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EXTRACT

From an Act prescribing Rules for the Goverment of the State Library, passed March 8th, 1861.

SECTION 11. The Librarian shall cause to be kept a register of all books issued and returned; and all books taken by the members of the Legislature, or its officers, shall be returned at the close of the session. If any person injure or fail to return any book taken from the Library, he shall forfeit and pay to the Librarian, for the benefit of the Library, three times the value thereof; and before the Controller shall issue his warraut in favor of any member or officer of the Legislature, or of this State, for his per diem, allowance or salary, he shall be satisfied that such member or officer has returned all books taken out of the Library by him, and has settled all accouuts for injuring such books or otherwise.

SEC. 15. Books may be taken from the Library by the members of the Legislature and its officers during the session of the same, and at any time by the Governor and the officers of the Executive Department of this State, who are required to keep their offices at the seat of goverment, the Justices of the Supreme Court, the Attorney-General and the Trustees of the Library

MINING AND SCIENTIFIC PRESS.

An Illustrated Journal of Mining, Popular Science and General News.

BY DEWEY & CO., Patent Solicitors.

SAN FRANCISCO, SATURDAY, JULY 3, 1875.

VOLUME XXXI Number 1.

The Union Iron Works.

This institution is the oldest established and the most extensive fonndry and machine shop on the Pacific coast, and in its appointments will bear a favorable comparison with any of the iron works in older cities East. The engraving shown on this pago represents the front of the works, which, however, face on Mission and Fremont streets as well as First, covering an area of 275 feet by 186 feet. Additions have been made to the buildings from time to time, as the necessities of business demanded, and several changes have recently heen made as stated hereinafter. No better indication of the ndvance in progrsss of the Pacific coast could be given, than that shown hy the steady increase in bnsiness of a representative mechanical iustitntion of this kind; and nbrief history of its origin and growth will repay perusal hy those interested in mechsnical pursuits or the progress of California.

The Union Iron Works were originally fonnded in 1849 by Messrs. James and Peter Donshue, and at that time consisted of a small rude furnace and a few commou tools, not even covered in or protected from the weather. The furnsce hlast was produced hy two hlacksmith hellows. Soon after the works started the first iron casting turned out on the Pacifio coast was made, in the shape of a "steady or spring bearing," for the propellor *McKim*. Thie casting cost fifty cents per pound. From thie little "plant" the Donahue Brothers built up a very large business, enlarging and improving their estahlishment from time to time, and endeavoring to keep it in advance of similar works which in course of time sprung up around them. Iu 1856 James Donahue sold his interest in the business to his hrother Peter, who erected a large hrick building on the site of the roofless workshop of 1849, and carried on the business in his own name.

As Mr. Donahue, however, was engaged in other enterprises of great magnitude, he was unable to exercise a personal supervision over the mechanical branch of his husinsss, and in 1863 formed a copartnership with H. J. Booth, of the Marysville Foundry, and C. S. Higgins, under the firm name of Donahue, Booth & Co. Mr. Booth had been in the foundry business in California for twelve years, and Mr. Higgins was also an active business man; hut the institation did not flourish as it should, and the firm sold out in 1865 to a new firm composed of H. J. Booth, G. W. Prescott and Irving M. Scott, under the firm name of H. J. Booth & Co.

Under this firm the foundry has heen running for the past ten years. As soon as they took hold of the business it began to increase wonderfully and new machinery was purchased, more men employed, and the facilities incressed gradually to the present timo, until now it is the most completely eqnippsd foundry and machine shop on the coast.

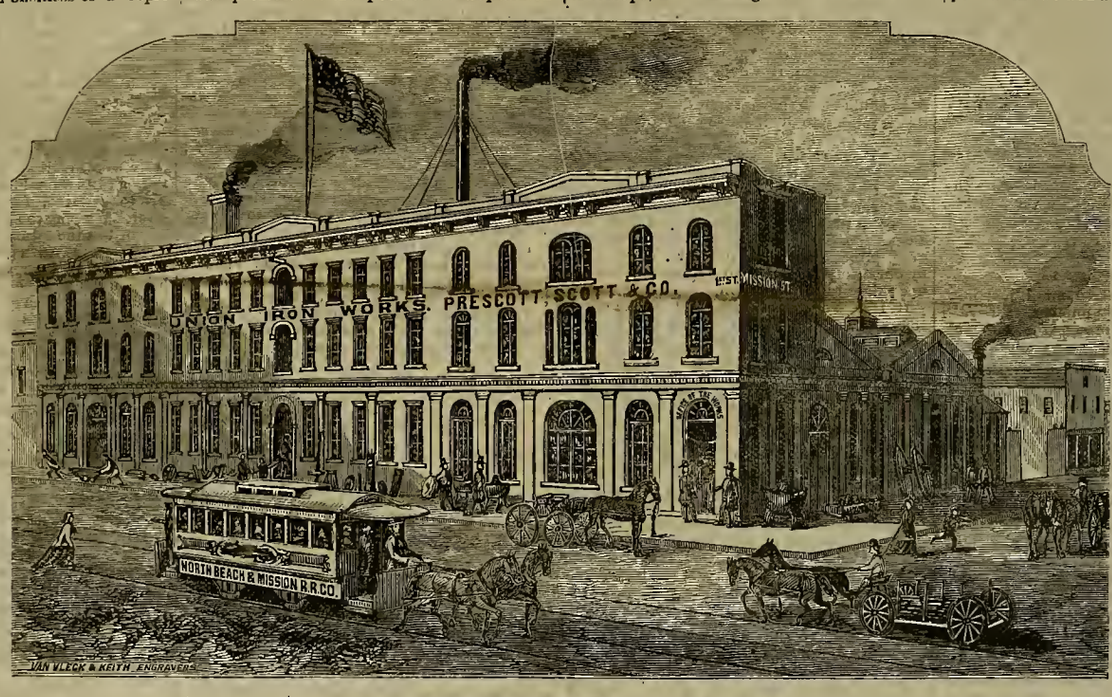
The New Firm.

On the 8th of laet month Mr. H. J. Booth retired from the businese and the firm name was changed to Prescott, Scott & Co., the new firm comprising G. W. Prescott and Irving M. Scott of the old firm, and H. T. Scott, who has for about eightyears been connected with the firm as confidentisl agent. G. W. Prescott and H. T. Scott will as hefore conduct the commercial and financial dspartments, and Irving M. Scott continues to superintend the mechanical branches of the bnsiness.

Mr. Prescott, the senior member of the firm, was one of the originsl members of the firm of H. J. Booth & Co. He is one of the best finsncial men in San Francisco, aud a first-class, intelligent mechanic. He has traveled nearly all over the world, gaining a great fnnd of iuformation thereby. He is on: of our prominent citizens, and is a capitalist who always has his money within reach. Mr. Prescott is head of the financial department of the works and is a mau who is respected by all who know him.

Irviug M. Scott, well known as one of California's most intelligent mechanics, came to the works as draftsman in 1860. In 1861 he was promoted to the position of Superintendent of the works, of which he has had charge ever since. He and Mr. Prescott both came in as partners in 1865. Mr. Scott has distinguished himself hy improviug greatly the mechanical details of all varieties of quartz machinery. When he first began to make a point of this, stsmps were able to crush from one half a ton of quartz dry to one and a quarter tons wet, per day. Now they crush two tons dry and up as high as five tons wet, a result which Mr. Scott has addod much to gain. He took out with Mr. Eckert in 1867, a patent for a slide valve governor, au invention of great importance and rightly judged to he a very beautiful and simple contrivance for controlling the speed of the engine under all conditions whether loaded or suddenly relieved from the entire work, or gradnally unloaded. The principle consisted in connecting the ingress of steam directly with the governor, making it supreme, shutting off or letting on steam, as circumstances might require. Mr. Scott hae no doubt contributed more to the mechanics of metallurgy than any other man on the coast. He has improved the mechanical details of nearly all the pans and settlers, making suggestions of value to the inveutors, while the machines were under his supervision. He introduced the first double armed came, with hub on one side, for quartz mills, which are now in univereal uee. It must he remembered that iu making machinery of this kind much had to be left to the machinist a few years ago when all the principles were not eo well laid down as at present. It was therefore of the greatest moment to the numorous inventors who were experimenting with this class of machinery, to have an intelligent mechanic who was thoroughly inte-ested in the improvement to suggest such features iu detail as would cheapen or strengthen the machine aud at the same time effectually carry out the inventor's ideas. Mr. Scott's claims as a first class mechanic are fully recognized hy all his competitors in business—a conceded compliment not easily gained. Although he did not on entering the firm hring with him much capital, he brought what was better, energy, mechanical talent and an excellent executive capacity.

H. T. Scott, the new member of the firm, a younger brother of the Supsrintendent, has been connected with the iostitution for some eight years. He first went into the casting department, then the time department, then collection, and was finally confidential agent of the old firm. During Mr. Prescott's absence in Europe, he is manager of the financial and commercial department, in which he has shown much ability. Hs hss had charge of the purchase of supplies for the works for the past four years. He has made his way ahead in the institution unaided hy relatives, but depending on his own energy and ahility for advancement. He is a young man of much promise.



UNION IRON WORKS—PRESCOTT, SCOTT & CO.

The Buildings

Comprising the works are not of elegant exterior, although the interior arrangements are well adapted for the purposes for which they are used. The offices have been recently fitted up in neat style, with counting room, business room, private offices, etc. A new and commodious boiler shop has recently been erected, as mentioned hereinafter. The inetitution is connected with the American District telegraph system of this city, and has speaking tubes, etc., throughout the buildings.

Each mechanical branch of the businees of these works comprises a distinct department under the special charge of a foreman of experience. The workmeu rely on merit alone for promotion, and discipline is maintained with a firm hand, the rules heing thoroughly understood.

The Drafting Department

Room ie completely fitted np, being supplied with the very best materials. Details of ordere are here worked ont for delivery to whichever department is to fill the order. There are eight draftsmen employed, in charge of Eugeue O'Neil, who has worked his way up from the machine shops to the head of this department.

The Pattern Shop

Is amply provided with planers, lathes, band saws, circnlar saws and a complete ontfit of machinery of this class. Every facility is here given to turn out work in a superior style at short notice, the machinery all being well adapted for the purpose and the men skilled in their trade. This shop is in charge of Willism McConuell, who has hesn in the institntion for many years, and worked his way up to the head of his department. There are eighteen men employed in this shop.

The Foundry

Is of course au extensive branch of the establishment and gives employment to 127 molders. It is well supplied with proper appurtenances. There is one crane of thirty and one of twenty tons capscity; two large sized coro ovens, three cupol is, with a capacity of melting 64,000 pounds in two and a half hours; pits and appurtenances for making the largest cylinders in castings of any description. One of the core ovens is one of the most approved appliances invented up to date, enabling them to do this class of work very cheap. This department is very complete. It is under the charge of Heury Dimmick, a superior mechanic, who hss been in the fonndry since 1863, and worked his way from a common molder in the shop up to his present position.

The Machine Shop

In these works contains some of the largest tools on this coast. The appliances in this department have heen enlarged to meet the reqnirements of the increase of work on heavy machinery for the Comstock mines. Every kind of mschinery that can aid man's labor is represented here, and all of the most approved patterns. In this department there are thirty-four lathes, from twelve to twenty feet, and thirteen planers from six feet wide by twenty-four feet long to ten feet wide hy thirty feet long, both lathes and planers heing the largest on the Pacific coast; six slotters; fourteen drills from ten feet to ninety-six feet; two vertical horing mills from four to eight feet; four horizontal horing mills, three bolt cutters, two nut tappers, two nut fscers, six shspers, four pulley lathes, two spur gear cutters from two sud a half inches to twenty-six feet; two hevil gear cutters from six inches to ten feet; also a complete assortment of milling machinery, small tools, cranes capable of handling thirty tons, cars, car tracks, etc., etc. This department is superintended by Wm. Worth, an old hand at the foundry, and one of the most thorough mechanics in California.

The Blacksmith Shop

Has seventesn fires, two steam hammers, and is supplied with cranes, small tools, and all facilities for turning out forgings of all kinds. About forty men are employed, over whom Patrick Hayes is foremau.

The Boiler Shop

Is a new building, erected this year in the rear of the main buildings and fronting on Fremont street. It ie supplied with a complete outfit of new and improved tools. Pipes, boilers, tanks and uumerous other thinge are constructed in this department, which in reality includes many various details which are inseparable from the business. By a new system of

(Continued on Page 8.)

CORRESPONDENCE.

London's Loss, San Francisco's Gain.

EDITORS PRESS:—The recent incorporation of the Tybo Consolidated miuing company, in San Francisco, marks a new era in the history of mining operations in this section of Nevada. It will stimulate prospecting and encourage the opening up of other properties that have been partly neglected of late, as well as foster the local industrial pursuits of the place. Henceforth we will not be dependent upon the capricious conduct of British capitalists or anffar from the red tape formulas of English official life. London's loss will soon become San Francisco's gain, thongh for the sake of the interests of the State, it would have been well were this property vended in the former city, for it would add to the importance of Nevada. However, the vastness of our mineral resources is becoming every day more evident, and since there are very many valuable properties lying around, the man of means has not got to travel far in search of an investment, for such chances are to he met with in almost every district of the State. Here foreign capitalists have had presented to them opportunities the like of which were not to be found elsewhere, and if success has not accrued to them from the operations of the past, it is safe to say that to their own indiscretion and their own inexperience can be traced the disastrons consequences which have resulted from their specnlations. In nine casee out of ten, these have been the prevailing causes of the severe losses which have heen snstained by English operators on the Pacific coast. Theu the blame oame to be laid ou the country, its mines and its people, instead of bsing charged to the want of judgment exercised by themselves in the matter of selecting their agents. Here is where the chief mistakes have heen made, and to this want of caution on the part of English iuvestors, can he readily traced many, if not all, of the failures that have taken place. Ordinary prudence has been entirely overlooked, and ignorant and irresponsible charlatans, calling themselves geologists and mineralogists have been entrusted with ths almost exclusive disposition of their funds, and have thereby inflicted much injury npon all concerned.

Of the many ventnres inaugnrated by

English Capitalsis

In Nevada, we caunot call to mind, just now, more thnn two out of the number, that are at present bearing out the promises of, and sustaining the reputations of their vendors in the British metropolis. Even one of these did not until quite recently, become a very desirable or profitable purchase. Under the administration of its English managers, it was driven to neerly tbe verge of bankruptcy, and how the company escaped having to resort to the nsual refuge of English mining companies, the winding up court, is nnaccountable to those who knew and understood the character of the men placed at its head. But it is presumable that the magnitude of the price paid for tbe property and the immense sums that had been recklesely squandered in unprofitable work and useless experimentslizing, together with their great faith in the value and permauence of their mines, were the inspiring reasons that prompted the further and the further disbursements of their golden dncats. But it is a fact worthy of note, that uutil the company determined to entrust the management to an American, and did do it, no certain nor encourag ing returns had ever been received from the vast sums expended. Since then success has followed snccess eo fast, that now its English owners can at least console themselves with the sweet satisfactiou derived from the conscions nees of owning a valnable property, free from incnmbrances of every kind, estnblished upon a paying basis with bright prospects and a radient futnre before it.

Frank Drake and his partner, Applegarth, the latter of whom resides in London, were the vendors of tbis property. It is at present quoted nt £6¾ on the London stock board, it is not uulikely that it will soon be in a position to disburse quarterly, perhaps monthly dividends, there having been cleaned up recently $100,000, the result of a twenty-five days run on Eberhardt and Aurora ore. Four thoneand dollars per day is not to be sneered at, especially when there appears to be lots of the same quality of ore from which to choose. What eays that metaphorical old gentleman of ruhicund countenance and vast avoirdnpois, to the above evidences of the barrenness of Nevada? Do they not eloquently appeal to his reason nnd his pocket alike, stagger his skepticism and put to instantaneous flight all of his firmest resolntions in favor of the exclusive employment of members of his own household to manage his mineral possessions in this country? They ought at all events to hnve some little influence in removing his prejudices, injurious alike to the interest of his own realm as well as to the reputation of this commonwealth.

The other of these mines is the

Richmond,

Of Eureka. This is now looked npon, and justly, as one of ths most valuable propsrties in Eastern Nevada, and has contribntsd more than any othsrs owned by Englishmen, towards removing the odinm whioh has attachsd to almost all American mining securities, since the bursting of ths Emma bubble. It was placed on the London market in 1872, by J. M. English of San Francisco, Presideut of the Gila and West Side companies, of Reveille, and of the Tybo Consolidated, of Tyho.

To this gentlemen is also dus the credit of having launched in the English capital, the Sweetland Creek mines, than which there are few more remunerative in the Golden State. To his enterprise is also largely due the creation of the foregoing three named compenies, thongh we must not forget that he has been ably seconded in his efforts to promote the lsnguishing interests of Reveille, and to stimulate and revive the drooping indnstries of Tyho, and Nye county generally, by his indefatigable associate, John B. McGee, of the latter district and county. Their faith and enterprise have heen nnbounded, and shonld meet with the rewards they so riohly merit. The Gila and West Side and Tybo mines will soon begin to bear golden fruit, and be claesed among the dividend paying institntions of Nevada. The valne of the

Tybo Consolidated

Can be best nnderstood, when we advisedly state that its owners have, up to the period of its incorporation, dishnrsed on account of purchase and construction accounts, and for the development of the property, to bring it to its present prosperous condition, no less a sum than $400,000 in clean coin. There has never been, to our knowledge, placed on the merkets of either San Francisco or London, anything in the mining line to equal it in the mere matter of longitudinal, lnteral and vertical exploration, or in the completeness of its exterior equipments, such as steam hoisting works, ore bins, tramways, furnace, mill, (twenty stamp), all necessary out-offices and hnildings, refining and calcining departments, water tanks, coal bins, together with nesrly three miles of solidly and securely laid water pipe, through which flows a copious supply, fed through branching pipes to all parts of the works.

Had this property been placed on the London stock board, it would have very greatly subserved the mining interests of our State, for we should then hnve three dividend paying mines to help to dieaipate the bad feeling that seems to exist in England regarding the mines of the Pacifio coast. But siuce it has not been floated there, the loss in that respect will be more than counterbalanced by the gain that will revert to our own people from having it placed in their midst. Thue they will all have a chance to become sharers in its fortnnes, for every property like it owned here, and worked by our own people, has an nppreciable bearing upon their futnre condition.

It is a well noted fact, that an American company is far more energetic as well as more enterprieing in every respect, and for that reason imparts a greater degree of stimulus to local intereats of whatever character, thau does an English incorporation. The reasons then are obvions, why the former is more desirable than the latter. The English people have been guilty of many blnnders, but the greatest error which they could have committed, was when they allowed the withdrawal of the Tybo property, to have it incorporated in the Bay City. Verily the ways and fancies of the Britishers are past finding ont. Here waa au excellent chance given them to partly re-imbnree themselves for the losses of the past, and they were coutent to let it pass because of their prejndices. We well remember that they did about the same thing in the early days of Eureka. Then, of course, they had some show of reason, the couutry being little more than a *terra incognila* to the greater portion of the mining world. At that time they incontinently rejected the property offered them hy Messrs. Buel & Bateman, at ahout half its value. That property is to-day embraced withiu the lines of the

Eureka Consolidated,

Of Eureka in this State. The property was at that time examined by English experts, and if we remember rightly, for we were then on the ground, their report was so nnfavorable that their principals declined becoming its purchasers. They have freqnsntly since them had cause to repent them of the hastinese o their decision. They will one of these days, too, have just as good cause to regret the conclusions arrived at in relation to the withdrawal of the Tybo Consolidated. The Eureka is to-day one of the leading mines of Nevada, and it and the Richmond are no doubt without a parallel in the mineral world. After more than four years of nninterrupted production, they yet stand pre-eminent as hnllion producers, and the same wealth of ore permeates the nndergronnd workings of both, so that it is a question which of them contains the greatest bonanza. The reports that have lately reached ns of the dimensions of the Enreka bonanza, henr about them an air of exaggeration, but yet we are inclined to thiuk them entirely correct. Friend Cassidy, of the *Sentinel*, gives the length ae developed up to 28th ult., at 280 feet, width or thickness 100 feet, depth 160 feet. These dimensions, allowing ten feet in place for a ton of ore, would give an amount approximating 290,000 tons of ore in sight in that bonanza. Wonderful, indeed! Over $33,000,000, according to the estimated valne of the ore. The estimate mede by a correspondent of the *Enterprise*, nppears to be the more correct one of the two, though by saying so we do not wish to impugn the verscity of the *Sentinel* in the least, yet the differsnce in ths two statements ars somewhat antsgonietic, and can hardly be very well reconcilsd; however, siuce we do not wish to enter the lists as the champion of either side, we will withdraw and lsave the solntion to others.

Ths Richmond is as big a mine as the Eureka Consolidated, bnt siuce it came entirely under the control of English officers, it is not the well managed property it was while an American superintendent was at its head. Then energetic action and vigorous development were ths rules and not the exceptions. Now ths siokly conventionalities of rontine that distingnish the English from the American management, hold triumphant sway. No property can be rendered remnnerative by such a course of action. It is, however, the custom of eome men to do exactly as their fathers did, and worship the ideas, appliances and methods of an antedsluvian age, chiefly because such and such things were done, and still are being doue in Cornwall, or elsewhere within Albion's Isle.

DE LA POEA.

Nevada, June 13th.

Plumas County Mines.

EDITOAS PRESS:—Having occasion to run around a little, I visited some of the mining camps in thia locality and write you a few lines concerning them.

Heath & Dodds are starting their new ditch, which they expect to complete within a year and which will be nine miles in length. Their mines are situated five miles east of Buck's ranch and are very extensive surface or placer mines.

At Hungarian Hill, owned by Gurny & Co., there are also extensive hydraulic claims which are now paying well. The largest run of two pipes, ninety hours, paid $1,400.

Thomas, Jolly & Co., near Nelson's Point, ten miles southeast of Quincy, have strnck it very rich in a large hill, too high to hnve water the year round, but it is a light deposit and deep, and pays big. Those are principally new operations.

Many other gravel mines are being improved in this county, but on a smaller scale. Some on Middle Feather and some on the east branch of the North Fork. Among the latter are Mnmpherd's Hill, near Meadow valley; Heath & Co., East Branch; Scott's Bar, and Stagg Point, Middle Feather. There is a great deal of good ground unprospected in this county, but capital ia necessary to the development thereof.

I have besn in this locality for many years and know of many places that wonld yield a large profit on capital judiciously expended, hut out of reach of the common laborer.

The town of Quincy is improving rapidly. Water is scarce in the monntains. This ie bad for placer but good for river mining.

HAY PAESS.

Bucks' ranch, Plumas county, June 23, 1875.

Bald Mountain Mining District.

EDITOAS PRESS:—In my rnmblings through the northeastern part of the State, I spent two days in the nbove camp, and I must say was very much surprised to find two or three mines of so much promise undeveloped and lying idle. The Crown Point ledge is as fine a prospect for a large and valuable mine as I have seen in the State, according to the amonnt of development. This mine is situated immediately on the summit of the Ruby range of monntains, running parallel with the mountain, and stands perpendicular, shows a trne fissure, the west wall being a fina clay seam of one to two inches in thickness. This miue has a tunnel or shaft over forty feet, all in ore. I am told that about half the ore from thia mine will pay $60 to $75 per ton, the remninder $25 to $35. This vein is at least five feet in width.

The Sutro mine is south and close by the Crown Point. It is owned by the same parties that own the Crown Point. I am told that Dr. J. M. Bailey holds the controlling interest in all the prominent mines in the camp. The Satro is about five feet in width and contains some very rich ore, mostly chloride. An incline shaft forty-six feet deep has been run on this ledge. Some fifteen or twenty tons of rich ore are on the dump. A few tons of this ore has been shipped to the Newark mill thirty-five miles, and some to Reno mill for reduction, yielding $128 to the ton.

I only visitsd one out of the four copper ledges in the camp; the one I visited shows a very large snrface or oropping of fine ore, assaying twenty to forty per ceut. in copper. I am surprised that some mining speculators have not had the property in haud long before this tbis time, as I understand the owner, Dr. Bailey, offers inducements rarely to be had when the prospects are so flattering. I would not be surprised to see the one of the leading camps of this part of the State in a few years. The camp is favorably situated, with plenty of fine timber aud water, sixty miles from Elko, and forty miloe from the narrow gauge railroad from Palisade to Enreka. It is in White Pine couuty, fifty miles due north of Hamilton.

J. W. GIBS.

Bald Mountain, Nev., June 14th.

Monterey County Mines.

The Monterey County *Democrat* says: In the southeast portion of this county lie the districts known as Peach Tree, Slack's canon and Cholame. Hsretofore the supposition has heen that the tracts of country so styled possessed little value save for grazing purposes. The facts are very diffevent. In the first place, hoth districts comprise considerable bodies of plow land of very good qnality. As to climatio advantages, they are healthy, and, as the experience of this season shows, hy no msans liable to mischief from drouth. Being supposed, commonly, to be of a very dry oonstitution, in this dronthy year hay and grass in the Peach Tree district are of exceptionally good quality and the Cholame stock growers consider themselves in as good position as any of their fellows in the oonnty.

The population is considerable in numbers already, as shown by the fact that they have three election preoincts and three school honees. New comers are constantly swelling the local census list.

Quicksilver, Coal and Iron,

Bnt what we now chiefly direct attention to, are the stores of valuable minerals contained in these districts, which promise in the immsdiate futnre to employ much capital and many men to work them.

As to the leading mineral, in value, we mention that H. F. Pitts and others are working a lead of qnicksilver located at the head of Cholame valley, which ia oonaidered rich, and from which 100 tons of ore have been got out, a hsap being in sight. Arrangements are in progress for the constrnotion of furnaces and retorts and it is expeoted that shipments of metal will soon be oommenced. In the vicinity of this mine on the same lead of ore, about thirty other claims have been located, which are being prospected, promising good results. To the northwerd, in Slack's oanon, F. M. Stone is at work on another quicksilver mine, which, like the rest, offers a fine prospect.

Coal.

About eight miles southeast of Slack's cauon, distant eighteen miles from the Salinas r er (the line of the S. P. R. R.), F. M. Stone & Co. are now opening a coal mine and are taking measures to ohtain capital with which to work it. The mine was discovered in April, 1870. And the coal, which is of course bituminous, has all along heen considered to offer every inducemeut to its working, save only in the matter of transportation. The prospect of an early continuation of the Southern Pacifio railroad has stimulated the discovers and owners to exertion, for, now, while opening the mine, they may look to the Southern Pacifio railroad as the means of conveying its products to consumers, with good prospect of the early realization of their hopes. Four shafts have been sunk upon the lead, which has been traced about one mile and a hnlf, hnving n dip of about 45°, and as sunk upon growing less. West of this mine, three-fourths of a mile, Snyder is sinking a shaft npon the same supposed lead and has the "sign."

Iron.

One and one-half miles west of the ooal discoveries, in a slide on the break of a mountain, bonlders of iron ore, weighing as much as 300 pounds each, are found, in numbers indicating the proximity of an extensive lead. There show, also, on the eastern side of the same monntain, indications of gold and silver mixed with the iron ore.

The Importance

Of these discoveries is great; as the value of the minerals, if their qnautity be sufficient, would offer the strongest inducements to the railroed company to extend its line and he the occasion of the rapid development of a region that people have been in the habit of considering a desert.

The Great Mines.

The *Alta California* recapitnlates the mines which have paid large sums to their owners without being assessed at all. The capital stock of the Imperial was $50,000, which constitnted its whole capital. It prodnced $3,562,791, and paid $1,067,500 in dividends.

The Consolidated Virginia mine has a nominal capital of $10,800,000, hnt only $411,200 was ever paid np, while $10,000,000 bullion has been produced. The California mine to-day has a nominal capital of $54,000,000, hnt it has never levied a dollar of assessment, and never will, although it has been explored and ore laid hare which has been estimated in value from $400,000,000 to $800,000,000. The Belcher mine has a nominal capital of $10,400,000, but the owners never paid np but $600,600. That sum snfficed to turn out $25,938,854 of bullion, and to give the shareholders $14,248,000 more than they paid out. In the same way Crown Point, with a nominal capital of $10,000,000, cost $623,370 only in assessments, and has paid $10,000,000 in dividends. The Eureka gold mine has paid $2,094,000, and never cost a dollar.

It is said that the inventor of the new motive power, by which water is converted into steam without fire, has sold the exclnsive right for New York city to Commodore Vanderbilt, for $95,000, but n Philadelphia firm having bought one-half the right for the United States, have prayed for au injunction to prevent the sale, oonsidering the sum paid much less than its true value.

MECHANICAL PROGRESS.

Resistance of Woods to Torsional Strain.

Professor R. H. Thurston, of the Stevens Institute of Technology, Hoboken, N. J., has been making some experiments to see how different woods will bear a twist, and gives the following as his results:

The test pieces were seven-eighths of an inch in thickness, at the middle or smallest part, and were made from the following woods: White pine, S., yellow pine (sap wood), S. yellow pine heart wood), black spruce, ash, black walnut, red cedar, spanish mahogany, white oak, hickory, locust and chestnut. The conclusions drawn are as follows:

White pine yields quite rapidly as the torsional moment increases. The maximum strength of the test piece was 15 1-2 foot pounds, and it was twisted completely off at a total angle of torsion of 130 deg. The substance is thus shown to have little resilience. Yellow pine has much greater strength, stiffness and resilience. The sap wood is equally stiff with the heart wood, but sooner passes its limit of elasticity. Spruce is less stiff than white pine, even, but possesses greater strength and resilience, its moment of resistance reaching 18 foot pounds, and twisting through a total angle of torsion of 200 deg. Ash seems to be weaker and less tough than is generally supposed. Its most striking peculiarity is its very rapid lose of strength after passing its limit of elasticity. Black walnut is very stiff, strong and resilient, and is but little inferior to oak. Its resisting moment reaches 35 foot pounds and one specimen attained a total angle of torsion of 220 deg. Red cedar is stiff but brittle, and loses all power of resistance after twisting through an angle of 92 deg. A torsional moment of 20 foot pounds only produced a total angle of torsion of 50 deg. Spanish mahogany is very stiff and strong. It is deficient in toughness and resilience, losing its power of resistance very rapidly after passing the limit of elasticity. White oak has less torsional strength than either good mahogany, locust or hickory, but is remarkable for its wonderful toughness. It passes its limit of elasticity at 15 deg., but loses its resisting power very slowly. The latter remains unimpaired to a torsion of 70 deg., and yields completely at 253 deg. Millwrights are evidently correct in holding this wood in high esteem for strength, toughness, and power of resisting heavy shocks and strains. Hickory has apparently the highest ultimate torsional strength combined with unusual stiffness and considerable resilience. Its moment of resistance to torsion reaches a maximum of 58 foot pounds. Locust has greater stiffness than any other wood on the list, and stands next to hickory in strength; it is also very resilient.

A NEW USE FOR CAST IRON.—Messrs. West & Patterson have recently introduced in Pittsburg a new and neat article under the name of Rank's Grave Guards. Though a grave subject it is nevertheless an indispensable one. These guards are designed for the purpose of preserving the symmetry of burial mounds. They are made of metal, cast in moulds of various patterns, with a square socket on each end for holding the head and foot stones securely in position. The casting is open in the middle, allowing the mound to project through so that flowers may be planted and kept in their proper place by the sides of the guard. The whole casting is painted white, or ornamented, and may be made to represent mottled or white marble. They are durable from the fact that cold weather will not break them, nor will they rust when well painted, and are very much cheaper than marble or stone, being sold at about one-third the cost of marble. They may be seen at No. 132 Smithfield street.

STEEL FOR BELLS.—The greatly reduced price of steel is gradually introducing that metal into very general use. It has of late been largely used for belle. One of its advantages for such purposes has been alluded to in a late German paper as follows: The three cast-steel bells which fell at the burning of the church of the German Reformed community at St. Petersburg have again been hung, and are found to be none the worse for several hours' endurance of a furnace-like heat. One of these bells, which was cast at the Bochuner vereins factory, has historic antecedents. It was presented to the St. Patersburg community after the invasion of Denmark by tha King of Prussia; and now that it has been again hung, it is proposed to change its name from King William, which it formerly bore, to the Emperor William.

BAND SAWS VS. CIRCULAR SAWS.—The German industrial papers are discussing the question of the disadvantages of circular sawe as compared with band saws: 1st. Circular saws are very dangerone to the workmen. 2d. They require a much greater power to drive them than any other kind. 3d. They make a much wider cut, producing more waste, and thus fewer products from a given amount of material. The only advantage is that the cost of procuring a circular saw is less than that of a band saw; but notwithstanding, the Mechanics' Association (*Gewerbverein*) of Muehlhausen have already published in their yearly report the advice to abolish their use wherever it is practically possible to do so; and this is of course the case in the great majority of circumstances.

The Bessemer Channel Steamer,

The much talked of experiment of Mr. Bessemer—a swinging saloon for avoiding sea sickness in crossing the English channel—seems to have proven a failure. At all events Mr. Bessemer has found it necessary to abandon the idea of making the cabin maintain its level automatically, and now entrusts that duty to a man who stands in the center of the cabin watching a spirit level, and managing with a single lever a complicated and powerful system of hydraulic brakes. Any one who knows by experience how difficult it is to hold a spirit lever perfectly motionless, will understand the delicacy of the task which this Bessemer brakeman has to accomplish. The incessant motion of the restless waves has to be counteracted by an equally incessant movement of the lever. A moment's inattention or carelessness, and the swinging cabin swings madly through an arc of many degrees. We do not understand, however, that he has entirely given up his project; that he is still hopeful of making it a success is quite probable and natural. But there can be no doubt but that he is sorely disappointed at the result thus far.

Perhaps it may be truthfully said that the swinging saloon has not yet been tested under conditions favorable to the formation of an intelligent and unprejudiced opinion of the practicability of the idea, and the fact that it was allowed to remain fixed during the public trial trip, although all the machinery for maintaining its equilibrium was in position, may be regarded as indicating that Mr. Bessemer and Mr. Reed, his architect and contractor, have no great faith in its successful working. The English papers express doubts that it will ever be regularly employed in the channel service, owing to its unmanageableness in entering and leaving the Calais harbor. This, however, remains to be determined. We certainly hope that Mr. Bessemer will succeed in making his ship a success, and that to the disappointment which he doubtless already feels will not be added the mortification of complete and final failure.

The *Engineer* expresses an opinion that the swinging saloon, even if it is made to work, will never prevent sea sickness; yet it is always best to avoid an over confident opinion with regard to an experiment which does not absolutely imply in its success a positive nullification of well known natural laws. The declaration of Lardner that it was folly to think of crossing the Atlantic with a steamboat; the jeering of Davy at the idea of lighting the streets of London with gas, and the incredibility of other savants with regard to the assumed possibilities of railroad traveling in the early days of the locomotive, will always stand out as so many warnings against the propriety of condemning the future of anything which admits of a scientific possibility.

PERPETUAL MOTION UNDER GOVERNMENT PATRONAGE.—It appears from a statement in the *Manufacturer and Builder* that the notorious H. M. Paine, well known throughout the country for his many attempts to utilize foolish and impracticable schemes, is now at work in New York under Government patronage, in the construction of a "perpetual motion machine!" He proposes the absurdity that a column of water, say 300 feet high, and hence with a pressure of 150 pounds per square inch, is capable, by the employment of certain mechanism, of moving an engine without any expenditure of water whatever—by simple pressure alone! Hence, every man with a water pipe in his house, of ordinary pressure, may apply that pressure to an extent proportioned to the pressure and size of pipe, to any desired mechanical purposes. If so, why will not a pile of brick, or stone, or sand, answer the same purpose—why insist upon water alone? We leave our readers to ponder over such an absurdity, and place their estimate upon the engineering capacity of the Government officer who could lend himself to such a swindle. The statement seems almost incredible; yet we find it, in detail, occupying nearly a page in the journal mentioned, with the principle of the mechanism fully illustrated and described. We should add, however, that the *Manufacturer* ridicules the idea as absurd in the extreme.

BESSEMER STEEL IN SWEDEN.—According to late accounts there are now thirteen Bessemer steel works in operation in Sweden. In most of the works great attention is being paid to the production of extremely soft steel, for the manufacture of armor plates for ships. The greatest difficulty encountered in the works is in keeping up a uniform character of steel, for the reason that, for the sake of economy in production, the Bessemer steel converters are fed direct from the blast furnace. A good and uniform steel has not yet been produced direct from the ore; although it is a most important step in the progress of iron manufacture to turn out even a very inferior steel by that clean and rapid process. The possibilities of the future in this direction are highly encouraging.

STEEL DIRECT FROM THE ORE.—At a recent meeting of the Iron and Steel Institute, of England, one of the speakers, with the obvious endorsement of the other members present, among whom were some of the most eminent metallurgists, spoke confidently of the prospect there appeared of steel being manufactured as easily and cheaply from the ore as iron is now. An interesting fact in this connection will be found in this department, under the head of "Bessemer Steel in Sweden."

SCIENTIFIC PROGRESS.

The New Discoveries in Regard to Light.—The Impact (?) of a Luminous Ray.

We alluded some weeks since to an interesting discovery by Mr. Crookes, in relation to what appears to be a hitherto unknown property of light, by which it possesses direct mechanical power, as if by impact, in rotating a wheel constructed similarly to a steamboat, but hung horizontally, its axis resting upon a pivot. This discovery is considered the most important since the day when the possibility of spectrum analysis was first made known.

The first discoveries by Mr. Crookes were made known to the Royal Society in August, 1873; but his more recent discoveries, which are still more remarkable, were first described there in April last. Mr. John Evans, F. R. S., President of the Geological Society, occupied the chair, and among the listeners present were the two Secretaries, Professor G. G. Stokes, and Professor Huxley; also, Dr. Wm. Huggins, Mr. O. W. Siemens, Mr. J. Norman Lockyer, Dr. W. B. Carpenter, Professor Maskelyne, and Dr. J. H. Gladstone.

Mr. Crookes began by stating that, in the paper which he had previously read to the society, he had made known how a lever arm of pith, delicately suspended in a very perfect vacuum, was repelled by the impact of light or radiant heat. A great condition of success in the experiments was to work with the highest possible rarefication; consequently the lever arms were suspended in glass bulbs from which the air had been exhausted by means of the Sprengel pump, which gives a far more perfect vacuum than can be obtained by the use of any other apparatus.

Until these experiments were made it was supposed that light had no action upon a lever arm of small ponderosity suspended in vacuo. Indeed, the circumstance that light could not turn a lever arm so suspended has been quoted in standard scientific text-books, by Dr. Balfour Stewart and others, as one point in the long chain of evidence against Newton's emission theory of light. But Mr. Crookes last week exhibited a bar of pith suspended by a cocoon fiber in a large glass bulb very well exhausted. When a lighted candle was placed about two inches from this bulb the pith bar began to swing two and fro, the swing gradually increasing in amplitude until the dead center was passed over, when several complete revolutions were made. The torsion of the suspended fiber then offered resistance to the revolutions, after which the bar began to turn in the opposite direction, and so on alternately. These movements were kept up with energy and regularity so long as the candle continued to burn. When instead of a candle a piece of ice was placed near the bulb, one end of the lever arm came towards it as if attracted; but the truth was, as explained by Mr. Crookes, that radiant heat was acting upon the pith bar from all parts of the room, and that the presentation of the piece of ice lowered the radiation on one side; consequently the movement was really caused by repulsion acting in the opposite direction.

The amount of repulsion produced could be measured. The advantage which a glass thread possesses over a cocoon fiber is that the index always goes back to zero. The fibres used to suspend the arms are so excessively fine that when the end of one of them is held in the hand the fiber usually curls upward like a cobweb until the other end of it floats almost vertically in the air.

As the vacuum becomes less perfect the repulsion grows less, until at last the neutral point is reached where there is no action at all. If still more air be then admitted, attraction instead of repulsion sets in. The barometric pressure of the neutral point varies with the density of the suspended substance on which the radiation falls; it varies also with the ratio of its mass to its surface, and with several other conditions. Thus the neutral point for a thin surface of pith being low, whilst that for a moderately thick piece of platinum is high, it follows that, with a rarefication intermediate between these two points, pith will be repelled while platinum will be attracted by the same power of radiation. Mr. Crookes proved this experimentally, by showing simultaneous attraction and repulsion by the same ray of light.

When these experiments were first made known, some of the observers tried to account for the effects by the assumed action of feeble air currents or of electricity, but both these hypotheses were considered by Mr. Crookes to be abundantly disproved. Professor Osborne Reynolds suggested that the movement might be due to evaporation and condensation at the surface of the suspended body. Mr. Crookes had a thick and strong bulb blown at the end of a piece of difficultly fusible green glass, specially made for boiler gauges. In it he supported a thin bar of aluminum at the end of a long platinum wire, the upper end of which wire was pressed through the top of the tube and well sealed for electrical purposes. The apparatus was sealed by fusion to the Sprengel pump, and the exhaustion was kept going on for two days, until an induction spark refused to pass across the vacuum. During this time the bulb and its contents were several times raised to a dull red heat. At the end of the two days' exhaustion the aluminum bar was found to behave in the same manner as, but in a stronger degree, than it would in a less perfectly exhausted apparatus, namely, it was repelled by heat of low intensity and attracted by cold.

Meteoric Dust.

Tissandier has conceived the luminous idea of looking for the meteoric dust in snow water; during a rain storm it is lost in the soil, but if snow be collected, the dust in suspension may be found after melting the snow. He publishes the following facts: If twenty-two gallons of snow water be evaporated to dryness, there remains a residue varying from 0.048 grammes, in the country equal to 0.212 grammes in Paris; this residue consists of a fine gray powder, the organic matter of which, being rich in carbon, burns brightly, and leaves nearly 60 per cent. of ashes, composed of silica, carbonate of lime, alumina, chlorids, sulphates and a large amount of iron. As a crucial test he melted a large body of snow found at a high altitude in Finland, remote from human habitation, and found minute particles of magnetic iron. As meteorites often contain magnetic iron, this is a verification of the theory that our earth is continually receiving accessions, if not of large meteorites, at least of meteoric dust.

Groveman brings this fact in connection with the aurora borealis, and proposes the hypothesis that the myriads of floating particles of magnetized iron, in entering our atmosphere, become incandescent, and arranging themselves under the influence of the terrestrial magnetism, group in magnetic lines in the same way as steel filings do under the influence of a magnet. The theory, however ingenious, does not sufficiently account for the disturbance of the compass needle during the aurora, nor for the duration of this phenomena for hours, as the burning of small particles of iron can give only instantaneous flashes.

We would ask the hypothesis that the floating iron particles make the region above our atmosphere a better conductor than the highly rarefied vacuum prevailing there (the absolute vacuum being found to be an absolute non-conductor); the electric currents from the charged upper regions over the poles, towards the damp conducting atmospheres over the equator, conducted by the metallic meteoric dust in the upper regions above our atmosphere, or *vice versa*, cause the luminous rays which we call the aurora borealis.

ACTION OF ELECTRICITY ON IRON.—The remarkable phenomena first observed by Prof. Gore, which consists in a very perceptible twisting of a bar of iron by the joint effects of currents of electricity passing longitudinally through, and also around such a bar by means of the insulated wire of an enveloping helix, has been further investigated. Subsequent experiments have shown that such twisting may be made to reach full one-quarter of a revolution. It has also been ascertained that both currents are necessary to the development of the phenomena. Either current, when applied separately, simply produces the ordinary effect of magnetizing the bar. The direction of the twist is definitely related to the direction of the current in the helix. In order to produce the fullest effect, the currents must be simultaneous. When they are successive a perceptible twist results in a lesser degree.

FAT DECOMPOSED BY SALT WATER.—M. Marticonana, a manufacturer in San Sebastian, long ago remarked that the fat which remained attached to salted skins was decomposed. Recently having bought fat which for a long time had been in contact with sea water, he had it washed with acidulated water, then with pure water, and finally pressed, when he obtained the fatty acids: stearic, margaric and oleic. This conforms to what at present is known concerning fats; rancidity of fats is nothing but decomposition, the glycerine separating from the fatty acids, and the fats from being neutral when fresh, become acid when old and rancid. It appears that the contact of salt water hastens this decomposition, while heat does this still more. Fat inclosed with water in a vessel and submitted to a heat of some 300° to 400° Fah. (of course under pressure), will, when kept in continuous circulation, be decomposed in eight hours.

SPECTRUM OF COGGIA'S COMET.—Spectroscopic observations on Coggia's comet, made at Greenwich observatory, show the spectrum of carbonic acid gas. When this gas was illuminated by the electric spark from an induction coil without a Leyden jar attached, the spectrum was nearly identical with that of the comet. Two bright bands were always coincident, but occasionally the coma of the comet gave a faint continuous spectrum in addition, while the spectrum of the nucleus was always continuous, and contained numerous bright bands, and three or four dark lines in the yellow and green.

METEOROLOGY.—Experiments were made in France last year to test how far the humidity of the atmosphere is affected by forests. One set of instruments for recording humidity was placed in the forest, and the other in the open air, a short distance off. The records showed that more rain fell each month in the forest than in the open air, and the total rainfall for six months was seven and one-half inches in the forest, and in the open field less than seven inches.

Sales at S. F. Stock Exchange.

FRIDAY, A. M., JUNE 25.

70	American Flat		3
395	Andes		2¼
100	Alpha		16
70	Belcher		25½
200	..do	h 30	.30
560	Best & Belcher		42½@42
145	Bullion		39@38½
20	..do	h 30	.40
20	Baltimore Con		4
1015	California		55½@55½
140	..do	h 6	.55¾
140	Chollar		68@70
220	Con Virginia		312½@315
110	Confidence		150@151
690	Crown Point		26½@27
170	Dayton		2¾
200	Daney		50c
100	empire Mill		4½
1455	Gould & Curry		15@15½
45	Hale & Nor		31
735	Imperial		6¾@7¼
30	Justice		80
280	Julia		11@11¼
95	Knickerb		3
70	Lady Bryan		2¾@2⅞
60	Mint		30c
210	Maryland		75c
2855	Mexican		17¾@17⅝
175	New York		1⅞@1¾
25	Occidental		3½
790	Ophir		45@45½
35	Overman		56@56
100	Pauper		1¼
300	..do	h 30	.4¼
675	Rock Island		9@9¼
60	Savage		87@90
20	Seg. Belcher		1¼
250	S Hill		8@7⅞
220	Sierra Nevada		12¼
60	Sucoor		1
360	Union		6¾@6⅝
70	Julia		1¼
805	Woodville		1¾@2
120	Yellow Jacket		12@12½

AFTERNOON SESSION.

250	Alps		50c
65	Andes		2½@27½
50	Belmont		4
730	Best & Bel		44@44¾
10	Belcher		25½
5	Bullion		40
50	Cherry Creek		1¾
80	Con Virginia		312@313
300	Crown Point		27½@27
200	California		60c
205	Eureka Con		60@61
50	Empire		1
920	Gila		4¾@4½
100	..do	h 30	.3¾
340	Gould & Curriot		15¾@15¾
400	..do	h 30	.3¾
150	Gould & Curry		15½
50	Ida Elmore		2
750	Illinois Central		6@6½
180	Jumalia		11¾@11½
850	Jefferson		3¾@4
100	..do	h 30	.4
140	Leopard		14
110	Meadow Valley		6
1050	Mansfield		3½@2¾
100	Mammoth		.25c
100	Mahogany		6½
445	Mexican		17¾@17⅞
20	No Belle		29
195	Umbe		45½@45⅝
210	Phoenix		1½
5	Piocbe		3¼
600	Prussian		27½@23¾
350	Poorman		6
25	S Cord		2½
700	South Chariot		75c
80	S Nevada		12@12¾
75	W & Creole		1
100	War Eagle		1⅝
20	Jacket		72

SATURDAY, A. M., JUNE 26.

200	Andes		3
100	..do	h 10	.3
20	Alpha		16
50	Belcher		25½@25¾
480	Best & Bel		42½@44½
155	Bullion		37½@38
50	..do	h 30	.39
50	Baltimore Con		4
295	Crown Point		27@26¾
1255	California		54½@54¼
100	..do	h 5	.54½
20	..do	h 30	.55¼
100	..do	h 10	.55
20	Chollar		68
140	Con Virginia		310@313
10	..do	h 5	.312
200	Confidence		150@151
300	Cosmopolitan		.30c
10	Caledonia		15½
210	Dayton		2¾
530	Empire		4¾@4¾
25	Eureka Con		.69
100	Florida		3
20	Gould & Curry		15⅜@15¼
1500	Georgia		.10c
105	Hale & Nor		30@31
420	Imperial		6¾@7
355	Julia		11¼@11½
40	..do		.30 .11
50	Jnst.ce		.80@81
825	Jackson		1½@1⅝
85	Knickerbocker		2¾
115	Lady Bryan		3
175	Lady Wash		1¾@1
1715	Mexican		17@17⅝
30	Maryland		.75c
10	Meadow Valley		.6
150	New York		1⅝
895	Ophir		44¼@44½
40	Occidental		3¼
245	Overman		.56@55
200	Phil Sheridan		.75c
600	Prospect		4½
250	Rock Island		9¾@10
10	Ray & Ely		42½
10	Seg Belcher		.76
100	S G Hill		.50c
10	Savage		85
15	Sierra Nevada		12
50	Silver Hill		3
290	Union		6¾@6
75	Utah		5¾
614	Woodville		1¾@2¼
50	Yellow Jacket		72

MONDAY, A. M. JUNE 28.

20	Alpha		17@16½
280	Andes		23¾@24¾
65	Belcher		25¾@25½
10	..do	h 30	.25¾
440	Best & Bel		44½@44¾
100	..do	s 5	.44¾
50	Bullion		.38¾
50	Bal Con		.37¾
215	Crown Point		27@27¾
10	..do	h 30	.27¾
355	Confidence		18@19¾
160	Con Virginia		311@312½
50	..do	h 30	.311
300	Cosmopolitan		.25c
200	Dayton		2¾
820	Gould & C		15¾@15⅝
100	Globe		.87½c
560	Georgia		12½c
20	Hale & Nor		30¾
15	Imperial		6¾
125	Julia		11¾@11
10	Justice		.90
50	Kossuth		.75c
120	Knickerbocker		2¾@2¾
120	Lady Bryan		2¾@2¾
855	Mexican		17¾@17⅝
275	New York		1¾@1⅝
50	Occidental		3
1555	Ophir		44¾@45
40	Overman		56
400	Prospect		4¾
220	Rock Island		10¾@11
15	Seg Belcher		1
70	Sierra Nevada		12¾
245	Silver Hill		3
170	S California		2¾
50	Union Con		6¾@6¾
350	Woodville		2
75	Yellow Jacket		12

AFTERNOON SESSION.

90	Am Flag		2¼
495	Belmont		4@3¾
53	Con Va		315@312
50	..do	s 8	.312½
455	Crown Point		27½@27
390	California		55¾@55½
410	Eureka Con		62@61
50	Empire		.75c
675	Gila		4¾@4⅝
100	..do		4¾@4⅝
455	Golden Chariot		3½@2¾
70	Gould & Curry		15¾
300	Illinois Con		.5
10	Imperial		.6
450	Jackson		1½
650	Jefferson		3½@4¼
50	K K Con		4¼
485	Leopard		13½@15½
100	Meadow Val		6
200	Mansfield		2½@3c
200	Mahogany		4¾@5
145	Mammoth		.15c
470	Mexican		17¾
1135	Imperial		7¼@7¾
50	Justice		82½
195	Julia		11¾@12¼
20	Kentuck		.13
50	Kossuth		.75c
200	Prussian		2¾
200	Poorman		6½@6¾
500	Raymond & Ely		4¾@4¾
30	Maryland		2¾
50	Lady Bryan		2¾
30	Mexican		17¾
125	Julia		11¾@11½
75	Knickerbocker		2
325	Kossuth		.75c
50	Lady Bryan		2¾
135	Mexican		17½@17¾
100	New York		1¾
50	Occidental		3
1095	Ophir		45½@45
210	Overman		.56@56
350	Paoific		1¾@2
890	Prospect		4½
250	Rock Island		11½@11¾
90	Savage		.90
100	S Nevada		12¾
40	Seg Belcher		.80
300	Succor		1
300	S R Island		.90c
455	S Hill		6¾@6⅞
270	Union		6¾@6¾
250	Utah		5¾@5¾
1120	Woodville		2@1⅞
50	Yellow Jacket		72@71½

AFTERNOON SESSION.

30	American Flag		2½
125	Belmont		3¾
140	Best & B		43@42½
600	Condor		.75c
710	California		55¾
30	Con Virginia		.313
240	Crown Point		26¾@26½
400	Eureka Con		.62
50	El Dorado Soath		.50c
70	Eureka		.5
100	Empire		.75c
345	G Chariot		4¾@4¾
1415	Gila		4¾@4¾
520	Gould & Curry		15¾@15
500	Huhn & Huut		.1
355	Illinois Cen		.5
10	Imperial		.6¾
525	Jackson		1½@1⅝
450	Jefferson		3¾@4¼
50	..do	h 5	.3¾
240	K K Con		4¼@4
1640	Leopard		16@16¼
250	Mexican		17¾@17½
50	..do	h 5	.17¾
400	Meadow Valley		6@7½
85	Mahogany		5¼@5
300	..do	s 30	.5
100	Mansfield		.2½c
50	Mons Belmont		.40c
440	Ophir		44¾@44½
550	Phœnix		1½@1¾
20	Pioche		2½
100	Panther		1¼@1¾
420	Poorman		6½@6⅝
100	Prussian		2¾
125	Raymond & Ely		4¾@4¾
135	Rye Patch		1⅝
30	Savage		.85
120	War Eagle		1@1⅝
90	Y Jacket		71@71½

WEDNESDAY A. M. JUNE 30

175	Andes		2¾@2⅞
180	Belcher		.25
185	B & Belcher		43@41¾
150	Bullion		.38@37½
195	Baltimore Con		3¾@4
85	Chollar		.66@67
100	Confidence		.18
180	Crown Point		25@25¾
420	Con Virginia		313@314
1205	California		55@55¾
900	Dayton		2¾
50	Empire Mill		4¾
50	Eclipse		.9
200	Franklin		1½
880	Gould & Curry		15@15⅝
200	..do	h 5	.15
200	Golden Fleece		2¾
400	Georgia		.10
10	Hale & Noroross		.33
680	Imperial		6½@6¾
5	Justice		.90
280	Julia		11
100	Lady Bryan		2¾
70	Lady Wash		1@1⅜
350	Mexican		17½
25	Maryland		.75c
100	Mint		.30c
246	N Carson		.15c
175	Ophir		44@44¼
310	Overman		.56@55
100	..do	h 30	.55½
690	Pacific		1¾@2
550	Prospect		4½
425	Rock Island		11¾@11
55	Savage		.85
240	Sierra Nevada		12¾@12
50	Succor		.1
10	Seg Belcher		.80
100	South Cal		.2
420	Union Con		6@6¾
50	Yellow Jacket		71½

AFTERNOON SESSION.

50	Imperial		6¾
340	Jefferson		4¾@4¾
100	Jackson		1¾
75	K K Con		4
1200	Leopard		16¼@16¾
5	Meadow Valley		5¾
70	Mexican		17¾
100	Mansfield		2½c
160	Mahogany		6@5½
50	Newark		.75c

SALES OF LAST WEEK AND THIS COMPARED.

THURSDAY, A. M., JUNE 24.

220	Andes		3
50	Alpha		16½
1010	Best & Belcher		41@43
680	Belcher		25@25¾
465	Baltimore Con		4@4½
420	Bullion		40
4380	California		.54@54¾
140	Chollar		.68@70
200	Caledonia		16
1210	Crown Point		26¾@27
100	Confidence		15½
845	Con Virginia		313@321
520	Dayton		2¾@2⅝
100	Daney		.50c
50	Empire Mill		4½
145	Gould & Curry		15¾
25	Hale & Norcross		33@34
1135	Imperial		7¼@7¾
50	Justice		82½
195	Julia		11¾@12¾
20	Kentuck		.13
50	Kossuth		.75c
200	Prussian		2¾
250	Phoenix		1¾
200	Poorman		6½@6¾
200	Raymond & Ely		4¾@4¾
30	Maryland		.75c
50	Lady Bryan		2¾
30	Mexican		17½
150	Kossuth		.75c
100	Knickerbocker		.3
50	Lady Bryan		2¾
30	Maryland		.75c
125	Julia		11¾@12
15	..do	h 30	.26¾
105	Confidence		.19
183	Con Virginia		.314@316
50	..do	h 30	.318@319
1330	California		.55¾@55¾
160	Daney		.50c
700	Dayton		2¾
110	Empire		4¾@4¾
125	Echpse		.6
465	Gould & Curry		15½@15¾
200	Globe		1¾
160	Imperial		6¾@6¾
50	..do	h 5	.7
30	Justice		.90@90
1250	Julia		11¾@11¾
75	Knickerbocker		.2
325	Kossuth		.75c
50	Lady Bryan		2¾
135	Mexican		17¾@17¾
100	New York		1¾
50	Occidental		3
1095	Ophir		45½@45
210	Overman		.56@56
350	Paoific		1¾@2
890	Prospect		4½
250	Rock Island		11½@11¾
90	Savage		.90
100	S Nevada		12¾
40	Seg Belcher		.80
300	Succor		1
300	S R Island		.90c
455	S Hill		6¾@6⅞
270	Union		6¾@6¾
250	Utah		5¾@5¾
1120	Woodville		2@1⅞
50	Yellow Jacket		72@71½

AFTERNOON SESSION.

80	Belmont		4@4¾
100	Best & Belcher		41@42
92	Con Vir		305½@312
300	Crown Point		28@27
480	California		53¾@54
660	Eureka Con		60@61
1690	Golden Chariot		3¾@3¾
210	Gila		4¾@4¾
160	Illinois Cen		6@6½
50	Imperial		7¼
10	Jackson		1¾
80	Jefferson		3¾@5¾
90	K No 4		4@4¼
160	Leopard		14
450	Mansfield		.25c
10	Meadow Valley		.6
660	Mexican		17½@17¾
25	Overman		.56@57
250	Utah		5¾@5¾
70	S Chariot		1
70	S Cord		2¾@3

AFTERNOON SESSION.

200	Andes		2¾
25	American Flag		2
650	Best & Bel		43¾@43½
75	Belcher		22½@23
300	Condor		.50c
100	Crown Point		.25¾
1025	Cal ifornia		.56¾@56¾
320	Con Virginia		.323@315
75	Empire		.50c
530	Goldan Chariot		3½@2¾
375	Oila		4¾@5¼
480	Illinois Cen		4½
100	Jackson		1¼@1½
405	Jefferson		4¾@5c
1020	Lady Bryan		2½
1135	Mahogany		5c@5¼
45	Meadow Valley		5¾@6
220	Mansfield		.2½c
110	Mexican		17¾@17½
240	Ophir		45½
500	Poorman		.6
325	Phœnix		1½
65	Rye Patch		1½

The Mining Stock Market.

We are unable to chronicle any new features in the mining stock market. Everything continues dull with small sales and low prices. Whether the unusual crop of assessments has anything to do with this continued depression, we do not know. The brokers probably live on hopes of the usual fall excitement coming on again, which would enliven their business a little. It is encouraging in view of the depression in stock circles, to observe the equanimity manifested on the Comstock, where everything is going on as usual, as if there were no stock market. Low prices does not seem to affect the progress of work, and at all the mines the usual activity prevails.

MEADOW LAKE.—Yesterday afternoon Messrs. R. M. Fryer and Jos. Perriu returned to Grass Valley from Meadow Lake mining district. They had been up there, in company with others, to examine the resources of that part of the country. Mr. Fryer has worked many samples of Meadow Lake ore, by his process, and has been very successful. The ore is very refractory, but he saves, every time, to within ninety per cent. of a fair assay of gold. In fact no assayer has yet been fouud who can find any precioua metal in the tailings left after the Fryer process. In a short time a quantity of ore will be sent down from Mesdow Lake, to be thoroughly tested by the new process This ore will come from various parts of the district, and the working of, say fifty tons, in that way, will show what Meadow Lake can do under the new order of things. Grass Valley's free ores, of course, can be worked up to a true assay value of the ore. Mr. Fryer goes to San Francisco this morning but will return in a few days, and then business will begiu.—*Grass Valley Union.*

THE new machinery ou the Utah mine, on the Comstock, is found to work with the utmost smoothness. The first lift of the pumps is already in place, and draining the shaft will be commenced in a very few days more. The new machinery, in point of power and finish, is second to none on the line of the Comstock, and the prospecting of the mine can now be reaumed and prosecuted with renewed energy and vigor.

AT the Dayton mine the heavy sole plates for the engines and other portions of the machinery are being placed on the stone foundations; and the erection of the whole is being crowded to completion with all the vigor possible.

ON the Ophir mine the new and powerful inline hoisting engines are being placed in position ready for future aervice. The heavy atone foundations for the pumping engine are fast approaching completion.

MINING SHAREHOLDERS' DIRECTORY.

Compiled every Thursday from Advertisemente in the Mining and Scientific Press and other S. F. Journale.]

ASSESSMENTS.—STOCKS ON THE LIST OF THE BOARDS.

Company.	*Location.*	*No.*	*Amt.*	*Levied.*	*Delinq'nt.*	*Sale.*	*Secretary.*	*Place of Business.*
Baltimore Cons M Co	Washoe	9	1 00	June 30	Aug 3	Aug 23	C A Sankey	331 Montgomery st
Belmont M Co	Nye Co Nevada	5	1 00	May 10	June 14	Jnly 6	O H Bogert	402 Montgomery st
Chariot Mill & M Co	San Diego Co Cal	4	25	June 24	July 27	Aug 17	F Swift	419 California st
Dayton G & S M Cn	Washoe	8	1 00	Jnne 8	July 15	Aug 5	W E Dean	419 California st
Empire M & M Co	Washoe	18	1 00	May 28	July 2	July 21	W E Dean	419 California st
Eureka M & S Co	Washoe	5	5	June 1	July 9	July 31	A C Ryce	308 California st
Florida S M Co	Washoe	2	75	Jnne 15	July 20	Aug 10	L Hermann	330 Pine st
Golden Fleece G & S M Co	Washoa	9	10	June 16	July 16	Aug 16	J P Moore	320 California st
Hnhn & Hnnt S M Co	Ely District	11	50	May 7	June 15	July 9	T L Kimhall	409 California st
Imperial S M Co	Washoe	22	1 00	June 29	Aug 3	Aug 20	W E Dean	419 California st
Iowa M Co	Washoe	3	10	May 13	June 14	July 7	A D Carpentar	605 Clay st
Jacob Little Cons M Co	Washoe	1	10	May 31	June 10	July 26	W R Townsend	330 Pine st
Jnstice M Co	Washoe	15	3 00	Jnne 19	July 19	Aug 19	Jas Kennedy	Merchants' Ex
Kossuth M Co	Washoe	4	1 00	Jnne 12	July 15	Aug 21	E F Stone	419 California st
Leviathan M Co	Washoe	1	50	May 29	July 6	July 28	F E Luty	507 Montgomery st
Mint G & S M Co	Washoe	10	20	May 12	June 16	July 9	D A Jennings	401 California st
Nevada G & S M Cn	Washoe	1	25	June 3	July 8	July 27	Joseph Mcguire	419 California st
Nevada Land & M Co.	Elko Co Nev	17	20	May 14	June 19	July 8	Wm H Watson	302 Montgomery st
New York Cons M Co	Washoe	14	50	June 22	July 27	Aug 16	H C Kibbe	419 California st
New York G & S Co	Washoe	5	50	June 22	July 27	Aug 16	H C Kibbe	419 California st
North Bloomfield O M Co	Cal	38	1 00	June 16	July 26	Aug 13	Thos Derby	320 California st
Ophir S M Co	Washoe	29	2 00	May 14	June 17	Jnly 8	J Marks	419 California st
Original Gold Hill M Co	Washoe	3	50	June 4	July 9	July 28	W M Helman	401 California st
Overman S M Co	Washoe	32	3 00	Jnne 25	July 30	Aug 19	R Wegener	414 California st
Rock Island G & S M Co	Washoe	3	10	May 19	June 21	July 12	J W Clark	418 California st
Savage M Co	Washoe	19	5 00	June 24	July 28	Aug 16	F B Holmes	419 California st
Silver Hill M Co	Washoa	6	2 00	June 8	July 14	Aug 4	W E Dean	419 California st
South Chariot M Co	Idaho	14	75	June 10	July 13	Aug 4	F Swift	419 California st
Utah S M Co	Washoe	10	2 00	June 7	July 9	July 30	W E Dean	419 California st
War Eagle M Cn	Idaho	10	1 00	June 30	Aug 5	Aug 25	L Kaplan	Merchants' Ex
Wells Fargo M Co	Washoe	2	10	Jnne 23	July 26	Aug 13	O H Bogart	402 Montgomery st
Woodville Cons M Co	Washoe	2	60	June 25	July 29	Aug 18	W M Helmann	401 California st
Woodville G & S M Co	Washoe	10	60	June 25	July 29	Aug 18	W M Helmann	401 California st

OTHER COMPANIES—NOT ON THE LISTS OF THE BOARDS.

Bandereta M & M Co	Cal	1	25	Jnne 17	July 17	Aug 2	J W Tripp	408 California st
Black Hawk Coal M Co	Cal	1	5	June 23	July 30	Aug 16	H A Powell	520 Montgomery st
Champion Cons M & S Co	Nevada	1	1 00	May 6	July 6	July 24	J M Buffington	311 California st
Cherry Creek M & M Co	Nev	3	25	May 18	June 21	July 15	D F Verdenal	409 California st
Cordillera G & S M Co	Mexico		10	May 8	June 18	July 3	Henry R Reed	321 Washington st
Edith Q M Co	Cal	4	25	June 3	July 19	Aug 11	Wm Stnart	113 Laidesdorff st
El Dorado W & D G M Co	Cal	9	10 00	June 8	July 8	July 31	H Elias	416 Montgomery st
Emma Hill Cons M Co	Utah		2	May 10	July 9	Aug 19	L O Fowler	302 Montgomery st
Equitable Tnnnel & M Co	Utah	10	25	May 12	June 16	July 7	C S Healy	Merchants' Ex
Florence M Co	Hnmboldt Co Cal	2	10	May 15	Jnne 10	July 7	J E Delevan	220 Montgomery st
Fresno Q M Co	Fresno Co Cal	2	25	June 14	July 24	Aug 14	R Wegener	414 California st
Gold Run Gn	Washoe	12	15	June 5	July 12	July 30	C O Palmer	41 Market st
Hartford M Co	Utah	3	30	June 26	July 28	Aug 14	E F Stone	419 California st
Idaho S M Co	Inyo Co Cal	1	10	Jnna 4	July 3	July 24	Daniel Buck	331 Montgomery st
Illinois Central M Co	Idaho	3	75	May 21	June 21	July 12	R H Brown	402 Montgomery st
Jackson M Co	Enreka Nevada	7	50	June 25	July 29	Aug 19	H C Kibbe	419 California st
Lady Washington M Co	Washoe	4	50	June 16	July 20	Aug 9	H C Kibbe	419 California st
Lake Co Quicksilver M Co	Cal	6	10	May 10	June 18	July 5	Andrew Baird	316 California st
Los Prietos M Cn	Cal	3	25	Jnne 2	July 9	July 31	S H Smith	6 Montgomery Av
Misers Dream S M Co	White Pine Nev	2	40	June 21	July 31	Aug 19	W F R S Hindler	Cor Cal & Spring
Missouri Q M Co	Cal	2	50	June 22	July 26	Aug 24	F H Rogers	330 Pine st
Morning Star G & S M Co	Cal	1	00	June 16	July 19	Aug 14	O H Bogart	402 Montgomery st
Mosquito Hydrsnlic M Co	Cal	2	31½	June 28	July 31	Aug 19	C S Healy	Merchants' Ex
Mountain View Cons M Co	Nevada	1	50	June 24	July 29	Aug 16	C S Healy	419 California st
Mount Savage M Co	Utah	2	10	Jnne 12	July 26	Aug 17	D F Verdenal	409 California st
North Carson S M Co		1	25	May 12	June 16	July 7	Nathan Leigh	416 California st
Northern Five-Cent Hill M Co	Cal	3	20	May 21	June 14	July 6	J M Buffington	311 California st
Omega Table Mountain M Co	Cal	6	5	June 8	July 13	Aug 2	David Wilder	Merchants' Ex
Orleans M Co	Grass Valley Cal	5	2 00	May 30	July 6	July 28	G P Thurston	315 California st
Pioneer Cons M Cn	Eureka Nev	3	10	May 18	June 23	July 13	C S Neal	419 California st
Red Jacket M Co	Idaho	7	50	May 21	June 25	July 16	Wm Willis	419 California st
Sierra Nevada M Co	Cal		25	May 30	June 30	July 21	G R Spinney	320 California st
Silver Central Cons M Co	Washoe	1	5	May 10	June 15	July 6	L Hermann	330 Pine at
Starr King S M Co	Elko Co Nevada	11	25	May 21	June 26	July 17	L Kaplan	Merchants' Ex
Table Mountain Alpha M Co	Cal	7	10	June 5	July 18	Aug 2	Leander Leavitt	401 California st
Umpire Tnnnel & M Co	Utah	4	5	May 20	July 1	Aug 2	Wm Small	531 California st
Union Tnnnel M Co	Nevada Co Cal	10	1 00	June 14	July 6	July 26	T Bragg	320 California st
Weaverville D & H M Co	Cal	6	1 00	May 4	June 7	July 7	F H Rogers	330 Pine st
Wm Penn Cons G & S M Co	Washoe	3	6	May 19	June 28	July 20	J F Pope	424 Montgomery st
Wyoming G M Co	Nevada Co Cal	6	35	May 11	June 12	June 30	J M Buffington	311 California st

MEETINGS TO BE HELD.

Name of Co.	Location.	Secretary.	Office in S. F.	Meeting.	Date.
Best & Belcher M Co	Washoe	W Willis	419 California st	Annual	July 12
Blue Jacket M Co	Washoe	C J Eaton	224½ Market st	Special	July 9
Dnolar Potosi M Co	Washoe	W E Dean	419 California st	Annual	July 12
Chrysopolis G & S M Co		Called by Directors	419 California st	Special	July 7
Cons Reforma L & S M Co	Cal	A D Carpenter	605 Clay st	Annual	July 5
El Dorado South Cons M Co	Nevada	Wm Willis	419 California st	Annual	July 5
Florence M Co		Scott Sutton	220 Montgomery st	Annual	July 17
French Gold Hill M Co	Nevada	J Marks		Annual	July 12
Howard Hill G M Co	Nevada	F J Hermann	418 Kearny st	Special	July 17
Imperial S M Co	Washoe	W E Dean	419 California st	Annual	Jnne 14
Kelsey G & S M Co	Cal	Called by Trustees	331 Montgomery st	Special	July 26
New York Hill M Co	Cal	Called by Trustees	401 California st	Special	July 29
Overman M Co	Washoe	R Wegener	414 Ccifornia st	Annual	July 8
Rock Island G & S M Co	Washoe	J W Clark	418 Ccifornia st	Annnsl	July 5
Union Cons M Co	Washoe	J M Buffington	311 California st	Annual	July 17
Washington & Creole M Co	Ely Dist	F D Cleary	Merchants' Ex	Annual	July 14

LATEST DIVIDENDS (within three months)—MINING INCORPORATIONS.

Name of Co.	Loeation.	Secretary.	Office in S. F.	Amount.	Payable.
Belcher M. Co.	Washoe.	H. C. Kibbe,	419 California st	3 00	Jan 11
Black Bear Quartz	Cal	W. Oliver	25	25	June 17
Charriot M & M Co	Cal	Frank Swift	419 California st	40	Nov 16
Cons Virginia M Co	Washoe	Chas H Fish	401 California st	10 00	June 11
Crown Point M Co	Washoe	O E Elliott	414 California st	2 00	Jan12
Diana M. Co.		N. C. Fasset.	220 Olay st.	1 00	Jan. 25
Empire M Co	Cal	D A Jennings	401 California st	50	June 15
Eureka Consolidatad M Co	Nev	W W Traylor	419 California st	1 00	June 1
Excelsior M & M Co		Frank Swift	419 California st	1 00	April 10
Jefferson S M Co		O A Sankey	331 Montgomery st	50	May 15
Leopard M Co		R H Brown		50	June 15
Manhattan S M Cn	Nevada	Chas S Neal	419 California st	1 00	June 15
Northern Belle M & M Co		W Willis	419 California st	1 00	June 15
Oneida M Co		L Kaplan	Merchants' Ex	50	June 23
Rye Patch M Co	Nevada	D F Verdenal	409 California st	50	Mar 5

MINING SUMMARY.

THE following is mostly condensed from journals pnblished in the interior, in prnximity to the mines mentioned

California.

ALPINE.

MINERS' MEETING.—Alpiue *Chronicle*, June 26: Au adjourned meeting of the miners of Silver Mountain District was held here on last Satnday evening. R. H. Ford in the Chair, and Recorder Leggett acting as secretary. Thomas W. Leggett was unanimously re-elected District Recorder. The district laws were amended so as to conform with the U. S. mining laws. The article regarding the amount of surface ground to be taken up was amended so as to read "not less than 50-ft nor more than 300 ft on each side of the ledge." The articles regulating the amount of work to be done on a claim, and providing for certificates of permanent title, were repealed.

BUTTE.

GRAVEL MINING.—Oroville *Mercury*, June 25: On Sunday laat we viaited the mining claim of George F. Halaey, on the road to the Upper Ferry, and just over the brow of Bridge hill. Mr. Halaey has made a abstantial bed rock flume, about 300 yards in length, extending from near the middle of the river,

from the Corcoran mine, five miles south of Antioch; a road has been built and it is the intention to have coal on the Granger's wharf for shipment within the next two weeks. Mr. Richard Mills, of Somerville, has a lease of the mine for a term of years. Ronse and Hawxhurst are preparing to work the Cuddy & Co. mine, land recently sold by Griffin. When in addition to these, the Tantonia and Marsh Grant veins are developed, Antioch will become an important shipping point for coal.

More Coal.—Contra Costa *Gazette*, June 20: The attention of Mr. Simon Blum was called recently to the fact, that many years ago a very promising vein of coal had been discovered on a portion of the Briones rancho, which now belongs to him. Several sacks of the coal then taken from the vein for trial proved it of good quality; but, either because of uncertainty of title, lack of means or enterprise, the vein was no further tested at that time, and the fact of its existence had almost been forgotten until within a few weeks. From the examinations lately made, the quality of coal and character of the vein, as far as superficially tested, Mr. Blum feels warranted in pushing the examination further, and has determined to run a tunnel that will strike it at such a depth below the outcrop as will be likely to show what it is.

EL DORADO.

Fort Yuma Mining Company. — *Mountain Democrat*, June 26: The Fort Yuma gold quartz mine is located in Agra mining district, El Dorado county, California, about seven miles in a northeasterly direction from the town of Latrobe, and embraces 1,500 lineal feet of the ledge. The mine was first discovered and worked by Mexicans, and was found to contain free gold in such quantities that it paid $20 per day to the hand, although worked by the old process—arrastras propelled by mules. When, however, the water level was reached, it required a more scientific knowledge of mining to continue and further the work, a commodity which the owners did not possess and had not acquired previous to the purchase of the entire property by the present company. Since the acquisition of this valuable mine by the Fort Yuma gold quartz company, a large amount of money has been expended in prospecting and sinking the shaft, which is now down 115 ft, which has developed the mine sufficiently to show a regular vein of gold sulphurets, widening as they descend, which at the bottom of the shaft is four feet in width, and the ore works, by mill process, from $17 to $25 per ton.

INYO.

Coso District —Panamint *News*, June 22: From P. J. McDonnell, who has just come in from Lookout canon, in the Coso district, some thirty miles west from this place, we have the following regarding that new but promising camp. The first discoveries were made here about the latter part of May by Ball, Childs, Boardman and Burke. The ores are urgentiferous, of very high grade, assaying from $60 to $1,100 per ton. The ledges are of great width, and there is every probability that they will go down to great depth. The formation is limestone, but standing upon edge, or nearly perpendicular, instead of lying flat, as is usually the case. Wood is four or five miles from the mines, and in great abundance. Water is within one and one and a half miles in running streams, and is found in close proximity by sinking twenty to thirty feet. The Modoc, located by Ball & Co., is considered to be a very promising mine. The width of the vein as now shown is from twenty to thirty feet. The ore in this mine will average $80 to $400 per ton and carrying forty per cent. of lead. The Lookout, a little lower down in the same mountain, shows equally as well, if not better than the latter, ore being observable throughout the entire croppings. The other mines, two in number, belonging to the same company, bear evidences from the croppings that they too, on development, will equal in value the Modoc and Lookout. In fact, this district, although new, will, without a doubt, soon take rank with the best that have ever been discovered in any portion of the county.

Important Purchase of Mining Property. R. M. Wilson, mining and civil engineer, who visited our camp a short time since, returned a few days ago and has effected a purchase of a mine which bids fair to be as productive of revenue to the owner as any other in this district. The mine is situated at the head of Happy valley, and is an immense argentiferous lead, having in close proximity and easy of access abundance of wood and water. This selection was made by Mr. Wilson, after visiting and closely examining the mines here and at Darwin, and he feels confident that he has acquired a very valuable property. He departed for San Francisco yesterday to perfect his arrangements for building a furnace and entering into the most active operations for developing his mine.

MARIPOSA.

The Pool Mining Company.—Mariposa *Gazette*, June 26: This company, which was organized several months since and incorporated with a capital stock of $10,000, for the purpose of opening and developing several valuable veins of quartz, we are pleased to learn are about to commence work, and are preparing to erect an 8-stamp mill, which will be completed some time during the fall. The veins of quartz contemplated to be worked by this company are in the neighborhood of the celebrated Washington mill and mine, and there is good reason to hope that the Pool mines are equal to any in the county. All that is required is a small outlay of capital, and with proper management these mines will again be heard from as in days gone by, where fortunes have been realized from the out-croppings of several of the veins now belonging to this company.

Washington Mine.—We learn from a correspondent who resides in the vicinity of Hornitos and near this valuable mill and mine, that the company have just finished a run of 4 month's duration, at their chlorination works, on sulphurets concentrated mostly by Schofield's machine; that the result is nearly $20,000, and that the whole cost of concentrating and chlorinating is less than $5000. Surely this speaks well for Schofield's concentrating machine.

NEVADA.

Lucky Find.—*Foothill Tidings*, June 26: Albert Shepard, who owns the lot occupied by the residence of Mrs. D. Newland, Walsh street, on the ridge back of the M. E. church, and lives on the back part of the lot, in clearing off some brush a few days since found a nugget of gold and quartz about as big as the palm of one's hand and about as thick, which contained fully $350 worth of gold. So it seems that all the nuggets are not picked up yet, or were not at the time of this find. It will pay to keep a sharp lookout for many years to come; not to the exclusion, however, of all efforts to turn up something.

Rich Gravel.—The Manzanita mine, near Nevada City, is now opened up by tunnels and drifts, to the extent of four acres of its ground, ready for taking out pay dirt. The editor of the *Transcript* saw on Monday last the proceeds of two parcels of gravel, a pan and a cigar box full, respectively, which had lately been taken out, and says: The former is worth fifty dollars, and the latter thirty. Of course all the dirt is not like that, and probably a small portion of it is. Still these parcels were taken from a piece of ground where the indications were no better than in other places, and in fact the one washing the dirt had no idea of its being so rich. It is, however, impossible to select any of the dirt that will not prospect first-rate. All the work now done in the mine pays. The dead work is all done. Every foot advance adds to the dividends of the company. The success of the Manzanita is a guarantee that other claims on the same channel are good, and that hydraulic mining in this section is in its infancy.

Very Good Ore.—Grass Valley *Union*, June 30: The New York Hill mine is giving forth lots of splendid ore. The ore is so rich that much of it has to be locked up in the vault of a bank. Gold can be seen all through the rock, and the sulphurets are perfectly splendid. The mine is on the biggest kind of a way to a great prosperity.

The Omaha mine, situated near the New York Hill, is also sending out fine ore. Rock taken from the Omaha mine yesterday was as good as any which has yet come from the New York hill. All agree that the rock from the two mines are almost identical as to character, and in richness the Omaha yesterday was equal to the New York Hill. Fine specimens, and big ones, can be seen at Den Meagher's and at Delano's, from both mines.

Gravel Mines.—San Juan *Times*, June 26: The American mining company at Sebastopol, uses 1500 in. of water, day and night. The company is still washing top ground and with very good success. They are pushing their new tunnel to a state of completion very rapidly.

The Milton company, at French Corral, are pushing their tunnel rapidly. Mr. Davis with his Ingersoll drill makes from 80 to 90 ft of hard bed rock tunnel every month, while the hand drillers only make 20.

The Kansas boys, at Empire Flat, utilize about 1000 in. of water daily. Their ground is very rich and their clean-ups very excellent.

The Sweetland Creek mine (Buckeye hill) is now in full blast. They will run thirty or forty days longer and then will make a clean-up. They are now washing rich gravel through their new tunnel.

The North Bloomfield mining company is now washing through two monitors, utilizing about 3000 in. of water daily. In consequence of a choking up at the mouth of one of their shafts they moved their monitor to a point nearer Malakoff. This company has struck a bed of gravel which is a little richer with gold than any gravel ever before struck on the Ridge.

Mining on San Juan hill proper is played out. Most of the ground on the hill belongs to the Eureka tunnel company, a corporation, and to the New England company. Neither of the companies named are worked at present.

The Bed Rock mining company at Birchville, utilize about 1000 in. of water daily, and would use more if they had it. Their clean-ups are magnificent, though not frequent.

The Manzanita mining company commenced cleaning up their sluices on Tuesday last. They anticipate a big haul.

PLACER.

New Quartz Mine.—Placer *Herald*, June 26: A new ledge is being opened by William Werry, about 250 ft north of the Crater mine, on Crater hill, which, we learn, gives every indication of proving fully as good, if not a better mine than the Crater itself. This ledge was first discovered about two years ago, but, until recently, nothing has been done toward its development. A shaft is now down 40 ft, at the bottom of which drifts are run 50 ft each way. The rock taken out so far, averages about $40 per ton. Mr. Werry intends pushing the work of developing this mine thoroughly right ahead, in view of which the necessary outbuildings have been erected, and hoisting works put on suitable to the present depth.

PLUMAS.

The Indian Valley Mine.—Plumas *National*, June 26: We were shown by C. T. Kaulback, Wells, Fargo & Co.'s agent at this place, a bar which was being shipped from Grasaville, weighing $2,700—the last clean-up of the Indian Valley mine under the present management. This mine, which has been running behind for some time, is now paying regularly and well, and its prospects for the future are brilliant. Our old friend, Major Whitlock, is sanguine that he has got a good thing, and we have reason to believe that he is right.

SIERRA.

Forest City Claims.—*Mountain Messenger*, June 26: Times are not quite as lively as they were some time ago. There are not as many men employed by the Bald Mountain company, on account of the failing supply of water. Buildings are still going up quite briskly, and if no fire destroys it, it will not take long for this place to rival Downieville in extent. The Bald Mountain Extension company have commenced operations, building and leveling, and preparing to start their tunnel, indicating they are determined for a siege up to the old mountain that contained its hidden treasures for ages. There is room enough within a radius of six or eight miles of this place to make it one of the richest gold regions on this or any other coast in the mining world. The South Fork are sinking in gravel at the end of their tunnel, and from what I hear it shows every indication of a basin or channel; every one wishes them success. The Bald Mountain company took out a 42-ounce nugget on Tuesday last; they are nice things to look at even if one don't own in them. Sam. Ireland brought in some very rich quartz rock, on Saturday, taken from a ledge at Minnesota. The ledge is 3 ft wide, shows gold all through, and if it continues as it indicates, Sam is a rich man at last.

TULARE.

Mineral King District.—Tulare *Times*, June 26: From an interview with Prof. Moss and Mr. G. W. Brown, who called at our office this week, we learn that prospects of Mineral King district are highly flattering. Prof. Moss has a complete assaying apparatus here now, and is having a building constructed in the district, and will soon be ready to thoroughly test the qualities of the ores. The Professor speaks in the highest terms of the geological formations and says that there is undoubtedly an inexhaustible amount of ore. Mr. Brown is building a saw mill. The building is to be 24x62 ft. He has a number of men at work and calculates to have the mill in operation ere long. He says that water power is abundant. In addition to the great number of leads that have already been discovered, Prof. Moss and Mr. Brown were out prospecting a few days ago when they noticed some float rock, and began to trace it to its source, and seek the lead from which it had been broken off. It appeared to be from a very rich lead. They separated about 500 yards, and began the ascent of the mountain. As they passed up better indications were presented, until finally they arrived near the same place far up the mountains and found the croppings of one of the richest leads yet discovered. It is of the richest kind of antimonial silver. The small specimens that the Professor brought with him will yield $2000 or $3000 per ton.

Nevada.

WASHOE DISTRICT.

California.—Gold Hill *News*, June 24: Only three drifts are now being run in the ore bodies on the 1500-ft. level—cross-cut No. 5, 100 ft south of the Ophir line, cross-cut No. 6, near the line, and a lateral drift which is being run in the ore vein to connect cross-cuts Nos. 4 and 5. The face of this lateral drift has been in the ore for almost the entire week, the car samples of which have given average assays of $164 to $167 per ton, the character of the ore being very even, showing little variation whatever in value. The ore in the face of cross-cut No. 5 is much richer, the car samples averaging from $355 to $365 per ton. The face of cross-cut No. 6 has not yet reached the rich ore.

Consolidated Virginia.—But little has been done during the past week sinking the C. & C. shaft, owing to the flow of water at the bottom, which became too strong for the small pump being used to handle. Larger pumps are being put in, and are now almost ready for use, so that in a day or two the sinking will again be under full headway. The erection of the heavy, permanent hoisting and pumping machinery for this shaft is being pushed to completion as rapidly as is possible.

Belcher.—Sinking the main incline below the 1600-ft. level is making steady and favorable headway, the rock in the bottom blasting out finely. Opening the 1600-ft station, preparatory to prospecting the ore vein on that level, is going rapidly forward. Driving the north drift on the 1500-ft level, to connect with the south drift on the same level from the Crown Point, is making vigorous progress. Preparations for opening up the 1500-ft level for the extraction of ore, is about completed. Daily yield, 500 tons of ore.

Chollar-Potosi. Sinking the new combination shaft is going steadily ahead without change or interruption. Sinking the main incline is progressing at the rate of two feet per day. Driving the south drifts on both the 1150 and 1250-ft levels is making good headway, the face of both still in porphyry. Daily yield of ore from the old upper workings, 85 tons, the assay value of which is about $30 per ton.

Florida.—The drift west, at the 400-ft level, is 160 ft in length, and to-day is in the east clay wall of the ledge 18 ft. Stringers of quartz are being met with which assays good, and the material improves as the drift advances. The new pump machinery works to a charm and in the most effective manner.

Ophir.—Daily yield 150 tons of ore, keeping the mills all steadily running. On the prospecting levels but little progress has been made during the week if we except the east drift being run on the 1700-ft level; the time being mostly occupied in retimbering and necessary repairs to the drifts on the 1600 and 1500-ft levels.

Gould & Curry.—Owing to a break of a wrist of the pumping engine, but little has been done on the 1700-ft level during the week; the water raising in the shaft until the men engaged in running the north drift on that level were driven out and the work stopped.

Sierra Nevada.—Sinking the new shaft is being prosecuted with all the vigor possible, rock in the bottom blasting out finely and the flow of water not interfering with the progress of the work in the least. The new air compressor is nearly completed, ready to start up.

Amazon.—The southeast drift at the first station level, since first cutting the hanging clay way, has penetrated the ledge a distance of 55 ft, at which point a portion of the face, last evening, had again apparently encountered country rock, although a portion was still in ore.

Yellow Jacket.—The 1840-ft level has not yet been completely drained of water, although it is fast being got under control. The south winze on the 1740-ft level is advancing downward at a very rapid rate. Another winze has been started on this level 400 ft north of the south winze.

Buckeye.—The flow of water at the bottom of the shaft is gradually lessening so that it is expected that the sinking can soon be resumed. The south drift, on the 550-ft level, is in a distance of 112 ft, the face in quartz and porphyry, the former carrying considerable gold, but not being sufficiently concentrated in quantities to pay for milling.

Leo.—Good progress continues to be made in sinking the winze. It is now down 131 ft below the main tunnel, the bottom in good working ground. The formation is of the regular Comstock character, and becomes more favorable looking every day.

Baltimore and American Flat.—Opening out and enlarging the 5th, or incline station, at the 900-ft level, is rapidly approaching completion. The quartz and ore body developed by the south drift at the 750-ft level is gradually improving in both the quantity and character of the quartz.

Hale & Norcross.—Sinking the main incline is making good progress. It is now down 150 ft below the 2100-ft level. It is expected that the new and powerful air compressor will be ready to start up in a day or two more, when it is the intention to use Burleigh drills in the shaft.

Crown Point.—Daily yield, 550 tons of ore. The ore producing sections are yielding well, and the mills are kept steadily running. The main east cross-cut on the 1700-ft level is being steadily pushed ahead to cut and prospect the ore vein in that portion of the mine.

North Carson.—Some very promising large seams of quartz have been passed through during the past week, evidently feeders of the main vein.

Lady Bryan.—The face of the west cross-cut, on the 80-ft level, is still in milling ore, although of a little lower grade than that heretofore reported.

Baocks.—The shaft is down a distance of 48 ft to-day, the last 20 ft being mostly quartz of a fine, solid character, containing many large boulders of good milling ore, average assays of which run from $30 to $35 per ton.

Globe Consolidated. — The prospecting drifts west, on the 250-ft level, have developed some bunches of fine quartz, but no ores that will yet pay for milling. There is no change in the strong flow of water on the 400-ft level.

Succor.—Drifting both north and west on the 550-ft level of the new shaft is still vigorously prosecuted, with much more favorable indications of finding pay ore in the face of the west drift.

Caledonia.—The erection of the new hoisting works building and machinery is being pushed to completion with all the vigor possible.

Cosmopolitan.—Under the new management, work in this mine is progressing in excellent style, and it is getting into better working shape. The ore yield is enough to keep the Hope mill running.

Nevada.—The ore body developed by the cross-cut at the lower level, being simply a continuation of that found in the workings above, is of the same excellent character.

Segregated Gold Hill.—The ore developments at the 400-ft level are showing even better than last week, and continue to show improvement in both extent and quality.

South California.—Shaft still progressing downward in good sinking ground. Some very promising feeders of quartz are occasionally met with.

Lady Washington.—The setting of the new machinery progresses as fast as is compatible with the handling of such heavy arrangements.

Justice.—The ore developments of the 400-ft level and south mine are improving in value and importance. Nothing new to report of the 800-ft level.

Mechanical Drawing.

In this article I shall take a strictly professional view of the subject. I shall show the reader that the surveyor engineer, either civil or mechanical, ought to be a practical draftsman, and teach him how to become one.

Drawing is the graphical representation of objects, either real or imagined—imagined in our case expressly for the purpose of being carried out in nature and becoming real. The first practice must be free-hand drawing. All beginnings are difficult, and when you take your pencil in hand and find that you cannot do with it what you want to, you are apt to feel discouraged, and think that to do it requires special talent. Disabuse your mind of this idea; all that is required is the conviction that real work has begun and must be carried on with earnest, thoughtful application. Without this application the most exalted talent will produce comparatively little. Look at some work executed for industrial purposes—for instance, the designs on calicoes, wall-papers, designs for carpets, etc.; try to copy them, or invent some new ones, and you will find that it requires a great amount of practice to produce anything as good. These designs are mostly produced in the factories by young men and women. After a time the girls make excellent draftswomen. They have to work expeditiously, and are certainly not paid as artists. The necessity of supporting themselves has made them thoughtful and industrious, and their training rarely coexists in more than the first practice I recommend, zealously carried through.

After a little intelligent practice you will find that you have more talent than you at first supposed, and the good opinion of yourself will increase your progress, and with it the enjoyment in your work. All of you can become good practical draftsmen, getting more expert in proportion as your profession offers you opportunities to execute drawings. The object of free-hand drawing is to discipline hand and eye, the hand being the more teachable of the two.

I will give an instance to prove that the eye must be educated to see. In running the boundary line between California and Nevada over a very rough and difficult country, I had two flagmen. The first one had to give sights ahead in a straight line, often distant for a mile or more. He had to grope his way through gulches, timber, and over rocks; but where he set up his flag he was seldom more than ten or fifteen feet off the line. He had an educated, keen eye. The hind flagman had to set up on the station just abandoned by the instrument; he had plenty of time to study the line before him, but still he would get lost on his way from one station to the other, and had sometimes to be hunted up by others of the party.

When you look at some piece of machinery, especially if it be in motion, you will find it very difficult to see everything; whereas, when your eye is educated you will perceive the purpose of the construction and understand the thoughtfulness of the arrangement of its parts. The education of the eye begins with that of the hand with your first practice, and therefore I wish to impress upon you that your real work begins therewith.

You should begin with copying simple forms—contour lines from good drawings. I would prefer the forms of nature—forms of leaves, plants, flowers, going from the most simple to the most complicated ones. These will teach you a good deal besides drawing. Copy these forms, correct your copy patiently, and finally, when true, outline them with an even, deliberate line. Drawings of good architectural ornaments, and for advanced scholars portions of the human frame, and finally figure drawing, is excellent practice.

With the brush you will have to practice laying on flat tints in India ink and color, next evenly graduating from deepest shade to light. As soon as you have acquired some experience of hand and eye, you ought to begin to draw from nature the same leaves and flowers you copy from drawings.

In shading, take a cobble stone or shell of uniform color, put it before you and try to reproduce on paper the delicate shading of nature. You will require all your patience and perseverence to vanquish that cobble stone or shell, but when you have succeeded you will have made great progress in your career as a draftsman.—*Manufacturer and Builder.*

New Oregon Mining Company.—The Oregon *Sentinel* says: From Mr. Jay G. Kelly, the mining expert, who was in town yesterday, we learn that the quartz mill which is to be erected on the Gold Back ledge, near Kirbyville, in Josephine county, had not arrived at its destination yet, but that it was on its way from Crescent City, and that he expected to have it up and in running order in about three weeks. This company, which will hereafter be known as the "Oregon quartz mill and mining company," have located and purchased eight or ten different quartz lodges and several placer mines, together with a large number of ditches, flumes, etc., with a view to actively engage in developing the mineral resources of that section. Mr. Kelly has been elected superintendent of the company. This would indicate that the right kind of men have taken hold of the matter at last, and it is earnestly hoped that they will reap a golden reward for their enterprise and activity.

Collapsing Boats.

An interesting series of experiments was lately carried on at Romsey, near Southampton, in the presence of Admiral Sir William Mends, and others interested in saving life at sea, as well as in naval and military operations, with the comprehensive system of collapsing life boats invented and patented by the Rev. E. L. Berthon. The party was conducted round the boat building sheds of Mr. E. P. Berthon, son of the inventor, in which were exhibited a great variety of these boats of different forms and sizes, from the little Arctic sledge boats, seven feet long, to be carried in the expedition which is to start on the 29th inst., up to large boats for emigrants and troop ships. The dimensions of the latter are as follows: Length over all, thirty-seven feet; breadth, twelve feet; and depth, five feet. Along the middle of the boat, the whole length fore and aft, is a locker with convenient hatches, in which is contained half a ton of the best provisions in tins, and a large water tank with a condenser, producing twelve gallons of water daily, in addition to the original supply. In the bow is the chain locker, and in the stern the binnacle, with compass, sextant and general chart. The whole of the stern sheets is covered in with waterproof canvass, affording a snug shelter and privacy for forty women. A boiler for soup, etc., completes this part of the arrangement. The boat is rigged with two lower masts, topmasts, and five sails, the whole of which, with twelve oars, together with the boat itself and all the above named contents, collapses into a space only two feet wide. These boats will never be placed on deck, but lashed outside the ship, from which position they can be detached, expanded and lowered in a few seconds. Each will carry 150 people with perfect safety in any sea, and being provisioned for that number for at least four weeks, there is nothing to hinder its occupants from continuing their voyage, or making for any convenient port. These boats need not interfere with any of those existing in a ship, and they may be carried in any required number without danger or inconvenience. Each boat weighs eighty pounds, and can be carried on a man's shoulder or under his arm, and even these little things would form a bridge for men to cross two abreast. Among other boats of this kind exhibited on the river, including some very pretty yachts' dingies, nine feet by four feet, was one of the Arctic sledge boats. It weighs only thirty-four pounds, and when carried under a man's arm it is only four inches wide. It is opened in three or four seconds, and then becomes so remarkably buoyant as to carry four men, although not intended for more than two. When filled with water it will still carry two men. These experiments are to be made again on the full scale in boats forty feet by twelve feet by four feet, and when collapsed against the side of one of our splendid troop ships, they will not project more than eighteen inches.—*Iron.*

A Copper Wonder.

There is now on exhibition in St. Louis a mass of native copper that is attracting much attention, and which will be exhibited at the Centennial at Philadelphia next year. It was taken from a mine on the Isle Royal, Lake Superior, is heart-shaped, and weighs 6,000 pounds, exceeding by nearly double the weight of the famous copper boulder which was transported many years ago from the same region to the Smithsonian Institute, at a cost to the government of $5,840. The specimen exhibits the pure copper to the eye, and contains ninety-eight per cent. of the metal. It was taken from an ancient mine about seventeen feet below the surface, and when found had evidently been detached from its bed by the ancient miners. A number of pieces of copper besides the mass were found, weighing from an ounce to seventeen pounds, evidently clipped by the old miners. Stone hammers weighing from ten to thirty pounds have also been found by the hundred, either perfect or broken from use. To what race these ancient miners belonged and at what period they flourished, can only be conjectured. Probably they belonged to the prehistoric mound builders, who worked in metals long anterior to the Indian races. At least, numerous evidences of their occupancy were discovered by the early Jesuit explorers, while specimens clipped by them from the copper rocks have been found scattered over nearly the whole country.

Saxon Mines.—The following memorandum from the last report of the condition of the mines in Saxony may be interesting: There are in the Freiberg district 98 mines. Of these 16 are paying; 20 are working and producing, but not paying; 23 are working, but not producing any mineral; the balance are abandoned. The mines employ 5,747 miners and laborers, and 535 occasional laborers. The value of the silver and lead product, the latter being small, for the year 1873 was 1,527,847 thalers, or $1,110,050 coin. The average production of each man was 227 thalers, or $167.44, less than 56 cents per day. If from this the profits of the mine are to be deducted, it leaves about 50 cents per day for labor. Small as the production of this well known district is, it would be far less were it not for the very economical working of the mines and the saving of every ounce of mineral, by every appliance for concentration which experience and ingenuity can devise. In the mining schools at Freiberg there are 114 students, of whom 25 are Americans. —*Mining Review.*

Railway Reflections.

Has not the railway affected, influenced, altered, yea, directed, the drift—the direction, of human thought? We are all influenced by the circumstances that surround us. Who is there that is independent of the material or social phenomena of his time? The mode, manner, and style of locomotion used by man influence his being, mold his character and affect his habits of thought and action. The fashion of our motor power controls our feelings and affects our emotions. To mount the horse is to partake of his nature—to sympathize with his spirit, bound, curvet, or caper, as his sportive mood may suggest. When we are seated in the railway carriage do we not mentally snort in accord with the iron steed—take pride in his speed, and glory in the force with which he devours distance? How different is the feeling of a man who is carried in a palanquin, or towed in a canal boat, from that of one who is whirled along in an express train, with a telegraph caution ticking in front, and a way train whistle screaming in the rear!

The railway has enforced habits of promptitude, illustrated the value of time, and shown the power of discipline. On the disk of our railway dial no shadow is allowed to linger. Our time tables are as absolute as the laws of the Medes and Persians; the locomotive has employed our legislatures to devise new codes of laws for its government, and engaged our judges in interpreting its rights and privileges. Into every grade of modern society the interest of the railway has extended.

The multitude of engineers, mechanics, workmen, clerks, and conductors who are kept employed in this service would be difficult to estimate; they constitute a large section of the population, a standing army of industry; and what an enormous supply of iron, timber, coal, oil, and other natural products the railway demands every year! In the manufacture of its necessary supplies, how many new trades have sprung up and are supported!

The property of our railways dominates the money market of the country. The capital of our time has run so largely into railways that every one who owns any surplus may be said to have an interest in railway property. It would be interesting to calculate the proportion of capital invested in railroads, as compared with banking, manufactures, insurance, or even agriculture.

As the overflow of the Nile enriched the plains of Egypt, so has the flood of railways over the land enhanced the value of the soil. The locomotive has virtually irrigated barren wastes, actually tempered the climate of inhospitable regions.

Probably no interest has been so largely promoted by the railway as that of real estate. Every farm has felt its influence. It has brought a market place to the farm of every husbandman, a customer to the workshop of every mechanic. Families are re-united; friendships maintained; intercourse established by the facility of railway travel. We eat, drink, sleep, live on the railway.—*The Railway World*

Owners Visiting Mines.

The Tuolumne *Independent* says: We note the visit this week of some of the principal owners of several of the gravel and quartz claims in Tuolumne county. It is meet and proper that those who have aided such enterprises by their time and capital, should at least once a year inspect for themselves the progress made and for what the money has been expended. A conscientious and thoroughly practical superintendent (and even the hardy delving workman) feel encouraged when receiving due praise for their solid, *telling*, steady work—judicious and economical expenditure—when personally expressed on the spot after proper examination.

It is idle to say San Francisco men can glean nothing by a short tour of inspection of the mines in which they are interested, simply because they "know nothing of mining." They can see with their eyes—hear with their ears much that they never would see or hear unless they did thus visit the neighborhood and the "location of works."

Among visitors this week were some of the co-owners of the Table Mt. B. G. Co.; the T. M. Alpha; the Marks & Darrow Q. Co., and several others. One of the *attaches* of our paper waited upon (we don't profess to understand the modus operandi of "interviewing") the gentlemen upon their return to Sonora and was assured of their perfect satisfaction in all essential respects—as to judgment and economy in the prosecution of the work, and, so far as they heard and could judge—as to the thorough practical manner in which the present developments have been brought about. They appear to be quite elated as to the present and future prospects thereof. Their visit having been unheralded, the superintendents were taken quite unawares. Several blasts were put in during the day and they had an opportunity of picking up the quartz in pieces averaging some twenty pounds, showing visible gold and rich sulphurets. One or two of the party confess they smelt (giant) powder, (midst thunder, lightning, snow, hail and rain) for the first time—considerably underground — in shafts and drifts. We hope such visits will be oft repeated—with equal satisfaction.

English Oak for Spokes vs. Hickory.

A great deal of the mistrust which is often to be found in the minds of workmen, respecting the information to be derived from books and papers, upon their own trades, is not without some foundation. If this mistrust be traced to its source, it will be found that the writers in question are oftentimes not acquainted with the practical parts of their subjects as practiced in the workshop; and therefore errors creep in, as almost every day's reading unfortunately proves. These, when observed by workmen as being directly opposed to experience gained by years of practice, are the first things laid hold of, and produce an unfavorable impression regarding all kinds of book learning, very difficult to eradicate. The subject of timber is one that has often been handled by scientific writers, and many extraordinary statements have been made respecting the various properties of the different kinds, which statements are entirely at variance with the teachings of every-day life. Numerous instances might be given, but my present intention is to give facts respecting British timber, gathered from practical observation, rather than a collection of errors.

Out of the many different species of wood used in British carriage building, the oak and ash are usually taken as the representatives, and, together with a slight spice of elm, form the principal woods used for the more important parts of carriage frame work. In England, no tree is held in such esteem as the oak, and there is none more deserving, for in whatever light oak may be considered, it appears to advantage.

In carriage building, the parts to which English oak is most adapted are the spokes, and no country has as yet produced a material to equal it in this respect. Hickory may excel in some respects, but for general good qualities nothing equals the oak. The way the oak is converted into timber at present is not such as to produce the most valuable wood, but to secure the most profit to the owner. If the tree were to be cut down in winter, as it ought to be, the bark would adhere so firmly as to become almost part of the wood itself, but when the value of the bark is about a third or more of the timber, it makes it worth while to sacrifice some of the value of the timber to secure the bark.

A cross-section of an oak tree shows, in addition to the growth, two distinct kinds of wood. Nearest the center the wood has a red aspect, and is known as "heart of oak;" the outer part is called the sap, and as the tree is cut down in spring, when the sap is up or running, the heart and sap are as widely different in their natures as if they belonged to two distinct species.

With the exception of oak and larch, scarcely any trees are here cut down in spring or summer for timber purposes, as these two trees are the principle if not the only ones whose bark is made use of. The bark of oak is of sufficient value to make it worth while peeling all parts, from the trunk down to almost the smallest sticks, and the wood or plantation where barkpeeling is going on is a scene of lively animation, from the number of young persons of both sexes employed.

The best method of preparing the oak wood for spokes is a subject whereof many various opinions are expressed by old experienced "spoke-haggers."

Some recommend that the timber ought to be buried in dry soil for a short time, while others hold that it ought to be soaked in fresh water; but the object in view is simply to get rid of the natural juices as expeditiously as possible, without injury to the wood in the shape of cracks or shakes. The simplest, and perhaps best way, is to cross-cut the tree into the required spoke lengths, and afterwards split up the pieces by wedges into sizes, which, after rough dressing and the shrinkage of drying, are large enough for ordinary spokes. The line of cleavage is very important, and to secure the best spokes it must not be taken at random, but must be through the medullary rays, or those easily discerned growths, which, in oak particularly, are found radiating from the pith like the spokes of a wheel. While the spokes are still green, they are roughly dressed up with an ax, and are ready for storing by to dry. The above is not so economical a method as sawing out the spokes, but it is without doubt the best; for with the medullary rays running from back to front of spokes, the fiber is considered to be in the best position for strength. Sawn spokes have not this advantage; and, moreover, they have a bad name, through wood being often cut into spokes that is quite unfit, through crossness, for that purpose.—*Carriage Maker.*

The Egyptian Blue.—It seems, as might reasonably be expected, that modern chemists are quite certain to rediscover the famous Tyrian purple and Egyptian blue of the ancients—colors which have stood the test of thousands of years of time, without any apparent diminution in their beauty. The probable production of the former has already been announced, and now it appears that M. Peligot, a French chemist, claims to have rediscovered the latter, a shade of blue which is conspicuous in many of the ancient ornaments found in Egypt. He has analyzed some of the enamel, then by synthetical experiments has succeeded in ascertaining the proportions of silica, oxide of copper, lime and soda that will produce the marvelous compound.

Useful Information.

Who First Made and Named Kerosene.

A correspondent mentions to us that the word "kerosene" originated with the Downe Kerosene Oil Co. of Boston. This is an error. It was Abraham Gesner, who, in 1844, distilled an oil from coal in Prince Edward island, and who was the first to give it the name of kerosene; while James Young, of Glasgow, introduced this manufacture into England. It was in 1847 that his attention was directed to the extraction of an oil from the petroleum which was found in a coal mine in Derbyshire; and when this was exhausted, he distilled the oil from Boghead cannel coal, and was quite successful in making, in 1854, 8,000 gallons of kerosene a week, which sold for five shillings a gallon, making half a million dollars per year, much of which was clear profit.

This result increased the coal-oil works in England, while in the United States the first coal-oil works were erected, in 1854, on Newtown creek, Long island, by the Kerosene Oil Co., working under the patent of Mr. Young, who had also taken it out in the United States. In 1856 the Breckenridge coal-oil works made kerosene from the cannel coal found there; and the same was done in Perry county, Ohio. In 1860 there were not less than twenty-five such factories in Ohio alone. The establishments along the Atlantic coast produced 200,000 barrels, while the total value of the kerosene thus produced was estimated to be over two million dollars.

Then the petroleum excitement came, and all the establishments commenced to make kerosene from crude petroleum instead of using coal. Kerosene being the only article for which there was any demand, the benzine sold at a very low price, while for the gasoline no price whatever could be obtained, so that in 1861, the largest works then in existence in the United States, those of Cozzens Brothers, in Greenpoint, Long island, burned the gasolins all up by conducting it through a pipe to a safe distance and discharging it in a swamp, where in this way a large fire was kept up, burning night and day for a long time.

Popular Science with a Vengeance.—It is one of the most hopeful signs of the times that everybody is now supposed to know a little science. Some of us know a very little. Others know a good deal, but the arrangement is somewhat confused. We scarcely know to which class the compiler of the "Yorkshire Exhibition Guide" belongs. Whatever amount of scientific knowledge he possesses, he certainly has the art of "combining his information" and presenting it to his readers in a fresh, cheerful and interesting manner. He says: "A medal and plate formed of the new metal, palladium, will be interesting to scientific men. The discovery of this metal a few years ago by Professor Graham finally settled the long disputed point as to whether or not the gas hydrogen was a metal. He proved that palladium was simply hydrogen condensed. This may be easily exemplified by placing a piece of the metal under the receiver of an air pump and exhausting the air. The solid metal at once flies off as a gas, and on readmitting the air it shrinks again into its former size. The little medal shown contains 100 times its volume of the gas." We will only add, in transferring this gem to our columns, that we hope it is not a fair sample of the teaching at the Leeds Mechanics' Institute—the worthy object for whose benefit the Yorkshire exhibition is being held.

Death Belts.—Frequently, in cases of shipwreck, especially in comparatively smooth water, life belts would furnish a means of temporary safety until boats were got ready on shore. They would have done so in the case of the *Northfleet*, and in the still more recent instance of the *Schiller*. But the life belts must be genuine, and not pretexts for the purpose of figuring in advertisements as proofs of the care taken by the owners for the lives of their passengers. Those found upon the bodies of the *Schiller's* victims appear to have been of the latter sort, consisting, as they did, of a few slabs of cork fastened together and to the person by one or two pieces of tape, and were thus worse than useless to a good swimmer; for it is stated that those who recovered the bodies declare that in very many instances they were found with the head under water and heels in the air, showing that the belts had really drowned instead of supporting the unfortunates who had trusted to them, by dropping down towards their hips. In this way scores of dead bodies were picked up in the water wearing belts which, if properly constructed, would have saved the life of the wearer.

Paper Stock.—Rice grass is now being introduced from Canada for use of Eastern paper makers. The article is pronounced fully equal to rags. It makes paper that is superior for printing clear impression. It is said that rice grass is found in the Northern States, and probably it grows in California. Surely it can be cultivated here. There is no reason why we cannot make our own paper; for labor is not an obstacle to success in such manufacture.

At the Atlas works, Pittsburg, Pa., they are making the largest shears ever constructed in this country. They will weigh forty tons, and will shear cold iron five inches thick.

To Make Lead Pipe Safe to Use for Drinking Water.—It is very generally known that lead is more or less acted upon by drinking water, and thus rendered unsafe to use for conducting the same for any great distance. Tinning on the inside has been employed as a remedy for the evil; but on account of cost or for some other reason, such pipe has not come into very general use. What is supposed to be a better remedy has been patented by Dr. H. Schwartz, of Breslau. His device consists in treating lead pipe for ten or fifteen minutes with a two to five per cent. solution of sulphuret of potassium or sodium, at a temperature of 212°. A boiling solution of sulphur in caustic soda is found to answer the same purpose. This treatment causes the formation on the surface of the pipe of a thin coating of sulphuret of lead.

A strong proof of the insolubility of sulphuret of lead is the fact that water from galena mines never contains a trace of lead. Still, a doubt might arise as to the equal power of the artificial sulphuret to resist the action of water. Fortunately, here, too, we have experimental proof to rely upon.

The *Chemical Bulletin*, of Paris, refers to a series of experiments with pipe coated after the method of Dr. Schwartz. These pipes were exposed, at the same time with other unprotected pipes, to the action of rain water, snow water, distilled water and the city water. On the following day he found a perceptible quantity of lead in the water which ran through the unprotected pipes, except in the case of city water, where traces of lead were found after a few days. For three months, however, and in the presence of air, the coated pipes did not contaminate the water flowing through them.

For the benefit of those interested in Schwartz's process, we would say that the details are given in the specification of patent No. 1519 of the British Patent Reports for 1863.

Gas Wells.—Our predictions of some years since—generally deemed at the time fit matters *de lunatico inquirendo*—as to the immense national importance of *natural gas* in the near future, are being slowly but surely verified. Among the numerous statements is one that borings for oil on the Red Bank creek, far east of the Butler oil field, gave torrents of gas. A Western Pennsylvania paper tells us also that "a number of wells will be put down in Beaver valley for natural gas. Messrs. Blake & Fessenden intend putting one down for the use of their file works. The owners of the paper mill at Beaver Falls intend putting one down also, and it is rumored that a company have leased the wells at Bennett's Run, to convey the gas to Beaver Falls, where it will be furnished for fuel." We also learn from Pittsburg, May 13th, that "a line has been surveyed, along which it is proposed to run a six inch pipe for the purpose of conveying the natural gas from the well near Sarversville, Butler county, to this city. It has been estimated that this size of pipe can carry a million feet of gas every twenty-four hours."

Petroleum Fuel.—All steamers navigating the Caspian Sea burn petroleum exclusively. A blast of steam gives the liquid petroleum even distribution under the boilers. Some contending patentees exhibited some systems of this sort here, three or four years ago; but something seemed imperfect, for petroleum has not come into use. As petroleum oil is abundant in Santa Barbara and elsewhere in California, it may profit our State to inquire into the process which proves successful elsewhere in California.

A Milanese lady, after long study and toil, has invented a process to spin the gossamer threads from cold cocoons, which affords considerable advantages on the old method of using heated water, viz.: Less space, no coal, less trouble for the spinner, and greater strength in the silk obtained.

Condensed air, as a street car motor, has been abandoned in New Haven. Horse power is more profitable.

Good Health.

Nelaton's Treatment of Boils.—A French medical journal says that Nelaton for more than twenty years prescribed the use of alcohol for the prevention of these smaller abscesses, which are so common amongst young people, and which so seriously impair the beauty of the face. It appears that this treatment is now extending, as some interesting details are to be found in a communication of M. Simon de Forges, of Sainte-Foartaine, which appears in the *Revue de Therapeutique*. In speaking of boils, small outward abscesses, and other inflammations of the epidermis and of the derma, he observes that as soon as the characteristic circular redness appears on any part of the body, whatever may be its size, with a point rising in the middle, making it a grayish white, a thimbleful of camphorated alcohol should be poured into a saucer; the palm of the hand should be wetted with it, and this should be rubbed with a gentle friction over the affected place. The fingers should be again steeped, and the friction continued as often as eight or ten times every half minute. The place should be well dried, and before covering it up a little camphorated olive oil should be applied to prevent the evaporation of the fluid.

Duration of Human Life.

The opinion has become very prevalent among many that of late years human life has become shortened beyond what it was a thousand or two or three hundred years ago. But well authenticated facts contradict such opinions.

It is stated, in a recent German periodical, that while in Republican Rome the average duration of life among the upper, always the longest lived classes, was only thirty years, among the same classes in the present century it reaches fifty years. In the sixteenth century the mean duration of life in Geneva was 21.21 years; between 1814 and 1833 it had reached 40.68 years, and at the present time as many people live there to the allotted term of seventy as three hundred years ago lived to forty-three.

The rapidity with which the mean rose in England, even in its earliest period of extension, is shown by the comparison of two financial transactions in that country, one in 1693 and the other in 1790. In the former year Government made considerable profit by borrowing a large sum of money on terminable annuities, based on the mean duration of life at that time; in the latter another loan, based on the same tables, resulted in a serious loss. The average duration of life in England at the present day is about forty years for males, and forty-two for females. The ratio is of course higher among the better-to-do classes, lower among the working classes and the poor. The aristocracy and annuitants are exceptionally long-lived; and a much larger number of people than is generally supposed reach the age of one hundred years and upwards.

There can be no better test of the amelioration which we owe to modern civilization than the increased length of man's earthly span as compared with the age attained in ancient and mediæval times.

Lime Vapor in Membranous Croup.—Dr. John Bartlett, in the Chicago *Medical Examiner*, recommends the following method of using lime vapor: The patient is placed in a tent extemporized with bedclothes and clothes horse. In this is placed a tub, and in the tub a bucket, filled with hot water. Patient being seated in the tent with nurse, unslacked lime is dropped into the water. From time to time the physician estimates the state of the vapor, increasing the steam and lime by dropping into the water pieces of lime. The quantity of lime required is large. The doctor's experience in the use of this bath has been a happy one. The onward march of the disease seemed checked at once, and a real improvement to take place.

Nervous Sympathy.—Our readers have no doubt noticed the verification of the phrase "gapes are catching," and it would seem by the following singular statement that fainting is catching also: "A young lady recently, while in conversation on matters verging on the horrible in Strouse's corset factory, New Haven, with a number of comrades, fainted. Singular to say the faint was contagious, and girl after girl fainted, and even one man employed in the shop succumbed. How long this would have gone on, it is impossible to say. Mr. Morris, the foreman, ordered a stoppage of work, and thus ended this singular and unparalleled demonstration of nervous sympathy."

A Cheap Fumigator.—The following will be found to be a cheap and pleasant fumigator for sickrooms, diffusing a healthful, agreeable, and highly penetrating disinfectant odor in close apartments, or wherever the air is deteriorated. Pour common vinegar on powdered chalk until effervescence ceases, leave the whole to settle, and pour off the liquid. Dry the sediment and place it in a shallow earthen or glass dish, and pour upon it sulphuric acid until fumes commence arising. This vapor quickly spreads, is very agreeably pungent, and acts as a powerful purifier of vitiated air.

Another Method of Making Cod-Liver Oil Palatable.—Mr. P. L. Simmonds, in the London *Chemist and Druggist*, suggests the following: Take equal parts of ground coffee and bone black; mix them in ten times their combined weight of cod-liver oil, and digest for half an hour at a temperature of about 130° Fahr.; then place the mass on a filter and drain the oil off, and you will have its nauseous taste changed into a pleasant coffee flavor.

Cure for Hydrophobia.—M. Lebeau, a veterinary surgeon of Paris, claims to have discovered a cure for hydrophobia, and submits the cure to an experiment, as follows: On the 23d of May he inoculated with hydrophobia virus sixteen dogs, in a hospital. Eight of these dogs will be kept securely without treatment; the other eight will be treated with the remedy, and the practitioner is confident that that his eight will remain sound, while the others will die.

Candles for Invalids.—Pulmonic candles are obtaining great favor in England. By mixing benzoin and storax with stearine, a delicious balsamic aroma is given out by the burning candles. This gives relief to lungs diseased, and its fragrant incense is grateful to the olfactories of the faithful generally—sound and unsound.

Good Advice to a Dyspeptic.—A gentleman saw an advertisement that a receipt for the cure of dyspepsia might be had by sending two postage stamps to the advertiser, and the answer was, "Dig in your garden and let whisky alone."

Domestic Economy.

Buckwheats and How to Make Them.

Buckwheat cake, properly made and of suitable ingredients, is not only a very harmless little circular institution when decently and rightly dressed, but a very excellent and healthy adjunct to the morning meal for five or six mouths of the year as well. I would not, however, and do not, make them from buckwheat alone, for the simple reason that they are not so good by half, leaving the question of hygiene out of the account. My cakes are made of buckwheat flower, Graham flour from white wheat, and wheat middlings equal parts, or the two former in equal proportions, and I am of the opinion that no other combination of grains or meals now known can surpass this for the purpose intended. A little oatmeal in place of the middlings does well, but it is not so good. We think our cakes are always good when they have had proper attention, and I will submit the formula to your readers for confirmation.

Always mix in a covered earthen jar, with suitable spout for pouring, and never in tin. Mix at bedtime one quart of the flours and in the proportions above mentioned; three tablespoonful soft yeast; a teaspoonful salt; sufficient buttermilk or other sour milk to make a rather thick batter. Let this stand in a moderately warm place until morning, and when wanted for use, thin slightly with cold water, add a teaspoonful of saleratus or soda, and bake immediately over a brisk fire to Aunt Chloe's "golden brown," and serve pretty warm, with the baking heat slightly diminished, and by no means steam them under a tin, and wait till all are baked before eating, as is frequently recommended. Then if a little gravy is relished no harm will ensue, if properly made, but there is a vast difference between lard oil and a juicy meat gravy. If syrup is used, pure sugar drips, or better still, maple syrup if obtainable should be used, and not salphuric "golden drips," which has recently found its way into the market and is poisonous. When the batter is once started as above, and cakes desired each morning, all you have to do is to leave a small portion of the batter each time, let it stand over night as before, and add the necessary flour, milk and saleratas in the morning and the trick goes on repeating itself admirably and only needs entire renewal at long intervals—*Country Gentleman.*

Put Flowers on Your Table.

Set flowers on your table—a whole nosegay if you can get it, or but two or three, or a single flower, a rose, a pink, a daisy. Bring a few daisies or buttercups from your last field work, and keep them alive in a little water; preserve but a bunch of clover, or a handful of flowering grass—one of the most elegant of nature's productions—and you have something on your table to remind you of God's creation and give you a link with the poets that have done it most honor. Put a rose, or a lily, or a violet on your table, and you and Lord Bacon have a custom in common; for this great and wise man was in the habit of having flowers in season set upon his table, we believe, morning, noon and night—that is to say, at all meals, seeing that they were growing all day. Now here is a fashion that will last you forever, if you please—never change with silks and velvets and silver forks, nor be dependent on caprice, or some fine gentleman or lady who have nothing but caprice and changes to give them importance and a sensation. Flowers on the morning table are especially suited to all. They look like the happy wakening of the creation; they bring the breath of nature into your room; they seem the very representative and embodiment of the very smiles of your home, the graces of good morrow.

Two Good Recipes.

We clip the following from the correspondence of the Germantown *Telegraph:*

Stewed Water-Cresses.—It may not be generally known that water-cresses are very delicious when stewed. They should be placed in strong salt and water to free them from all insects, after which they should be carefully picked over, all the water drained off, and then put into a stew pan with a lump of butter and a little salt and pepper—a few minutes will suffice to render the cress quite tender. A little vinegar may be added just before serving, but this must be according to taste. The cress stew made thin, as a substitute for parsley and butter, will be found an excellent adjunct to boiled fowl.

Scrap Pudding.—Put the scraps of bread, crust and crumb, into a bowl with sufficient milk to cover them. Cover with a saucepan lid or a plate, and put into the oven to soak about half an hour. Take out and mash with a fork till it is a pulp; then add a handful of raisins and as many currants, a teaspoonful of brown sugar, half a cup of milk, some candied lemon-peel and one egg. Stir up well, grease a pudding dish, and pour the pudding in. Grate over a little nutmeg, put into a moderate oven, and let bake for an hour and a half.

A Good way to clean black kid gloves is to take a teaspoonful of salad oil, drop a few drops of ink in it, and rub it over the gloves with the tip of a feather; then let them dry in the sun.

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San Francisco:

Saturday Morning, July 3, 1875.

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Volume Thirty-One.

With our present issue we commence the thirty-first semi-annual volume of the MINING AND SCIENTIFIC PRESS. We shall still continue as heretofore to spare no labor or expense to keep up and add to the well earned reputation which the paper now enjoys, and shall use our utmost mesus and endeavor to render it still more useful and acceptable to the miner, mechanic and general reader. We make no apology and feel no delicacy in asking and urging upon the friends of the paper, everywhere, to aid us in extending its circulation, or in calling on them to assist us in filling our columns with facts and information which shall be of value to our readers in the several departments of practical knowledge to which the paper is devoted. We return sincere thanks for past favors and earnestly solicit a continuance of similar ones in the future.

The rapid strides which are now beiug made in scientific mining on this cosst, and the new discoveries and improvements which the ingenuity and experience of man is constantly soaking to apply to mining operations, renders the existence of a journal exclusively devoted to such specialties an indispensable requisite to every miner and mill man who desires to keep himself posted on the progress of the chemistry, metallurgy and mechanics of mining. The wonderful discoveries and marvellous deeds which are now being almost daily achieved in the domain of science and art, render serial scientific and class publications the mainstay and dependence of every person who wants to keep up with the times. The achievements of the past few years are great enough, but who can tell what a year will accomplish? Books are useful only as a record of the past—the living, active, present can only be found in the pages of the newspaper or magazine.

With these facts before us may we not look with confidence to the active assistance of friends? It will readily be recognized that the greater the income, the greater will be our facilities for collecting and disseminating information which shall be useful to our readers. We acknowledge a desire to continue to publish a creditable journal in San Francisco, devoted to the mining and mechanical interests of the Pacific coast. We trust that the friends of the paper will swell our already large list to double its present proportions. We can assure them that if they will do so we shall increase the value of the paper without increse in price. The files of the paper speak for it, and those who will take the trouble to examine them will find not only the current mining news from all quarters of the coast, but very full and reliable descriptions of all new mechanical improvements, metallurgical processes, new districts, etc., etc. We shall continne to improve the paper and ask the co-operation of the intelligent, progreesive citizens of the Pacific coast to aid us with their pens as far as possible, and otherwise assist in maintaining a paper which will be a credit to the interests to which it is devoted.

Flume Battery for Hydraulic Mines.

Many of our hydraulic claims are composed of a hard blue cement or clay, in which the pieces and particles of gold are contained. During the process of hydraulicing, many large pieces of this hard cement get into the flume and are carried away with the refuse or tailings, in an unbroken condition, so that whatever gold there may be contained in the lump is lost. To obviate this, Daniel F. Hawks, of Timbuctoo, Yuba county, California, has invented, and patented through the agency connected with this office, a battery or crushing apparatus by which the undesolved pieces of cement which attempt to pass through will be thoroughly broken and pulverized while on their way through the flums.

The invention consists in constructing at some point in the length of the flume, a stamp battery similar to an ordinary stamp mill. The stamps are arranged diagonally and alternately across the flume, so that whatever might escape one line of stamps will be oparated upon by the alternating stamps or the next diagonal line. This arrangement necessitates the placing of some of the stamp stems further from the cam shaft than others. It is therefore necessary to make the operating cams longer for some of the stamps than for others. The dies are imbedded in the bottom of the flume so as to rest above or on the cross timbers which pass across under the flume. The inventor's idea is to construct the bottom of the flume where the battery is, in a series of steps, so that each stamp or row of stamps will strike upon a different step, thus providing a series of benches for the stamps to operate on.

In order to get rid of the large stones and boulders which are constantly passing into and through this class of flumes, and which would, if allowed to pass through the flume battery, prevent its successful operation, the inventor constructs a turn-out or side flume, leading from the main flume, and in this turn-out flume the battery section is placed. This turn-out flume branches off from the main at some suitable point, and after making a detour again enters the main flume at a point below. At the point where this side flume branches off from the main flume, a number of parallel bars are placed in the bottom of the main flume, so as to form a grating or "grizzly," through which the large rocks or boulders cannot pass, while the water, earth or cement and smaller stones will fall through into the turn-out flume and be carried through it. After the water and stuff passes through the side or turn-out flume, it is again brought into the main flume, while the boulders which were screened out will again intermingle and pass down the main flume with the dirt, etc., assisting to disintegrate the cement.

In order to prevent the stamp steme from being broken or bent by striking on such rocks as will necessarily pass through the side flume, each of them is passed through a rubber cushion on the top of the flume. These elastic cushions are large enough to provide the desired side yield, and are firmly secured in an opening on the top of the sluice. A metal bushing or tube is fixed in the center of each cushion and the stamp stem passes through the tube. By means of this arrangement it will be difficult for any large lumps of clay or cement to pass through the battery section without being crushed. As many stamps as necessary to properly crush the earth or cement can be used, and their weight and arrangement can be varied according to the necessities of each case. Some device of this kind has long been wanted by hydraulic miners.

CORRECTION.—The vicious little typographical error, whereby the title to Mr. Bowman's paper on "*The Great Plunge in the Tertiary*," in our last issue, was made to read ridiculously "*on* the Tertiary," will of course be ascribed to types by the intelligent reader; as also the word convergence, erroneously printed, when it should have been emergence.

WHEN they strike poor ores in the mines nowa-days, they say it is rich, but "not sufficiently concentrated to pay for milling." That is the long way of saying "low grade ore."

Continued from Page 1.

punching the work produced is so accurate as to remove all necessity of pin drifting, which is so injurious to the boiler. All sheets are planed before being rolled, thus preventing injury to the boiler—which often occurs in the old system of hand chipping and caulking—and by a new system of csulking a larger body of iron is set down, making a more substantial job and preventing injury to the under plate. By the adoption of these new improvements and the use of the best skilled labor under intelligent foremen, this department has been brought to a high degree of mechanical perfection, and the work turned out has no superior. There are seventy-two men in the boiler shops, in charge of Levi F. Cole, who has been at the works since 1864.

In The Flask Shop

All the wooden flasks and wooden work appertaining to a large foundry are prepared. Great expertness and promptness are required in this department, which is connected with that of the molders, the men being enumerated with those in the foundry. The flask shop is in charge of Joseph Burke.

The Tool Shop.

Here the tools are all kept and repaired. When the men take tools from here they are charged with them, and become individually responeible, and if they are not returned the missing tools are charged to those persons who took them from the shop. When a mechanic is through with any tool or tools, he returns them to this shop, so that everything in this line is kept track of contiuually, supplies kept up, and tools kept in order. This shop is in charge of Frank A. Davis.

In The Screen Department

Some fifty different varieties of screens for quartz mills are made. They are made of Russian iron, galvanized iron or zinc. Holes are punched in these plates from half an inch diameter down to that of a number ten cambric needle. The machinery for this department is very perfect and was designed and constructed at the works. It was made to suit the special requirements of this class of work. Mr. Buxton is in charge of this department.

The Laboring Department.

In so immense an establishment a large number of laborers, as distinct from skilled mechanics, are necessarily required, and they form a department of their own, furnishing all labor necessary to sustain the skilled departments of the business. There are sixty-three men in this department, under charge of Mr. Wetherby.

In the Shipping Department

A very complete system of shipping and tallying is carried out. All articles are weighed separately in each order and numbered, with value, etc. This being the case, in the event of any particular piece or package being injured or lost during transportation, its weight and value is seen by referring to the memorandum, and there is no confusion in determining what to replace or what is lost. The utmost care is taken in shipping goods, to the great benefit of purchasers as well as the works. In charge of Robert Peckham.

The Police System.

In a large establishment like this, employing 476 men, some system is of course needed to keep a check on the men and look out for those who shirk duty or endeavor to get full "time" with very little work. In these works the idlers, loafers, etc., are closely looked after and weeded out as soon as possible. Each man has a metal check with his number on it, which on his arrival in the morning he hangs on a peg having a corresponding number. This is under the supervision of one of the "police department." It is, of course, easy to see who is there and who not. At regular intervals during the day men go around the works and see that all the hands are fully employed, and of course each foreman sees that his men do not "soldier." When the men come in at one o'clock they each take their numbers from the pegs, so it is again known whether all the force returns at the proper time.

The Apprenticeship System.

The firm receives boys at the age of seventeen, for four years, paying them the first year $4 per week; the second year, $6 per week; the third year, $8 per week; and the fourth, $10 per week. At the expiration of the time a pretty correct estimate of their worth can be formed, and if they have proved themselves good workmen they are kept employed in the establishment, and experience has shown that they generally accomplish more work than Eastern men. The firm undertakes to give the boys a trade and they bind themselves to remain four years. If they leave the establishment without permission during that time, they forfeit all pay due them when they leave, and the proprietors reserve to themselves the right to discharge any boy for incompetency or want of punctuality. The boys usually prove themselves attentive and industrious, for no shop will employ an apprentice from another shop unless he brings a written discharge. This established rule prevents boys from roaming about from one shop to another. The reward for ability and good behavior is promotion in work and tools. Under this system of mutual good will, the employers are protected and the employees saved from the unpleasantness of being bound to unappreciated servitude. The good boy is promoted; the bad boy discharged. The former, in fact, does not require to be bound, and the latter is not wanted on any terms whatever. The advantage to the boy is he learns a respectable trade and obtains the means of earning a good living, while the advantage to the community is that every boy who labors faithfully in the establishment has inducements to become a respected citizen; for while it is the aim of the proprietors to make a first class mechanic, they also seek to train an intelligent and peaceful member of the community. At present there are seventy-two apprentices at work in the Union Foundry—three draftsmen, six pattern makers, thirteen moulders, ten boiler makers, three blacksmiths and thirty-seven machinists. These boys are nearly all children of poor parents and in a number of instances the main support of widows. The system of apprenticeship in force in the establishment was secured with great difficulty in the teeth of the combined opposition of the trades unions.

Mr. Scott has done more in a practical way to solve the question "What shall we do with our boys," than has been done by all the speeches and newspaper articles on the subject combined. It is to be hoped that others will follow in his footsteps. Mr. Scott's experience convinces him that by a judicious system of management of the boys of California, they can most sucessfully compete with any cheap labor, to the advantage of themselves and their employers as well.

As an indication of the gradual growth of the business of this foundry, which tends also to show the advance California has been making, we append a list of the engines and boilers made by the Union Iron Works from 1856 to 1874 inclusive:

Year.	Engines.	Boilers.	Year.	Engines.	Boilers.
1856.....	3	3	1866.....	18	45
1867.....	3	7	1867.....	19	39
1858.....	9	13	1868.....	21	28
1859.....	5	7	1869.....	16	41
1860.....	5	11	1870.....	15	21
1861.....	11	20	1871.....	27	51
1862.....	4	2	1872.....	30	49
1863.....	16	38	1873.....	24	45
1864.....	21	66	1874.....	38	77
1866.....	20	61			

This makes a total of 306 engines and 776 boilers made at these works from 1856 to January, 1875. Of course these engines and boilers varied greatly in size. The three engines turned out in 1856 only aggregated 75 horse power, while one engine built for the Consolidated Virginia mills last year, was 679 horse power alone. Of late years the engines and boilers made have been much larger than formerly, and the mining machinery much heavier. They have three large engines on hand now of a combined capacity of 1,680 horse power. The largest one, 680 horse power is for the California mill; another one of 500 horse power is for the pumping engine of the same mine; the other is for the pumping works of the Lady Washington mine.

Mining Machinery

Has always been a specialty at these works as at most California foundries, and the Union has gained an enviable reputation for its work in this line. We append a table which will show the number of stamps, pans and settlers made since 1865, at these works:

Year.	Stamps.	Pans.	Settlers.
1865.....	227	87	34
1866.....	308	37	17
1867.....	212	48	27
1868.....	113	43	19
1869.....	113	55	25
1870.....	120	67	39
1871.....	230	95	32
1872.....	133	39	28
1873.....	125	37	18
1874.....	277	66	31
Totals.....	1858	586	271

These figures show that these works have turned out a large number of quartz mills with all their appurtenances, and when it is considered that this is only one of the foundries of the city, it will be seen that the amount of such work done is more than most people suppose. They have striven to attain perfection in this line, and their efforts have been rewarded with success. Drawings are made here of this class of work, which are sent to England and all over the world. The model mill for the Massachusetts Institute of Technology was also made at these works. The Savage hoisting works, the largest on the Comstock lode, were made at this foundry. This was the first instance where they introduced the conical winding drum for round wire rope. It was the first cut gear of any magnitude used in hoisting, and the first poppet valve engine used in hoisting. They are now engaged in building the largest quartz mill ever built, for the California mine, on the Comstock. It will have seventy stamps, forty-six pans, with all the most complete appliances known in modern quartz machinery.

This institution was the first to introduce poppet valve engines on this coast, and also introduced the system of direct acting hoisting and pumping engines for mines. In all these improvements they have always endeavored to keep economy of steam in prominent view. It would be difficult to enumerate all the new departures from old ideas initiated by these works.

Locomotives.

The *California*, which was the first regular locomotive ever constructed on this coast, was made at these works, and was pronounced by competent judges to be satisfactory in every respect. This was some years ago, and since then they have turned out seventeen locomotives altogether.

This firm makes a specialty of horizontal and vertical engines of all sizes and patterns. It also makes a specialty of cut spur wheels of

every variety, having every facility of furnishing spur and bevel wheels of all sizes at short notice and low price. As an instance of the size of this class of work turned out here may be mentioned the fact that they recently cut a spur wheel for the Savage mining company, weighing 66,400 pounds, being 21 feet in diameter, 19 inches in face and 6 inches in pitch. This is believed to be the largest cut gear that has ever been made in any part of the world, and it is deserving of special mention that the cut was as accurate as the wheel of any watch. They have also lately cut bevel wheels ten feet in diameter.

The Union iron works employ a small army of men in the different departments. Altogether there are 476 men employed in the establishment, as follows: Pattern makers, 18; machinists, 143; blacksmiths, 40; boiler makers, 72; laborers, 63; moulders, 127; draftsmen, 4; draymen, 7; and watchmen, 2.

Two engines of a total capacity of 120-horse power drive the machinery of the works. The consumption of pig iron per year is about 4,500 tons. They use 1,000 tons of Lehigh coal for smelting and other purposes. 1,200 tons of fuel coal and 400 tons of Cumberland coal for

"The Glorious Fourth."

It is not a jot nor tittle the less "glorious" on account of the extravagant praises of its friends, or the sneers and criticisms of its enemies. The burlesques on "the spread eagle" have not clipped the wings of the emblematic bird, and the people will continue to keep this truly glorious day according to dictates of their own consciences, their own tastes and their pockets; and the first century of American independence will, on Monday next, receive a grand parting salute. This century has been an experimental one, and has proved as satisfactory to the world at large as an experiment, as it has to our own people. It is a grand century's work; and realizing this, as we must while looking at it as a whole, we should be very careful how we disparage one decade in order to exalt another. There have been "revolutionary heroes" in many epochs in our history; and there also have been conservative heroes who have rendered effective service to the country in the seemingly unimportant periods between these epochs. The coming century will uncover ten acres of ground, giving plenty of place for the exhibition of all the articles expected. There will be provided also, ample and suitable accommodations for the shelter and display of live stock, which it is intended shall be exhibited during the months of September and October. The exhibition being international, will bring together for comparison the best products from every quarter of the globe; hence every effort should be made to give just evidence of the capacity of the varied climates, soils, skill in tillage, and the character of the live stock in the United States; whilst the mechanical aids to agriculture should exhibit ingenuity, excellence of workmanship, and adaptation to the desired ends.

Notices of Recent Patents.

Among the patents recently obtained through Dewey & Co.'s Scientific Press American and Foreign Patent Agency, the following are worthy of mention:

Improved Bed Bottom.—Demmen & Newhouse, Stockton, Cal. This invention relates

Manufacture of Overalls, Blouses, Etc.—S. R. Krouse, San Francisco, Cal. This is an improvement in the manufacture of clothing such as overalls, blouses, jumpers, and that class of goods which are worn during manual labor and are subjected to heavy strains at different points. The invention consists in a novel construction and the use of strengthening pieces at various points, so as to overcome the tendency to rip. Across the tops of the pockets in a pair of overalls is formed a stay, which is turned down and stitched to the upper part of the pocket and resembles an ornamental flap or pocket cover without the use of the separate piece. The ends of this stay are covered out a short distance beyond the edge of the pocket, running to a point and are firmly attached. In order to make a button stay and at the same time secure the brace and pocket opening, a piece is made which is stitched with its upper end to the upper end of the band. The button is sewed through this piece and also the band, thus preventing it from being torn out. A strip extends across the lower edge of the band, which is there firmly secured. From this point

THE AGRICULTURAL BUILDING AT THE CENTENNIAL.

smith purposes. They also use 5,000 tons of wrought iron; 300 tons of boiler plate, and about 8,000 tubes for a year's supply. The amount of money distributed by this institution for wages alone will average $250,000 per year. This establishment has been carried on to its present position in a country that does not produce a pound of pig iron, no hard wood timber, not a pound of coal except for fuel purposes, and where wages are at least thirty-three per cent. higher than in the Eastern States.

In the California mine, on the Comstock, the prospecting work on the 1500-ft level is fast narrowing down to small proportions, the steady, systematic and vigorous prosecution of the work having, with the exception of a small portion of the extreme north end of the ledge, literally cut the whole into immense blocks and squares, the tunnels and cross drifts having much the resemblance of the thoroughfares of some great city.

The Belcher mine is looking well throughout, and there is no apparent probability of a reduction in the quality and quantity of the ore extracted for months to come. The air shaft is nearly completed to the 1200-ft level, thoroughly ventilating the lower levels of the mine and greatly facilitating the work in that portion of the mine. The surface repairs to the machinery is also about completed, so that everything is in the best possible working condition.

doubtedly need the services of both these classes of heroes; and notwithstanding our characteristic disparagement of "the period," we firmly believe that when the coming century shall have finished its course, and in rendering its account has occasion to allude to its "illustrious predecessor," there will be little distinguishing of periods in awarding its praises.

As a reminder of the grand International Exhibition in honor of the hundredth anniversary of the "glorious Fourth," and with a view to stimulate active interest in its success, we have given this most conspicuous part of our paper this week to an illustration of one of the Centennial Buildings.

Of course in the exhibition of 1876, where all the inventions of the nation are to be represented, agriculture will have a prominent place. The Centennial Commissioner, realizing the importance of the agricultural interests of the United States, and anticipating the demands that will be made for proper representation, is making ample provision for the accommodation of this department. The Bureau of Agriculture has been organized as one of the bureaus of administration of the exhibition, and will comprehend the native and cultivated products of the soil, and of objects immediately derived therefrom. The exhibition will open May 10th, 1876, and those who desire to exhibit cereals, forage plants and tubers, should make their preparations during the present season. The building, shown in the accompanying engraving, is most eligibly located in Fairmount park, and will

to an improvement in the construction of the upper and lower coils of spiral bed springs and to an improved arrangement for connecting the upper coils of the springs together when they are secured in position in the bed bottom frame. It further consists in the employment of C-springs for supporting the upper frame of the bed bottom. The springs employed are constructed similar to any ordinary spiral spring, with the exception of their upper and lower coils. These coils are formed by bending the wire short upon itself and coiling it backwards in a direction opposite to that in which the intermediate coils are wound, and then hooking the extremity of the wire in the short bend, so that a perfectly flat and complete ring is formed in each end of the spiral spring, giving an even bearing surface. When the springs are secured in their relative positions, a flat conical spring is secured in the space between the upper coils of each four springs by means of wire hooks or connections, which connect the top coil of each of the four springs with the lower or base coil of the flat conical springs, thus providing a spring bearing on what would otherwise be an open space. The upper coils are also connected by a wire rod, to prevent them spreading apart. A leather or other equivalent strap has one end fastened to each of the frames opposite the C-springs. By shortening the connecting strap the tension of all of the springs as well as that of the C-springs, can be increased, and the bed thus regulated for a light or heavy weight.

it is tapered and crosses the corner of the pocket opening, being firmly stitched and forming a stay. The back strap is so formed that it passes along with its upper part beneath the lower edge of the band and is there stitched in. From this point the strap extends downward and across the side or hip seam and the lower corner of the pocket, thus serving as a pocket stay and a powerful strengthener to the hip seam, which is thus prevented from ripping. By this method of reinforcing the various parts, the invention is able to resist the greatest strains and the wearers can use suspenders or not as desired.

L. W. Coe has just opened an establishment at the corner of Sansome and Sacramento streets in this city, where he furnishes complete mining outfits for power drills. He is the inventor of, and has on hand, the new "California Drill," referred to by us a few weeks since.

The New California Mill.—The erection of the new mill is being pushed to completion with all the energy possible, all the men that there is any show whatever to work being employed in its erection.

At the New York Consolidated mine, on the Comstock, the mason work for the deep and heavy foundations of the new machinery is well commenced and being pushed forward energetically.

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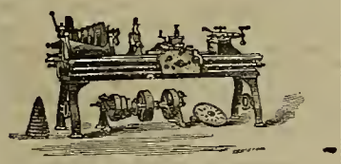

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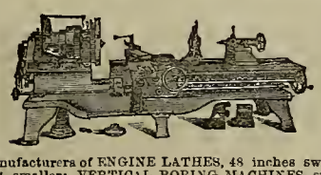

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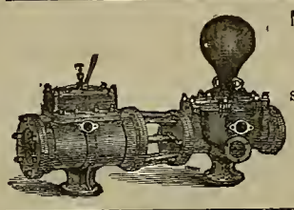

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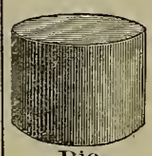

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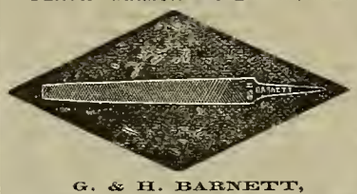

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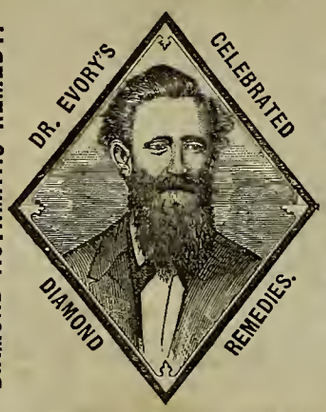

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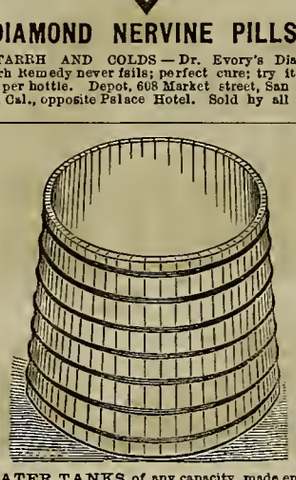

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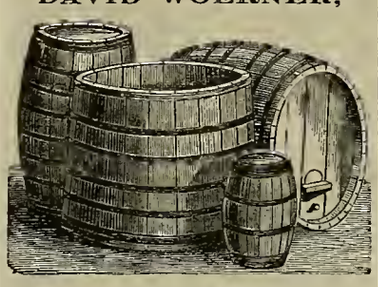

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Tenth Industrial Exhibition of the Mechanics' Institute, S. F., 1875.

PRELIMINARY ANNOUNCEMENT.

The Board of Managers of the Tenth Industrial Exhibition have the pleasure of announcing that an Industrial Exhibition will be held, under the auspices of the Mechanics' Institute, in the city of San Francisco, to be opened on Tuesday, the 17th of August, 1875, at 11 A. M., and to continue open at least one month thereafter.

In making this public announcement, the Managers desire that those who intend to exhibit should send in their applications for space as early as possible, so as to avoid the necessity of excluding, as has been the case heretofore, the many desirable exhibitors who are unusually tardy in making applications.

The forthcoming Industrial Exhibition will be the tenth held under the auspices of the Mechanics' Institute, and the Managers are justified in saying that it will undoubtedly surpass in completeness of detail and general arrangement any heretofore held.

The last Exhibition was attended by 700,000 visitors, attracted hither by the fame of these Industrial Fairs, and for the purpose of investigation, business and pleasure.

All the available exhibiting space was applied for several weeks before the day of opening, and the Managers were compelled to deny admission to many desirable exhibits.

The Board of Managers desire particularly that the arts, the industries and natural products of the country should be well represented at the forthcoming exhibition, and no pains will be spared to make these classes of exhibits a special feature there.

The Exhibition will be held in the building constructed for that purpose in 1874, but it will be materially enlarged and improved in many details for the Exhibition of 1875.

The space under roof will exceed 180,000 square feet, or about four and a half acres, exclusive of the Horticultural Garden, which will occupy 24,500 square feet additional.

The location of the Exhibition Building, on Eighth street, between Market and Mission streets, cannot be surpassed for convenience and accessibility, and can be approached from every part of the city by means of the various lines of street railroads, any of which bring visitors within two blocks of the entrance gate.

The utmost care has been exercised in providing for ample ventilation and light, and during the evening the building is brilliantly illuminated by over 5,000 gas lights.

The promenade avenues are broad, and 3,000 seats are provided for the comfort of visitors, for whose convenience there is also an excellent restaurant, under the management of a first-class restaurateur.

Every afternoon and evening the best orchestra the city can supply will discourse excellent music under the direction of an accomplished leader.

The building is always well attended by visitors, and during the last Exhibition over 29,000 were daily admitted for a number of days, and under no similar circumstances can the manufacturer, the mechanic, the inventor, producer or business men so advantageously place himself before the people of the Pacific Coast.

Persons desiring to obtain information, or to make application for space, should address "Managers of Tenth Industrial Exhibition, San Francisco, California," or make personal application as below.

It is expected that the various transportation companies will convey goods intended in good faith for exhibition, at half the usual rates.

Exhibitors from abroad, if they have no agent or consignee in San Francisco, can consign goods and mark the same to the "Manager of the Tenth Industrial Exhibition, 17 Post street, San Francisco," and they will be stored, if they arrive before the day of opening, free of expense; but no charges or expenses for freight or forwarding, etc., will be paid by the Managers.

In order to secure space, application should be made on or before July 20th, 1875.

Blanks will be furnished on application.

Premiums will be awarded as follows, viz: 16 gold medals, 50 silver medals, Society Diplomas, Certificates of Merit and Special Premiums, as the Board may determine.

Blanks for space can be obtained at the Mechanics' Institute on application by letter or otherwise; and any information will be given, by applying to any member of the Board of Managers, as below:

A. S. HALLIDIE.....113 Pine street.
JAMES O. PATRICK.....122 Battery street.
HENRY L. DAVIS.....421 California street.
D. E. HAYES.....213 Fremont street.
ASA B. WELLS.....Mechanics' Mill.
P. B. CORNWALL.....Cor. Speer & Harrison streets.
CHAS. ELLIOT.....516 California street.
GEORGE SPAULDING.....414 Clay street.
RICHARD SAVAGE.....139 Fremont street.
W. P. STOUT.....604 Merchant street.
J. H. MACDONALD.....217 Spear street.
J. P. CURTIS.....320 Jackson street.
R. B. WOODWARD.....Woodward's Gardens.
JAMES SPIERS.....311 Howard street.

To the Librarian of the Mechanics' Institute, or to J. H. CULVER, Secretary, 27 Post street, S. F.

Rules and Regulations of the Tenth Industrial Exhibition, Mechanics' Institute, S. F., 1875.

1. The Pavilion will be open for the reception of goods on Monday, August 2d. The exhibition will be open to the public on Tuesday, August 17th, at 11 o'clock A. M.

2. Applications for space must be made on or before July 20th, stating character of exhibit, amount and kind of space required—wall, table or floor. And, if cases, state length, width and hight of case. Blanks will be furnished for this purpose, and a clerk will be in attendance at the Library of the Mechanics' Institute, every day from 12 to 1, and 7 to 10 P. M.

3. All persons presenting articles for exhibition must have them registered by the Receiving Clerk, who will give a receipt for the same, which receipt must be presented when the articles are withdrawn, at the close of the Exhibition.

4. Judges will be appointed by the Board of Managers, immediately upon the opening of the Exhibition, to examine all articles presented, in accordance with Article III, and the Managers will award premiums on such articles as the judges shall declare are worthy, which will be delivered as soon as they can be prepared. Due notice will be given of the announcement of premiums.

5. The mornings of each day, until 10 o'clock, will be appropriated to the Judges, and no visitors will be admitted during the time thus appropriated, except at the special request of the Judges, or by permission of the Managers.

6. Articles intended for sale may be labeled accordingly, but cannot be removed until the close of the Exhibition, except by written permission of the Managers.

7. Steam power will be provided, so that machinery of all kinds may be seen in actual operation, and every facility possible will be given to exhibit working machinery to the best advantage.

8. The name of every article must be attached by the exhibitor to it.

9. Articles intended for exhibition must be entered and placed on exhibition on or before Saturday, August 21st,

10. Perishable articles will be received, or may be removed at any time during the exhibition, with the consent of the Managers.

11. The most effectual means will be taken, through the agency of the Police and otherwise, to guard and protect the property on exhibition; and it will be the purpose of the managers that all articles shall be returned to the owners without loss or injury. Still, all articles deposited will be at the RISK OF THE OWNERS.

12. In case of any misunderstanding, application may be made to the Managers, who will at all times be in attendance.

13. The Managers are desirous that articles should be presented early. Those from abroad, intended for exhibition, should be properly packed, and if not consigned to exhibitor's agent, must be marked, "MANAGERS OF TENTH INDUSTRIAL EXHIBITION, SAN FRANCISCO, CAL." All articles thus received, arriving too early, will be stored free of cost to the exhibitor, and the Managers will have them duly placed in proper position for exhibition. No freight charges will be paid by the Managers; but exhibitors are notified that arrangements are being made with various transportation companies to repay freight charges on evidence of goods exhibited.

Information will be furnished by addressing MANAGERS OF TENTH INDUSTRIAL EXHIBITION, SAN FRANCISCO, CAL.

WIRE ROPE

For Mining, Shipping, and General Purposes.

All kinds and sizes on hand, or made to order; guaranteed of unsurpassed quality, and manufactured of any length. FLAT ROPES, ROUND ROPES and TAPER ROPES, of IRON OR STEEL.

Patent Endless Wire Ropeway

(WIRE TRAMWAY,)

FOR THE RAPID AND ECONOMICAL TRANSPORTATION OF ORES AND OTHER MATERIAL OVER MOUNTAINOUS AND DIFFICULT ROADS.

This system has been in use for over three years, and given thorough satisfaction.

PATENT GRIP PULLEY,

For transmission of power by means of wire ropes.

WIRE.

Fencing Wire and Staples,
BALING WIRE,
SPRING WIRE,
GALVANIZED WIRE,
BROOM WIRE,
STEEL WIRE,
COPPER WIRE,
BRASS WIRE,

And Wire of all kinds, on hand or made to order.

SOLE AGENT FOR

Richard Johnson and Nephews' Celebrated Telegraph Wire.

Full stock on hand in bond, or duty paid.

Wire Cloth and Wire Netting.

FULL ASSORTMENT ON HAND FOR ALL PURPOSES, AND

All Kinds of Goods in the Wire Line.

Send for Circulers, Etc., to

A. S. HALLIDIE,
2em 113 and 115 Pine Street, S. F.

Office of Drain Pipe Works,

S. W. Corner Sacramento and Montgomery Sts., S. F.

DRAINS

CONSTRUCTED

In any part of the State, and

Work Warranted

E. T. MENOMY
Proprietor.

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THE NEVADA

QUARTZ MINING PROPERTY FOR SALE,

With a new 15-stamp mill, now running. Has its own water power, with houses, shops, etc. Government title; joins the Providence mine, on Deer Creek, Nevada City, Cal. For sale or to bond.

Address, I. S. VAN WINKLE,
413 Market street, San Francisco.

San Francisco Cordage Company.

Established 1856.

We have just added a large amount of new machinery of the latest and most improved kind, and are again prepared to fill orders for Rope of any special lengths and sizes. Constantly on hand a large stock of Manila Rope, all sizes; Tarred Manila Rope; Hay Rope; Whale Line, etc., etc.

TUBBS & CO.,
e20 611 and 613 Front street, San Francisco

QUICKSILVER.

UNITED STATES PATENT OFFICE.

The Quicksilver Mining Company of New Almaden, California—Trade-mark for Quicksilver Flasks.

Statement of trade-mark No. 1499, registered October 19, 1873; application filed September 29, 1873.

Specification describing a trade-mark, used by the Quicksilver Mining Company, a company chartered by the State of New York, and working and operating quicksilver mines at New Almaden, Santa Clara county, State of California, for Quicksilver Flasks.

Our trade-mark consists of the letter "A" straddling a circle. This letter has generally been painted upon the upper end of each flask, bottle, or jar in which the quicksilver is contained, its usual position being such that the opening or mouth in the upper end of the flask, bottle or jar will be between the spreading angular sides of the letter, the cross-mark of the letter passing along close to the edge of the hole.

This trade-mark we have used in our business for ten years last past. The particular goods upon which we have used it are quicksilver flasks, and it has always been applied as above described.

THE QUICKSILVER MINING COMPANY.
By J. B. RANDOL, Manager.

This trade-mark is also registered in the office of the Secretary of State, Sacramento, California, and all producers and dealers in quicksilver are cautioned not to use the said trade-mark.

For New Almaden Quicksilver, apply to
THOMAS BELL, Sole Agent,
Over Bank of California, San Francisco.

NEW ALMADEN QUICKSILVER.

TRADE **A** MARK.

The well known full weight and superior quality of the quicksilver produced at the New Almaden Mines having induced certain unscrupulous persons to offer their inferior productions in flasks having our trade-mark, "A." notice is given to consumers and shippers that quicksilver, "A" brand, guaranteed weight, can be purchased only from THOMAS BELL, San Francisco, or his duly appointed sub-agents.

J. B. RANDOL, Manager.

New Almaden, April 5, 1875.

Ayer's Sarsaparilla,

FOR PURIFYING THE BLOOD.

This compound of the vegetable alteratives, Sarsaparilla, Dock, Stillingia and Mandreke with the Iodides of Potassium and Iron makes a most effectual cure of a series of complaints which are very prevalent and afflicting. It purifies the blood, purges out the lurking humors in the system, that undermine health and settle into troublesome disorders. Eruptions of the skin are the appearance on the surface of humors that should be expelled from the blood. Internal derangements are the determination of these same humors to some internal organ, or organs, whose action they derange, and whose substance they disease and destroy. AYER'S SARSAPARILLA expels these humors from the blood. When they are gone, the disorders they produce disappear, such as Ulcerations of the Liver, Stomach, Kidneys, Lungs, Eruptions and Eruptive Diseases of the Skin, St. Anthony's Fire, Rose or Erysipeles, Pimples, Pustules, Blotches, Boils, Tumors, Tetter and Salt Rheum, Scald Head, Ringworm, Ulcers and Sores, Rheumatism, Neuralgia, Pain in the Bones, Side and Head, Female Weakness, Sterility, Leucorrhœa arising from Internal ulceration and uterine disease, Dropsy, Dyspepsia, Emaciation and General Debility. With their departure health returns.

PREPARED BY

DR. J. C. AYER & CO., Lowell, Mass.

PRACTICAL AND ANALYTICAL CHEMISTS.

☞ Sold by all Druggists and Dealers in Medicine.

CRANE & BRIGHAM, Wholesale Agents
SAN FRANCISCO, jy11-8a

LEVI, STRAUSS & CO.,

Patent Riveted

Clothing,

14 & 16 Battery St.,

San Francisco.

These goods are specially adapted for the use of FARMERS, MECHANICS, MINERS, and WORKING MEN in general. They are manufactured of the Best Material, and in a Superior Manner. A trial will convince everybody of this fact.

Patented May 12, 1873.

USE NO OTHER, AND INQUIRE FOR THESE GOODS ONLY. eow-bp

SAN FRANCISCO

Pioneer Screen Works,

Removed to 32 Fremont Street, near Market.

J. W. QUICK,

Manufacturer of perforated sheet metals of every description, at reduced rates. Mill owners using Battery Screens extensively, can contract for large supplies at favorable rates. This is the only establishment on the Coast devoted exclusively to the manufacture of screens.

PURCHASERS please say advertised in Scientific Press.

Banking.

The Merchants' Exchange Bank

OF SAN FRANCISCO.

Capital, Five Million Dollars.

C. W. KELLOGG.....President.
H. F. HASTINGS.....Manager.
E. N. VAN BRUNT.....Cashier.

BANKING HOUSE,
No. 423 California street San Francisco.

KOUNTZE BROTHERS, BANKERS,

12 WALL STREET, NEW YORK,

Allow interest at the rate of Four per cent. upon daily balances of Gold and Currency.

Receive consignments of Gold, Silver and Lead Bullion, and make Cash advances thereon.

Invite Correspondence from Bankers, Mining Companies, Merchants and Smelting Works.

French Savings and Loan Society,

411 Bush street, above Kearny..... SAN FRANCISCO

4v27tf G. MAHE, Director.

Business Directory.

GILES H. GRAY. JAMES M. HAVEN.

GRAY & HAVEN,

ATTORNEYS AND COUNSELORS AT LAW

In Building of Pacific Insurance Co., N. E. corner California and Leidesdorff streets.

SAN FRANCISCO.

JOHN ROACH, Optician,

429 Montgomery Street,

. W. corner Sacramento.

Sm1v6 Instruments made, repaired and adjusted 22v17-3m

JOSEPH GILLOTT'S
STEEL PENS.
Sold by all Dealers throughout the World.

WM. BARTLING. HENRY KIMBALL.

BARTLING & KIMBALL,

BOOKBINDERS,

Paper Rulers and Blank Book Manufacturers.

505 Clay street, (southwest cor. Sansome),

5v12-3m SAN FRANCISCO

BENJAMIN MORGAN,

Attorney at Law and Counselor in Patent Cases,

Office, 715 Clay Street, S. F.

Refers to Dewey & Co., Patent Agents; Judge S. Heydenfeldt or H. H. Haight. 5v28-3m

SANBORN & BYRNES,

STAIR BUILDERS.

Mechanics' Mills, Mission Street.

Bet. First and Fremont, San Francisco. Orders from the country promptly attended to. All kinds of Stair Material furnished to order. Wood and Ivory Turners. Billiard Balls and Ten Pins, Fancy Newels and Balusters. 25v8-3m-hp

A Paying Gold Quartz Mine

WILL BE SOLD

AT A VERY REASONABLE FIGURE.

Terms, Cash.

Application must be made before the 1st of July, 1875.

Address, A. G. HULL.

Care of W. INNES, Esq., Mokelumne Hill, Calaveras County, Cal.

PACIFIC OIL AND LEAD WORKS,

SAN FRANCISCO,

Manufacturers of

Linseed and Castor Oils,

OIL CAKES AND MEAL.

Highest price paid for Flax Seed and Castor Beans delivered at our works.

Office, 3 and 5 Front street.

Works, King street, bet. Second and Third, fel5-eow

Rifle Shooting.

Rifle shooting has become much more popularized in this country within the past year or two than heretofore. This is owing principally, no doubt, to the introduction of long range shooting and the skill necessary to make a good score. American rifles have always been noted ever since the time of the old Kentucky rifle. The leading feature of that weapon was the small bore and heavy weight of metal around it. The leading points in the construction of rifles now is to get them as near as possible to the requirements of military duty. They want as much metal as is proper for a soldier to carry and no more. The maximum weight of most rifles is now about ten pounds.

Within the past ten or fifteen years attention has been turned to shooting at greater distances, and considerable changes have been made on rifles. The form of rifling has been changed from a slow twist and deep grooves to rapid twist and shallow grooves. The form of bullets has been changed from a light picket ball to one of a long cylindrical conoid form, made of hardened lead instead of soft lead, so as not to "strip" on the shallow rifling. The bullets are heavier than they used to be and the charges of powder heavier.

Some twelve or fifteen years ago the English turned their attention more particularly to the rifle and adopted the Hythe system of shooting. The principle feature of this system is the use of targets, either round or square, by which a rapid scoring can be attained; and also the adoption of rules in regard to position, which are intended to fit the men for shooting under all circumstances. The interest aroused recently has been created by competition and the close calculations necessary to hit a target at a long distance. The wind, state of the atmosphere and many other things have to be taken into consideration. Often in shooting at 1,000 yards, the muzzle of the gun will point actually twenty-five feet to one side of the spot where the bullet is intended to hit.

The recent rifle matches have created considerable interest, and it is a subject of congratulation that the American team has beaten the Irish team on its own ground. Both teams made splendid scores, but the Americans had thirty-eight majority of the three ranges, as will be seen by the following score:

AMERICAN TEAM.

	800 yds.	900 yds.	1000 yds.	Total.
Fulton	58	57	46	161
Daken	58	55	51	164
Yale	56	52	51	160
Gildersleeve	56	56	52	164
Coleman	56	48	52	156
Bodine	52	58	51	162
	337	327	303	967

IRISH TEAM.

	800 yds.	900 yds.	1000 yds.	Total.
Pollock	58	53	49	164
Wilson	56	54	56	151
Johnson	58	29	50	140
Hamilton	56	64	51	161
Milner	55	68	41	154
McKenna	52	44	53	149
	338	292	299	929

This international contest took place at Dublin, Ireland.

Another interesting match took place last Saturday, between the Sumner Light Guard of California, and twelve men of Company D, 12th Regiment, N. G. S., New York. The New Yorkers used the Remington and the Sumners the Sharp rifle. The individual scores of each team were as follows:

NEW YORK.	200 yds.	500 yds.	Total	CALIFORNIA.	200 yds.	500 yds.	Total
H. B. Smith	22	24	46	Burke	23	26	49
T. J. Dolan	19	25	44	Robertson	22	24	46
E. H. Madison	21	24	45	Strong	24	22	46
A. Wood	21	22	43	Nash	23	22	45
J. A. Banta	22	21	43	Watson	22	22	44
John Beattie	21	21	42	Murphy	18	26	44
W. G. Carson	16	25	41	Steed	22	21	43
W. C. Reddy	20	21	41	Earle	22	20	42
W. S. Smith	21	19	40	Burns	19	22	41
L. Moran	17	20	37	Preble	16	21	40
J. M. Burlew	16	21	36	Dove	20	19	39
J. H. Wood	20	9	29	Hunt	21	11	32
Totals	235	253	488	Totals	255	256	511

This makes a score of 488 to 511, leaving a majority of twenty three in favor of the California boys, and making the Sumner Light Guard the champion rifle company of the States of New York and California. The result of this match was communicated to the respective teams by telegraph, each team doing their shooting in their own States. It will be seen that Mr. Burke made the best score, but Mr. George Strong, (of the MINING AND SCIENTIFIC PRESS), at the 200-yard target, made the highest score thus far recorded in any match at this range in the United States. At 200 yards the highest recorded score at Creedmoor is twenty-three points, seven shots, military rifles, and as Mr. Strong's was twenty-four, it beats the former best record.

As considerable interest has been aroused in the sport, we shall probably have several other matches soon.

The Consolidated Virginia mine is yielding daily 600 tons of ore, keeping the mills all running up to their full crushing capacity. The yield of bullion for the present month will amount to about $1,500,000, differing but little, if any, from that of the last two months. The ore breasts are all yielding well, and in fact the entire mine is looking as well or better than it has for the past twelve months.

Industrial Items.

THE contract for furnishing the gas fixtures for the Palace Hotel has been awarded to Thos. Day & Co., of this city. The dining-rooms will be lighted by twenty-four light chandeliers. Each of the 755 sleeping rooms will be furnished with a five-light chandelier with center light extension arm. The office will have four twenty-four light chandeliers, one each in the ladies' and gents' reception rooms, reading room and bar room, and two in the ball room. On each of the marble mantles will be two standard lights, making 1,408 in the hotel. The bath and wash rooms will require 1,800 brackets. Around the balconies in the inner court will be 108 standard lights, with three and five-light clusters. At the entrance to the court will be rich brass bracket lamps, with coach lantern beveled edge glass.

JOHN W. BASSNINE, representing the Gold mining company on the Upper Amoor river, Eastern Siberia, has contracted with Stephen H. Davis, of the Pioneer shipyard, and John Csiue, of the Globe iron works, Stockton, for the construction of a steru wheel steamer of the following dimensions: The hull to have a length of 135 feet; breadth of beam, 28 feet; depth of hold, 5 feet. The machinery will consist of double engines with oyliuders of 14-inch bore and 4-feet stroke; two boilers, 42 inches in diameter and 16 feet in length. The hull is to be put up in sections here, then taken apart and shipped to San Francisco, from whence it will be reshipped on board a sailing vessel for a port on the Amoor. Hull and machinery are to be ready for shipment from San Francisco not later than April 1st, 1876.

THE new telegraph line from Santa Cruz to San Francisco will soon be in complete connection with Southern California. Work is going on at present connecting the line with San Juan and Gilroy, and when that is finished the circuit will be complete.

AT a meeting of the Board of Direotors of the Sonoma and Marin railroad company, held in Petaluma last week, contracts were let for grading thirteen miles from that point and constructing the tunnel near San Rafael.

A COMMITTEE have been appointed to make inquiries among the land owners, and to raise funds for the right of way in that the Santa Cruz narrow gauge railroad may be extended to Watsonville.

A No. 6 blower, the largest size manufactured, has just been completed for the new Coso mining company, Darwin City, Inyo county, by the Globe iron works, Stockton.

THE New England tunneling and smelting company's saw mill will be ready for operation by the last of July. The mill will be sixty-two by twenty-four feet.

THE corner stone for a new wine manufactory was laid by Mr. N. Carriger, on his ranch, in the Sonoma valley.

WM. H. HARRISON, of Livermore, has applied for a patent for a one rail railroad of his own invention.

A NEW schooner called the *Mary E Russ* was launched at Eureka, Humboldt county, on the 22d ult.

General News Items.

MRS. DANA RICE, of Santa Cruz, was recently relieved of a brass pin by coughing it up from her lungs. It had been thought for a long while that Mrs. Rice was afflicted with consumption, but this incident proved the opinion to be erroneous.

THE Washington National Monument Society request the churches and Sabbath schools of the country to take up a collection on Sunday, July 4th, to aid in completion of the monument; contributions to be forwarded to J. B. Smith, Treasurer of the society, Washington, D. C.

THE Commissioner of the General Land office has granted a patent to the rancho Santa Rita, confirmed to Joel Ramon Mals, containing over 12,000 acres in Santa Barbara county, Cal. The patent was sent out on June 28th, to the Surveyor General of California.

AN inundation, most disastrous in its results, occurred in France last week. The number of persons drowned in Toulouse alone is estimated at 2,000. Damage to property in that city and Agen, $24,000,000.

THE officials at the Treasury Department in Washington are busy taking account of stock, necessitated by the transfer of the funds from the custody of General Spinner to Mr. New, the newly appointed Treasurer.

THE pupils of the Sacramento schools may not look with unalloyed pleasure at the coming Centennial. The Board of Education propose to shorten the vacation this year in anticipation of that event.

THE International rifle match took place near Dublin, on Tuesday last. After a display of admirable shooting by both American and Irish teams, the former proved victorious by a score of 968 to 928.

Two graveyards are offered for sale by the Oregon and California railroad company. An interesting locality for anybody wishing a home surrounded by "silent memories of the past."

THE *Oceanic*, the pioneer steamer of the Oriental and Occidental line, arrived at this port last Thursday from Hongkong and Yokohama.

ONE hundred and fifty thousand dollars, worth of property was destroyed by the recent storm in Iowa.

THE Portland *Journal* is arguing the construction of a canal from the Oregon City Falls to Portland, a distance of thirteen miles, to be used for water power for driving machinery.

Two Italians were arrested in Marysville last Saturday, charged with counterfeiting. A large amount of metal and a supply of $2.50 gold pieces were found at their haunt.

THE steam dredge is hard at work in Wilmington harbor, and the people there still feel confident that their city will be the sea port of Southern California.

NOTWITHSTANDING the fact that half a ton of ice a day is used in Visalia, the thermometer marked 103 deg. in the shade there last Monday.

SENATOR JONES' Turkish bath house was opened on Tuesday last.

PATENTS & INVENTIONS.

A Weekly List of U. S. Patents Issued to Pacific Coast Inventors.

[FROM OFFICIAL REPORTS FOR THE MINING AND SCIENTIFIC PRESS, DEWEY & CO., PUBLISHERS AND U. S. AND FOREIGN PATENT AGENTS.]

By Spacial Diapatch, Datad Washington, D. C., June 29th, 1875.

FOR WEEK ENNING JUNE 15TH, 1875.*

PAINT COMPOUNN.—Isaac L. Merrell, S.F., Cal.

PLOW.—Christian Myers, Marysville, Cal.

CARRUETER.—John C. Henderson, S. F., Cal.

HORSE POWER.—Horace Parkhurst, Oakland, Cal.

TRADEMARKS.

FOR SALTED, PICKLED AND PRESERVED SALMON. J. W. and V. Cook, Clifton, Oregon.

FOR ANTI-FRICTION METAL.—Geo. S. Hunt, Sacramento, Cal., and Benjamin Hunt, St. Louis, Mo.

*The patents are not ready for delivery by the Patent Office until some 14 days after the date of issue.

NOTE.—Copies of U. S. and Foreign Patents furnished by DEWEY & CO., in the shortest time possible (by telegraph or otherwise) at the lowest rates. All patent business for Pacific coast inventors transacted with perfect secrecy and in the shortest possible time.

Monthly List of Scientific Books.

[Published the first issue in every month.]

AUTHOR.	TITLE.	PRICE.
Sprague (John),	Electricity—Its Theory, Sources and Applications	3 00
Joynson (F. H.),	Mechanics' and Students' Guide in Designing and Constructing General Machine Gearing	2 00
Foye (James C.),	Tables for the Determination and Classification of Minerals	75
Hyde (Prof. E. A.),	Skew Arches, No. 15, "Science Series"	60
Blasius (Wm.),	Storms—Their Classification, Nature and Laws	2 50
D'Anvers (N.),	Elementary History of Art	4 00
Andre (Geo. G.),	A Practical Treatise on Coal Mining	2 00
Hartwig (G.),	The Aerial World	6 00
Gordon (J. E. H.),	An Elementary Book on Heat	76
Percy (John),	Metallurgy Introduction, Refractory Materials and Fuel	16 00
Southall (James C.),	The Recent Origin of Man	6 00
Stewart & Phelps,	The Sun and the Earth, and Force Electrically Exhibited	26

The above list is compiled and the works for sale by A. L. Bancroft & Co., Scientific Booksellers, 721 Market street, San Francisco.

Progress at the Sutro Tunnel.

The following is the report of progress in the Sutro tunnel, for week ending June 22, 1875:

Number of feet in tunnel, June 16	9,735
Number of feet driven during week	80
Distance in, June 22	9,816

Details of work performed are as follows, heading being 8x10 feet:

Holes drilled	403
Holes blasted	405
Average depth	6 14-100 feet
Powder consumed	883 lbs
Exploders consumed	405

ROCK.—Comstock porphyry, containing iron pyrites. Favorable blasting.

WATER.—One hundred miners' inches flowing.

[Signed] A. SUTRO, Gen. Supt.

SYMPTOMS OF LIVER COMPLAINT, AND OF SOME OF THE DISEASES PRODUCED BY IT.

A sallow or yellow color of skin, or yellowish brown spots on face and other parts of body; dullness and drowsiness, with frequent headache; dizziness, bitter or bad taste in mouth, dryness of throat and internal heat; palpitation; in many cases a dry, teasing cough, with sore throat; unsteady appetite, raising food, choking sensation in throat; distress, heaviness, bloated or full feeling about stomach and sides, pain in sides, back or breast, and about shoulders; colic, pain and soreness through bowels, with heat; constipation alternating, with frequent attacks of diarrhœa; piles, flatulence, nervousness, coldness of extremities; rush of blood to head, with symptoms of apoplexy, numbness of limbs, especially at night; cold chills, alternating with hot flashes, kidney and urinary difficulties; dullness, low spirits, unsociability and gloomy forebodings. Only few of above symptoms likely to be present at one time. All who use Dr. Pierce's Alt. Ext. or Golden Medical Discovery and Pleasant Purgative Pellets for Liver Complaint and its complications, are loud in their praise of them. They are sold by all dealers in medicines.—*Com.*

METALS.

[WHOLESALE.]

WEDNESDAY M., June 30, 1876.

American Pig Iron, ℔ ton	—	@	46 00
Scotch Pig Iron, ℔ ton	46 00	@	48 00
White Pig, ℔ ton	—	@	45 00
Oregon Pig, ℔ ton	—	@	46 00
Refined Bar, bad assortment, ℔ ℔	—	@	3½
Refined Bar, good assortment, ℔ ℔	—	@	4
Boiler, No. 1 to 4	—	@	5½
Plate, No. 5 to 9	—	@	5½
Sheet, No. 10 to 14	—	@	5½
Sheet, No. 16 to 20	5½	@	5¾
Sheet, No. 22 to 24	6	@	6½
Sheet, No. 26 to 28	6½	@	7
Horse Shoes, per keg	7 50	@	8 00
Nail Rod	10	@	—
Norway Iron	9	@	—
Rolled Iron	6	@	—
Other Irons for Blacksmiths, Miners, etc.	—	@	4½
COPPER.			
Brazers'	35	@	—
Copper Tin'd	37½	@	4
O'Neil's Pat	37½	@	40
Sheathing, ℔ ℔	40	@	24
Sheathing, Yellow	—	@	25
Sheathing, Old Yellow	—	@	12½
Composition Nails	24	@	—
Composition Bolts	24	@	—
STEEL.—Eoglieh Cast, ℔ ℔	20	@	25
Anderson & Woods' American Cast	—	@	16½
Drill	—	@	16½
Flat Bar	18	@	22
Plow Steel	9	@	10
TIN PLATES.			
10x14 I C Charcoal	12 00	@	12 50
10x14 I X Charcoal	14 00	@	14 50
Roofing Plate I C Charcoal	11 00	@	11 50
Banca Tin	30	@	32
Australian	28	@	30
ZINC.—By the Cask	—	@	11
Zinc, Sheet 7x3 ft, No 7 to 10 ℔ ℔	—	@	11
do do 7x3 ft, No 11 to 14	—	@	11½
do do 8x4 ft, No 8 to 10	—	@	11½
do do 8x4 ft, No 11 to 10	—	@	12
NAILS Assorted sizes	4 25	@	8 70
QUICKSILVER, per ℔	65	@	70

LEATHER.

[WHOLESALE.]

WEDNESDAY M., June 30, 1876.

City Tanned Leather, ℔ ℔	26@29
Santa Cruz Leather, ℔ ℔	26@28
Country Leather, ℔ ℔	24@29
Stockton Leather, ℔ ℔	25@29
Jodot, 8 Kil., per doz	$50 00@54 00
Jodot, 11 to 13 Kil., per doz	68 00@72 00
Jodot 14 to 19 Kil., per doz	82 00@84 00
Jodot, second choice, 11 to 16 Kil. ℔ doz	57 00@74 00
Cornelian, 12 to 16 Ko	57 00@67 00
Cornelian Females, 12 to 13	63 00@67 00
Cornelian Females, 14 to 16 Kil	71 00@76 50
Simon Ulimo Females, 12 to 13, Kil	60 00@64 00
Simon Ulimo Females, 14 to 15, Kil	70 00@72 00
Simon Ulimo Females, 16 to 17, Kil	73 00@75 00
Simon, 18 Kil. ℔ doz	61 00@63 00
Simon, 20 Kil. ℔ doz	65 00@67 00
Simon, 24 Kil. ℔ doz	72 00@74 00
Robert Calf, 7 and 9 Kil	35 00@40 00
French Kips, ℔ ℔	1 00@1 15
California Kip, ℔ doz	40 00@ [illegible]
French Sheep, all colors, ℔ doz	3 00@15 00
Eastern Calf for Backs, ℔ ℔	1 00@1 25
Sheep Roans for Topping, all colors, ℔ doz	9 00@13 00
Sheep Roans for Linings, ℔ doz	5 50@10 50
California Russett Sheep Linings	1 75@4 50
Best Jodot Calf Boot Legs, ℔ pair	5 00@5 25
Good French Calf Boot Legs, ℔ pair	4 00@4 75
French Calf Boot Legs, ℔ pair	4 00@—
Harness Leather, ℔ ℔	30@37
Fair Bridle Leather, ℔ doz	48 00@72 —
Skirting Leather, ℔ ℔	33@37½
Welt Leather, ℔ doz	30 00@50 00
Calf Leather, ℔ foot	17@¾
Wax Side Leather, ℔ foot	17@

Gold, Legal Tenders, Exchange, Etc.

[Corrected Weekly by CHARLES SUTRO & CO.]

SAN FRANCISCO, June 30, 3 P. M.

LEGAL TENDERS in S. F., 11 A. M., 85½ to 86¼.

GOLD in N. Y., 117⅛

GOLD BARS, 890.- SILVER BARS, 4 and 4½ per cent. discount.

EXCHANGE on N. Y., ¾ per cent. premium for gold; on London bankers, 4⁹; Commercial, 49¼; Paris, five francs per dollar; Mexican dollars, one and two per cent. discount.

LONDON — Consols, 93 to 93⅝; Bonds, 102⅝

QUICKSILVER in S. F., by the flask, per ℔, 65c@70c.

UNITED STATES
Mineral Land Laws, Revised Statutes,
And Inatructiona and Forma Under tha Sama.

We have just issued a pamphlet containing the general mineral land laws of the United States, with instructions of the Commissioner of the Land Office The contents of this pamphlet comprise all of the Government laws with relation to mineral lands of interest to the mining community, as follows: Mining Statute of May 10th, 1872, with Instructions by the Commissioner of the Land Office; Mining Statute of July 26th, 1866; Mining Statute of July 9th, 1870 Forms required under Mining Act of May 10th, 1872, as follows: Notice of Location; Request for Survey; Application for Patent; Proof of Posting Notice and Diagram of the Claim; Proof that Plat and Notice remained Posted on Claim during Time of Publication; Registers' Certificate of Posting Notice for Sixty Days; Agreement of Publisher; Proof of Publication; Affidavit of $500 Improvements; Statement and Charge of Fees; Proof of Ownership and Possession in Case of Loss or absence of Mining Records; Affidavit of Citizenship; Certificate that no Suit is Pending; Power of Attorney; Protest and Adverse Claim; Non-Mineral Affidavit; Proof that no Known Veins Exist in a Placer Claim, etc. There is also given the U. S. Coal Land Law and Regulations thereunder. The work comprises thirty pages, and will be sold, post-free, for 50 cents. It should be in the hands of every one having any mining interests. DEWEY & CO.,

Publishers of MINING AND SCIENTIFIC PRESS, S. F.

N. B.—We have also added to the above publication, the REVISED STATUTES OF THE UNITED STATES, so far as relates to Mining Laws.

Thanks for Prompt Attantion.

STOCKTON, June 26, 1875.

Messrs. Dewey & Co., S. F.:—

I have received the patent for my invention in wagon brakes, which you prosecuted for me; patented May 11, 1875—No. 163,045. Thanks to you for your prompt attention to the case; you will hereafter be my attorneys in such cases. I recommend all inventors on the Pacific coast to give you a call, which I think they will never have any cause to regret. Very truly yours,

GEO. G. BUCKLAND,
Stockton, Cal.

WOODWARD'S GARDENS embraces an Aquarium, Museum, Art Gallery, Conservatories, Tropical Houses, Menagerie, Seal Ponds and Skating Rink.

Thursday Noon our last forms go to press. Communications should be received a week in advance and advertisements as early in the week as possible.

DEWEY & CO.

American & Foreign Patent Agents

OFFICE, 224 SANSOME STREET, S. F.

PATENTS obtained promptly; Caveats filed expeditiously; Patent reissues taken ont; Assignments made and recorded in legal form; Copies of Patents and Assignments procured; Examinations of Patents made here and at Washington; Examinations made of Assignments recorded in Washington; Examinations ordered and reported by Telegraph; Rejected cases taken up and Patents obtained; Interferences Prosecuted; Opinions rendered regarding the validity of Patents and Assignments; every legitimate branch of Patent Agency Business promptly and thoroughly conducted.

Our intimate knowledge of the various inventions of this coast, and long practice in patent business, enable us to abundantly satisfy our patrons; and our success and business are constantly increasing.

The shrewdest and most experienced Inventors are found among our most steadfast friends and patrons, who fully appreciate our advantages in bringing valuable inventions to the notice of the public through the columns of our widely circulated, first-class journals—thereby facilitating their introduction, sale and popularity.

Foreign Patents.

In addition to American Patents, we secures with the assistance of co-operative agents, claims in all foreign countries which grant Patents, including Great Britain, France, Belgium, Prussia, Austria, Victoria, Peru, Russia, Spain, British India, Saxony, British Columbia, Canada, Norway, Sweden, Mexico, Victoria, Brazil, Bavaria, Holland, Denmark, Italy, Portugal, Cuba, Roman States, Wurtemberg, New Zealand, New South Wales, Queensland, Tasmania, Brazil, New Grenada, Chile, Argentine Republic, AND EVERY COUNTRY IN THE WORLD where Patents are obtainable.

No models are required in European countries, but the drawings and specifications should be prepared with thoroughness, by sble persons who are familiar with the requirements and changes of foreign patent laws—agents who are reliable and permanently established.

Our schedule prices for obtaining foreign patents, in all cases, will always be as low, and in some instances lower, than those of any other responsible agency.

We *can and do* get foreign patents for inventors in the Pacific States from two to six months (according to the location of the country sooner than any other agents.

Home Counsel.

Our long experience in obtaining patents for Inventors on this Coast has familiarized us with the character of most of the inventions already patented; hence we are frequently able to save our patrons the cost of a fruitless application by pointing them to the same thing already covered by a patent. We are always free to advise applicants of any knowledge we have of previous applications which will interfere with their obtaining a patent.

We invite the acquaintance of all parties connected with inventions and patent right business, believing that the mutual conference of legitimate business and professional men is mutual gain. Parties in doubt in regard to their rights as assignees of patents, or purchasers of patented articles, can often receive advice of importance to them from a short call at our office.

Remittances of money, made by individual inventors to the Government, sometimes miscarry, and it has repeatedly happened that applicants have not only lost their money but their inventions also, from this cause and consequent delay. We hold ourselves responsible for all fees entrusted to our agency.

The principal portion of the patent business of this coast has been done, and is still being done, through our agency. We are familiar with, and have full records, of all former cases, and can more directly judge of the value and patentability of inventions discovered here than any other agents.

Situated so remote from the seat of government, delays are even more dangerous to the inventors of the Pacific Coast than to applicants in the Eastern States. Valuable patents may be lost by the extra time consumed in transmitting specifications from Eastern agencies back to this coast for the signature of the inventor.

Confidential.

We take great pains to preserve secrecy in all confidential matters, and applicants for patents can rest assured that their communications and business transactions will be held strictly confidential by us. Circulars free.

Engravings.

We have superior artists in our own office, and all facilities for producing fine and satisfactory illustrations of inventions and machinery, for newspaper, book, circular and other printed illustrations, and are always ready to assist patrons in bringing their valuable discoveries into practical and profitable use.

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United States and Foreign Patent Agents, publishers Mining and Scientific Press and the Pacific Rural Press, 224 Sansome St., S. F.

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Mining Engineer and Metallurgist.

Roasting of Gold and Silver Ores, and the Extraction of their Respective Metals without Quick silver, 1870.

This rare book on the treatment of gold and silver ores without quicksilver, is liberally illustrated and crammed full of facts. It gives short and concise descriptions of various processes and apparatus employed in this country and in Europe, and explains the why and wherefore.

It contains 142 pages, embracing illustrations of furnaces, implements and working apparatus.

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Concentration of Ores (of all kinds), including the Chlorination Process for Gold-bearing Sulphurets, Arseniurets, and Gold and Silver Ores generally, with 120 Lithographic Diagrams. 1867.

This work is unequaled by any other published, embracing the subjects treated. Its authority is highly esteemed and regarded by its readers; containing, as it does, much essential information to the Miner, Mill man, Metallurgist, and other professional workers in ores and minerals, which cannot be found elsewhere in print. It also abounds throughout with facts and instructions rendered valuable by being clearly rendered together and in simple order. It contains 120 diagrams, illustrating machinery, etc., which alone are of the greatest value. PRICE REDUCED TO $5.

Nevada and California Processes of Silver and Gold Extraction, for general use, and especially for the Mining Public of California and Nevada, with full explanations and directions for all metallurgical operations connected with silver and gold from a preliminary examination of the ore to the final casting of the ingot. Also, a description of the general metallurgy of silver ores. 1864.

As its title indicates, this work gives a wide range of information, applicable to all vein miners and workers in precious metals, affording hints and assistance of exceeding value to both the moderately informed and the most expert operator.

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BY OTHER AUTHORS.

The Quartz Operator's Hand-Book; by P. M. Randall. 1871. Revised and Enlarged Edition. Cloth bound, 175 pages. Price, $2.

Sulphurets: What They Are, How Concentrated, How Assayed, and How Worked; with a Chapter on the Blow-Pipe Assay of Minerals. By Wm. M. Barstow, M.D.; 1867; cloth bound, 114 pages. Printed and sold by Dewey & Co. Price, $1; postage free. The best written work, and most complete work on the subject treated.

ANY OTHER BOOKS DESIRED will be furnished at the most reasonable rates by Dewey & Co., Mining and Scientific Press Office, S. F.

The Large Circulation of the Mining and Scientific Press extends throughout the mining districts of California, Nevada, Utah, Colorado, Arizona, Idaho, Montana, British Columbia and to other parts of North and South America. Established in 1860, it has long been the leading Mining Journal of the Continent. Its varied and reliable contents giving it a character popular with both its reading and advertising patrons.

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G. W. McGrew—Santa Clara county.
Chas. T. Bell—California, Oregon and W. T.
D. J. James—Australian Colonies.

The Scientific Press.—This valuable journal entered upon the seventeenth year of its publication on the 4th of July. The steady advance in character, that every reader has noticed in the paper, renders it unnecessary to make any splurge of improvement, and the publishers simply content themselves with the announcement that they will continue to make their paper as interesting as possible. That it is interesting to a large class of readers, the wide circulation and extensive influence of the Press, is sufficient evidence.—*Placer Argus.*

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1776. 1875.

PROCLAMATION.

July 4th, 1875.

Headquarters Grand Marshal, No. 127 Montgomery street, San Francisco, California, June 17th, 1875.

FELLOW CITIZENS: The near approach of the Ninety-ninth Anniversary of the Declaration of American Independence is the signal to invoke good citizens to aid in perfecting the arrangements for a fitting celebration of the honored day.

Having been distinguished in the appointment of Grand Marshal by the unanimous choice of the Committee of Arrangements, I desire to extend to all military organizations, civic bodies, societies, and to all classes of citizens willing to organize for the purpose, a warm and hearty invitation to join in the memorial honors of the day.

Without partizan or sectional bias, looking only to the glorious national memories of the past, and to the prosperous future stretching far before, let us, dwellers by the Western sea send back a loyal greeting to our fellow-citizens nearer the birthplace of National Freedom.

The first century of American freedom draws to its glorious close. National trials and struggles for existence have not shattered the noble fabric of Republican self-government—cemented as has been by the blood of our Revolutionary forefathers. Looking backward to the early vicissitudes of our national existence, the American citizen sees in the high-souled patriotism of the Revolution the grandest model of duty and self-devotion. Let us fittingly honor the day, the men, the deed. The Independence of America, its proclamation gave hope to suffering millions; its achievement has given happiness to a great nation in wealth and numbers far surpassing the most sanguine hopes of the manly heroes who fought for posterity, who died that we might be free. In peaceful enjoyment of the freedom so dearly purchased, let us be a grateful body of fellow citizens forget any dividing line in the proud boast that we are Americans.

Special invitations will be extended to all accessible associations, and it is enjoined upon all classes of our citizens to organize under chosen officers and receive a proper place in line.

Announcement is made of the appointment of Major R. H. Savage as Chief Aid to the Grand Marshal.

Committees on Finance will be duly announced, and in their visits to our fellow-citizens, the generous response peculiar to California is invoked for the necessary support of such a celebration as will do our loyalty credit.

JOHN McCOMB, Grand Marshal.

UNIVERSITY of CALIFORNIA,

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Tuition free. Circulars sent on request.

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Mining and Other Companies.

Bandereta Mill and Mining Company— Location of principal place of business, San Francisco, California. Location of works, Coniterville Mining District, Mariposa County, California.

Notice is hereby given, that at a meeting of the Board of Directors, held on the 17th day of June, 1875, an assessment, No. 1, of twenty-five (25) cents per share was levied upon the capital stock of the corporation, payable immediately, in United States gold coin, to the Secretary, at the office of the company.

Any stock upon which this assessment shall remain unpaid on the 17th day of July, 1875, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Monday, the 2d day of August, 1875, to pay the delinquent assessment, together with costs of advertising and expenses of sale.

J. W. TRIPP, Secretary.

Office, room 16, No. 408 California street, San Francisco, California.

Electric Mining Company—Principal place of business, San Francisco, State of California. Location of works, Lincoln Mining District, Butte County, State of California.

Notice is hereby given, that at a regular meeting of the Board of Directors, held on the 22d day of June, 1875, an assessment of Five cents per share was levied upon the capital stock of the corporation, payable immediately, in United States gold coin, to the Secretary, at the office of the company, in San Francisco, Cal.

Any stock upon which this assessment shall remain unpaid on the 26th day of July, 1875, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Monday, the 16th day of August, 1875, to pay the delinquent assessment, together with costs of advertising and expenses of sale.

A. B. PAUL, Secretary.

Office, No. 318 California street, San Francisco, California. Room No. 13.

Morning Star Gold and Silver Mining Company. Location of principal place of business, San Francisco, California. Location of works, Great Mogul District, Alpine County, State of California.

Notice is hereby given, that at a meeting of the Board of Directors, held on the 21st day of June, 1875, an assessment, No. 25, of one dollar (1.00) per share was levied upon the capital stock of the corporation, payable immediately, in United States gold coin, to the Secretary, at the office of the company, room 1, No. 402 Montgomery street, San Francisco, California.

Any stock upon which this assessment shall remain unpaid on the 24th day of July, A. D., 1875, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Saturday, the 14th day of August, 1875, to pay the delinquent assessment, together with costs of advertising and expenses of sale. By order of the Board of Directors.

O. H. BOGART, Secretary.

Office, room 1, No. 402 Montgomery street, San Francisco, California.

Orleans Mining Company—Location of Principal place of business, San Francisco, California. Location of works, Grass Valley Mining District, Grass Valley, Nevada County, California.

Notice is hereby given, that at a meeting of the Board of Trustees of said company, held on the 31st day of May, 1875, an assessment, No. 5, of two dollars per share was levied upon the capital stock of said company, payable immediately, in gold coin of the United States of America, to the Secretary, at the office of the company, room 8, No. 315 California street, San Francisco, California.

Any stock upon which said assessment shall remain unpaid on the 6th day of July, 1875, will be advertised on that day as delinquent, and unless payment shall be made before, will be sold on the 28th day of July, 1875, to pay the delinquent assessment, together with costs of advertising and expenses of sale.

GEO. P. THURSTON, Secretary.

Office—Room 8, No. 315 California street, San Francisco, California.

Iron and Machine Works.

San Francisco Boiler Works,

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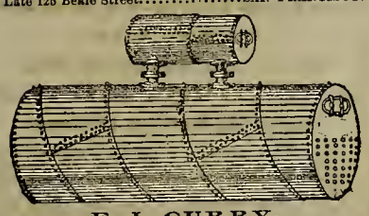
Late 125 Beale Street.....SAN FRANCISCO.



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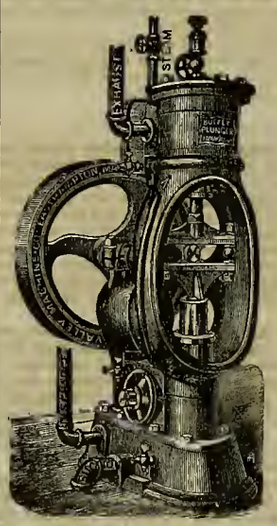

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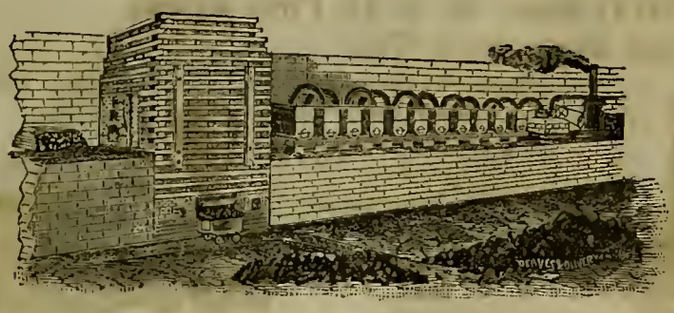

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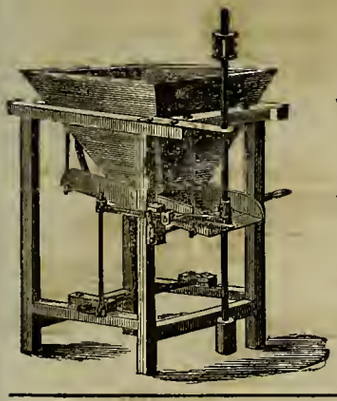

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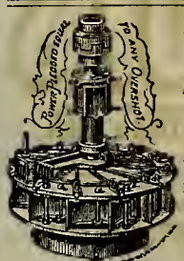

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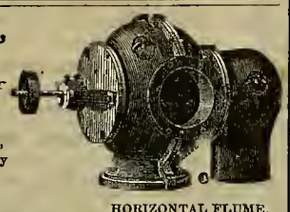

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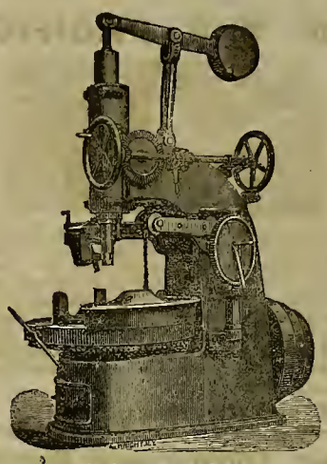

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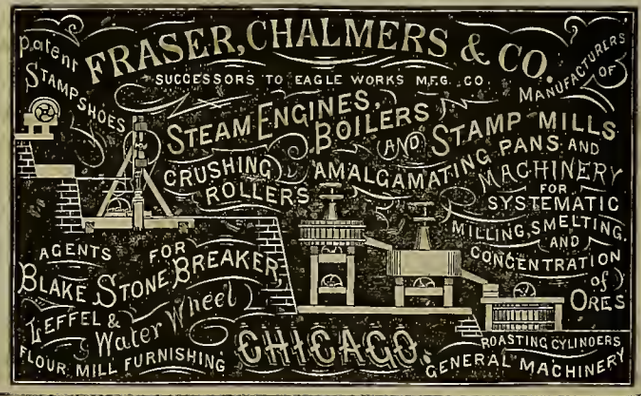
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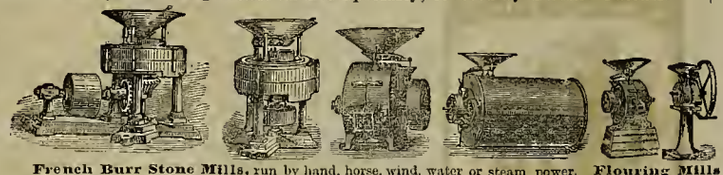

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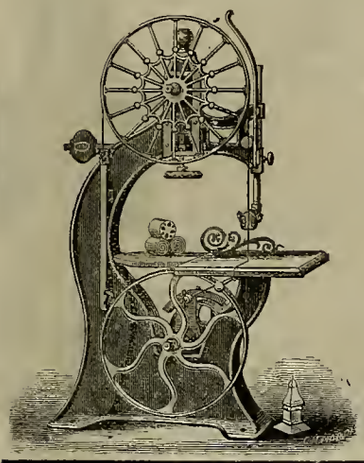

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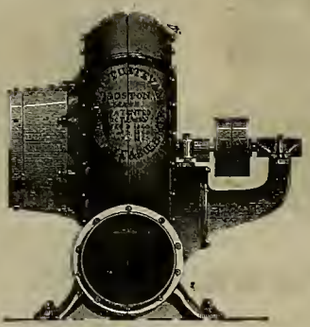

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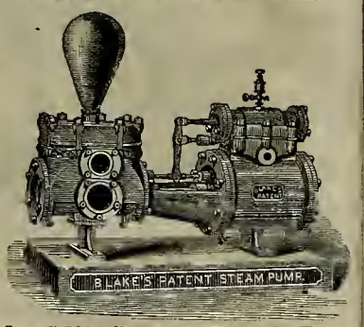

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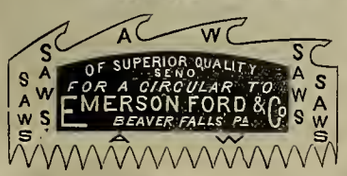

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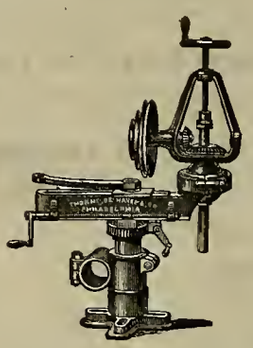

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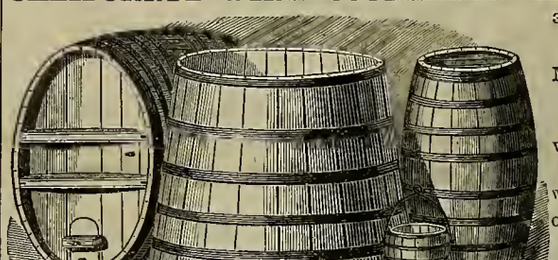

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SAN FRANCISCO, SATURDAY, JULY 10, 1875.

VOLUME XXXI Number 2.

Tybo and Reveille Districts.

We had the pleasore this week of receiving a visit from Mr. J. D. Power, of Tybo, Nevada, an old correspondent of the Press. He representa mining affairs as very flonrishing in both Tybn and Roveille districts, Nevada, and gives us some items of interest concerning both placos. At Tybo, he says there are at least 50,000 tone of ore in sight in the Two G mine alone. This is part of the Tyho Consolidated mining company's property, which consists of the Two G, Hnnky-dora, Casket and Lafayette mines, or 3,600 feet in all. It was originally intended to dispose of this property in London, but the owners changed their minds and placed it in San Francisco. The owners are J. B. McGee, J. W. English and Arthnr K. Hawkins.

Tho Two G is the best developed of the locations, bnt tha Casket has an 88-ft shaft in the vein, the Hnnkey-dora an 80 ft shaft, and the Lafayette a 75-ft shaft in ore. Work is being continued on all the mines and averything indicates permanence in tha ledges.

At present there are thirty-five men at work on the Two G. The first tunnel struck a magnificent body of ore. At No. 2 tunnel, 595 feet from the surface, thay have a vein eight fact wide, of ore going from $50 to $450 per ton. On tunnel No. 1, work has ceased at prasaot, everything waiting for the mill and furnace. Thore are sixty men now at work putting up the mill, which is to be a 20-stamp wet crusher. Some 10,000 shares of the stock in this company have been sold for $12 per share. The mines are good and the whole property, Mr. Power thinks, is one of the finest in Eastern Nevada. James Hadson is foreman of the Tybo Consolidated company.

In Reveille district, twenty-five miles southeast of Tybo, there are thirty-two men at work on the Gila mine. The dry-crushing 10-stamp mill belonging to this mine is ten miles from the mine, at the base of tne Diamond raage of mountains. The ore is packed two miles and a half and hauled the rest of the way to the mill. The developments on the Gila consist of a tunnel run 450 feet east from the opening. To test where the ledge went, a winze was sunk seventy feet from the entrance of the tunnel, which winze run down fifty feet, thirty-five feet of the distance ia ore. Forty feet from thatia another winze sunk in a "ohimney." Twenty-five feet from the top of the winze, following the chimney down, the ledge opened out to seven feet. From that depth a drift was started south on the ledge, on a continuous body of ore the whole way. This widened out to eight feet and closed in again to two feet. The drift was continued on for 200 feet with a uniform body of ore, occupying four feet. The pulp at the mill runs from $375 to $390 per ton, and when Mr. Power left Reveille, two weeks since, the ledge was four feet wide, continuing south, drifting at an angle of from 45° to 50° N. E. In the onteide tunnel after cutting the ledge at a depth of ninety-five feet they drifted north a little, following ore for some time. They left the ore to the north and turned south prospecting. Five feet from the cut of the tunnel they struck a body of ore four feet wide which has continued, with intermissions, in segregated bunches, for thirty feet. The foot and hanging walls are perfect all the time. At the south end of the drift there was a solid body of ore five feet wide with good walls, drifting to the south at an augle of 45° to 50°, indicating that it was going down the same as a chimney of ore would, suddenly. Thirty feet from the entrance of the tunnel a winze was begun on the vein. This winze is down twenty-two feet, with a four foot ledge at bottom. The ore assays from $390 to $425 per ton, and there are about 250 tone on the dump. The mill is running day and night, the last shipment of bullion being $16,525.

The West Side is another mine in Reveille district, which ie a promising one. It is located, as the name indicates, on the west side of the mountain, overlooking the valley. This property was discovered about two months ago. It consists of 1,500 feet, and there are 400 feet of vein unoovered, on the surface the ledge being traceable some 200 feet. There are four small shafts sunk, one ten, one fifteen, ona eight and one fourteen feat deep, on a vein five feet wide. The ora is very similiar to that of the Gila, and ia easily worked. There are twenty-five men at work on the mine and mill. The mill has five stamps, and is two and a half milas from the Gila mill. The water supply is perhaps better than that of the Gila, though both hava an abundance from monntain springs. This property is worked by A. J. Mason, superintendent, and is incorporated in this city. It was incorporated with a capital of 10,000 shares, and 20,000 shares were sold in a few hours for $1.50 per share. They have now ample funds to go ahead with, and no danger of assessments in the future.

All of thasa properties are owned principally by Arthur K. Hawkins, J. B. McGea and J. W. English. Tha former is President of the West Side, and Mr. Englieh is President of the Gila. All the developments on these properties and tho purchasa price were paid by these gentleman and their associates. The expenses of purchase and development of the Tybo Consolidated property up to the first of December last, were $400,000. Everything is first-class on the property. Water was brought two and a half miles in a four inch pipe, laid in a ditch two feet deep, and covered in as a protection against frost or injury. It is conveyed to the different works in the same sized pipe.

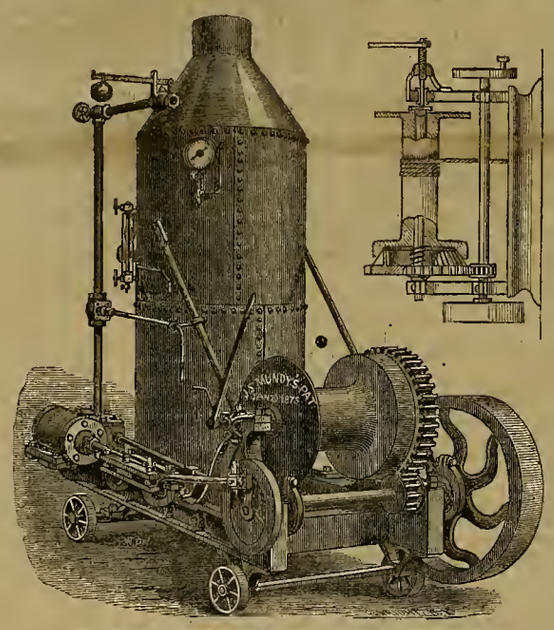
M. D. Howell is superinteadent of the Tybo Conoolidated property. He was formerly secretary of the Richmond Consolidated miuing company at Eureka, and is a man of large mining experience. He is an old California mill man, and practical in every sense of the word. There is a great abundance of wood already at the mill and furnace. The cost of the Tyho property and its development will show the public the promoters require nothing beyond its value, when placed on the market. The mill will put through forty tons of ore in twenty-four houre, and the furnace will run through twenty-five tons a day. The furnace is an ordinary cupola, sixty-five feet in hight.

The American rifle team are having honors and attentions of all kinds heaped upon them by the Irish people. They paid a visit to Belfast on Tnesday, last were received by themayor, cheered by the moh, diaed by the city government, etc. They will be invited to shoot a match against a picked team of English, Scotch and Irish riflemen.

The U. S. steamer *Narragansett*, which has been for the last two years engaged in snrveying the Gulf of California, arrived at this port last Sunday.

Portable Hoisting Engine.

The aocompanying engraving represents Mundy's patent friction hoisting engine, a machine patented this year. The engine is a plain side valve with straight connections and no rocker shaft movement. Tho boiler is well braced on the frame of the engine and the lugs supporting it are alotted so as to admit nf a free expansion of the hoiler without any strain on the frame of the engina. The machines ara constructed of the best materials and the boilers are of extra large size. The cylinder and steam chest have Mundy's improved brass screw glands, which keep tha rods in line and prevent friction and cutting. The engine exhausts by means of a three way cock into or out of tha stack. The pump is fastened on the bed and is worked by an eccentric of the main shaft, thereby avoiding the strain on the cross head, eo oommon with partiee running their pumps fastened to their cylinders and operated from their cross heads.



MUNDY'S IMPROVED HOISTING ENGINE.

The improved patent friction drum is represented as a great improvement, something long needed among parties who use engines for hoisting and pile driving purpoees. The drum runs looee on the drnm shaft, the driving gear being keyed solid on the drum shaft, and wood dovetailed on the side of the gear and turned off to receive the flange of the drum. The drom is forced on the wood by means of a steel screw and pin, thereby forming a perfect friction which will hoist from one to sixty tons, according to the size of the engine. It is stated that the N. Y. Department of Docks have raised a weight of 16,000 pounds easily with a doublo 6x12 engine. The friction also forms a perfect brake in lowering. There is a heavy fly wheel on each engine for running a belt for pumping. On all heavy mining engines the frames are extended out and extra large drums put in. The patentee of this engine is J. S. Mundy, No. 7 Railroad avenue, Newark, N. J.

We learn that the boring oompany's well at San Fernando is now down 179 feet, and is ejecting at tho rate of 4,000 barrels of water a day. A great deal of gas is escaping from the orifice, and the drill is in soft rock.

A great bore is that San Fernando tunnel getting to be. It already extends 250 feet into the eolid rock on the south side of ths mountain.

Notices of Recent Patents.

Among the patents recently ohtained through Dewey & Co.'s Scientific Press American and Foreign Patent Agency, the following ars worthy of mention:

Guard for Wire Ropes in Pulleys.—A. S. Hallidie, San Francisco, Cal. This invention is an improved gnard or keeper for preventing wire ropes and other ropes which are supported in pulleys, from leaving the grooves in which they bear. Where a great length of rope, such as is necessary in the construction of wire rope tramways, and in the propulsion of vehicles along a track, is snpported at intervals on pulleys, some guard or fander is required to prevent the rope from jumping out of the pulley groove. Heretofore twn pulleye have been used for this purpose, one of which supported the rope while the other was placed directly above it, so that the grooves of the pulleys would be opposite each other. This invention is a substituta for this upper pulley. The journal upon which the ropa-supporting pulley rotatas, is secured to tha undar side of tha snpporting beam and projects out far enough beyond the end of tha beam to permit tho pulley to rotate in a vertical plane at right anglos to the end of tho beam. To the upper side of the beam is secured a block, which is so constructed that it will overhang the upper edge of the pulley. That portion of the block whioh is next to the inside face of the pulley extenda down far enough helow the edge of the pulley to prevent the rope from jamping out of the groove, while the portion whioh extends above and across the groove or edge of the pulley will keep the rope down to its place. The space between the outside end of the block and edge of the pulley will serve to admit the rope to the groove and permit the paseage of the saddle shank, and being just space enough to admit the rope into the groove, there will be no danger of the rope getting to the outside of ths pulley.

Dish Rack Attachment for Stoves.—Frank Enos, Mineral City, Nev. This is a rack attachment for stoves and ranges for the purpose of supporting dishes of cooked victuals in cloes proximity to the stove in order to keep them warm. The rack consists of a metal rim or band which is made somewhat larger than the top of the stove and of the same shape, so as to form a square or other shaped frame. One side of this frame rests on the top of the stove, passing across just in front of the pipe or draft hole in the rear of the stove holes. This side extends beyond the sides of the stove and the rim extends entirely around the stove top an inch or two from its edge. The rear side of the frame is attached to the atove by hooks, and the front side is supported by legs. Various devices could he employed for retaining the rack or rim in place opposite the edgea of the atove top, but the main feature of the invention is the rim supported as deecribed, so that dishes, pots, or other culinary vessels can be removed from the stove holes and placed with one edge on the rim while the other edge rests on the edge of the stove top; or so that they will rest entirely upon the rim, for the purpose of keeping the contents of the dishes or vessels warm. This rim or rack will not interfere with ordinary cooking and will be extremely convenient.

A patent for the Canon del Aqua land grant, confirmed to Jose Scrafin Ramierz, and located in Monterey county, New Mexico, about fifty miles from Santa Fe, has been signed by the Commissioner. The grant contains 3,501 acres.

The Amador *Dispatch* says: The machinery to be ueed in the fruit drying establishment of the Ginnochio Bros., in this place, has arrived, and everything will be in "ship-shape" by the time the frnit is ready to he gathered.

Those intersated assert that the new railroad from Colusa to Woodland will be oompleted in time to carry off this season's grain crop.

CORRESPONDENCE.

Colusa County Quicksilver Mines.

The Buckeye.

This mine, located May 22d, 1870, is situated in the western edge of Colusa county, about thirty-five miles west of Colusa, in the Sulphur Creek mountains. It is yet in the hands of the original discoverers, working in all forty to forty-five men, under the superintendency of H. Caswell.

A young men herding sheep accidentelly discovered some very rich ore, thrown out by badgers end gophers, and was lucky in finding the cropping of good mineral. But owing to want of means to open up the claim they began on a small scale, using only a quicksilver tank for a retort; which giving very satisfactory results, they soon had twelve flask retorts running. With them took out $700 in twenty-three days; this part of the work being mostly done by the wife and children of one of the firm.

The proceeds of these, soon built a larger retort, end another, and these grew into a very substantial Knox & Osborn furnace, that it now running right along and since the first of last November has not stopped or cooled off. This is a rare example of what can be done in quicksilver mines

Without Assessments

Being levied or stock sold. The mine is developed by two tunnels, the longer one near 1,000 feet long, striking the mine at a great depth end landing the ore at the furnace, where eight or ten men carefully assort and break it, ready for the furnace. There seems to be an order and plan observed in the whole, and two objects constantly in view, convenience and economy. Their store, bourding house, cottages, shops end barn, would be a good start for an incorporated city, if over in Nevada, and to make such a showing of improvement on a mining property has generally cost large and unjustified assessments. There are many investing in non-paying silver and gold mines, that would do well to look at a better thing nearer home. Monthly yield, fifty to ninety tanks of quicksilver.

Adjoining the Buckeye land and works are

Several Other Claims

Located, and various amounts of prospect works, but at present not doing much work. Sulphur Creek, the name of the postoffice and village, is favored with three saloons and two stores, and a district school of about twenty pupils; is connected with Colusa by an excellent wagon road; tri-weekly stage; has abundance of wood end water. Three miles up the Sulphur creek brings you to the

Elgin Quicksilver Mining Company,

Belonging to Mrs. Wilbur, (of Wilbur Springs), Mr. Smith, and Mr. Chapin; now under the superintendency of Mr. Smith, who is working seven men and running some of the best ore in a small retort. They are getting out some high grade ore. The

Famous Burning Spring

Is situated near by and is truly a marvel and worthy of a lengthy mention, but I am unable to give it here.

Near the bank of the Sulphur creek with its hot water, is an excavation against the bank, as if to open a spring, and here the gas escaping from the slate rock and dirt blazes just as nice as a good house fire. The flickering noise of the flame can be heard for rods around With my hat trim I was able to carry water enough to extinguish the flame for a short time. Dr. Wilhur had commenced his plans and preparations to carry the gas to his dwelling for lighting and heating purposes, but the dwelling was burned, and the doctor was soon called away by death; since his death nothing has been attempted here, as his widow has removed three miles below to the hot sulphur springs, amply fitted up for invalids and tourists.

These springs seem quite noted, especially for rheumatic patients, and cure many by their waters and the hot mud baths. They are spoken highly of for all complaints except consumption.

Near the Elgin mine is what is called

The Agate Mine,

Owned by Dr. Clarke and Dr. Bartlette, who have expended much labor to grade a road, or path rather, up the mountain sides to reach it, and are now getting out a variety of stones of the agate and precious opal family that will ere long produce a sensation among our specimen seekers and our lapidaries. At present they are very quietly developing and testing the qualities and varieties of their specimens.

The Abbot Quicksilver Mine

Is situated about two miles west of the Buckeye mine, and just over the county line into Lake county; located September, 1866, 3,200 feet, now held under United States patent. This mine is prospected and developed by half-a-dozen tunnels, the longest, 488 feet; greatest depth of work, 144 feet; one shaft seventy-five feet to water and all the way in ore. The ore, principally of the sulphuret, is now being successfully reduced by the Knox & Osborn, at the rats of about seven tons per day, which they hope to increase by making some valuable improvements in the firing mechanism of furnaces. The company's principal office is at Colusa, in charge of Jackson Hart. The mining operations and reductions are under the charge of Mr. Aldershey, a practical mining engineer of years experience, who can do the planning, surveying and drafting, and to the smallest particular the manual execution of any part of the operations,—one who believes in the doctrine that the true economy of mining is to put the labor in the right place by making all proper calculations ahead of labor and then do substantial work.

The present prospect of the Abbot is very flattering. To the east of the Abbot and on the supposed extension of the same lead, is the

Excelsior Mine,

Owned by the Disturnell brothers. Their mine now shows an ore face of fifty feet, in which are some very rich strata.

They imitated the example of the Buckeye boys in using the small quicksilver flasks for retorts, and then reduced eighteen flasks of quicksilver. They now have the old Buckeye cast iron retort hired, and are turning out a nice little yield of expense money instead of mortgaging their mine for a working capital. They have out at the mine about six tons of ore, that is estimated at 12½ per cent., and thousands of tons of the same in the hill. Their claim in the hands of capital would soon send a stream of metal into the market, and coin into the dividend funds of the company.

The surrounding country is mountainous, but well suited for sheep, and some for cattle herding; near by is Bear valley, with excellent farms and ample supplies at reasonable rates.

A rich discovery of cinnabar ore was lately made by Mr. Rathborn and others, about two miles from Mr. Ingraham's ranch, west of Bear valley, in Colusa county. The quality is right, it is only a question of quantity, and of this big hopes are indulged. C.

Sulphur Creek, June 19th, 1875.

The Historic Old Quartz Mill.

The history of this mill, belonging to the Mariposa estate, says the Mariposa *Gazette*, is full of interest. It has successively passed through the hands of Commodore Stockton, John Charles Fremont, Fred. Law Olmstead, and others of but very little less note. The amount of gold that has been taken from the vein on which it is located, denominated the "Mariposa Mother vein," runs up into millions. In all the history of mining operations, no parallel instance can be cited where there has been such woeful mismanagement and downright stealing as in this iden ical mill. It was worked in days when but little was known regarding quartz mining, and when labor was high. The men who had it in charge exercised no vigilance, and the consequence was that much useless labor was performed, and much purloining done. The records containing its history are here, and many of our old citizens are familiar with all that took place. They all express the opinion that if properly worked and managed no mine on this coast would pay better, if as well. There stands the huge old edifice, a mournful but eloquent relic of the past, its timbers in a good state of preservation, not entirely denuded of its machinery, and there lies exposed to view the broad vein of quartz, richly impregnated with gold, tempting and inviting its proprietors to disengage it from the rock that holds it fast. It is one of the marvels of the times that, in this gold-seeking age, such a mine of wealth, ready to be blasted and thrown into the mill, should be left undisturbed while its owners expend hundreds of thousands of dollars in uncertain enterprises to reach quartz veins which when struck are no richer, if as rich, as this "Mother vein" has proven itself to be. It has been satisfactorily established by surveyors that this is a continuation of the celebrated Hayward or Chamberlain vein, in Amador county, from which so many millions of dollars have been taken. It has not, as yet, been tested to its full capacity, because of the bungling manner in which it has been worked. If the Mariposa company will not work it themselves, they ought to lease it to those who would. Let them make public the fact that it will be let on reasonable terms, and they will not have it idle on their hands for any length of time.

The grading of the Ruby Hill and Eureka railroad has been completed to the Lawton dump on the Eureka Consolidated line. The surveyors are now engaged running track centers, and will soon finish that part of the work. Iron and ties are arriving daily and being laid. A side track is being put in the rear of the furnaces, and the entire road, the *Sentinel* says, will in a few weeks be in running order.

The White Pine *News* mentions the fact that several parties from San Francisco, owning old mineral locations in that district, are stirring themselves in the matter of patenting their mines. The *News* says they are just beginning to realize that their mines are worth looking after, and to save them from being jumped will patent them. The prospects of Hamilton are improving.

Dryer for Old Varnish.—Boil a small quantity with sugar of lead, and add it to the rest; say one ounce of sugar of lead to one gallon of varnish; or, take turpentine. Do not make it dry too quickly; such varnish will crack readily, and will not stand as well as a more slowly drying varnish.

Eastern Oregon Mines.

Within the past few days we have been talking with some old mining prospectors, and they tell us what we have always thought was the fact in relation to this portion of Oregon. They say this is the best field for profitable prospecting for quartz end other minerals that can be found on the Pacific coast; that they can find plenty of good ledges and mines, but they have not the capital to open them, so it is no use for them to locate claims only as far as they are able to do the work on them to hold them. One of them said to us, "if some good old California prospectors would only come in here and take up some ledges he could show them, and let their backers in San Francisco know the facts in relation to this country, there would be plenty of capital here in a short time to develop mines as fast as they were discovered, and then we would have glorious and prosperous times here." We agree with our friend, and believe as he does, that if the capitalists of San Francisco or the East were convinced of the fact that our mines are as rich as we think and know them to be, it would be but a short time until we would have plenty of capital here to open and develop the hidden wealth of our mountains.

There is, as our prospecting friends say, a vast extent of country in Baker and Grant counties where a pick has never yet been struck, and a great portion that has been prospected has only been skimmed over, and no thorough search has ever been made for ledges that have not made their appearance distinct and plain on the surface of the ground, and not more than one out of twenty, thus discovered, has been went down upon deep enough to enable a good judge to tell whether there was anything there or not that would pay to work. As a general thing the men who discover these ledges have not the means to prospect them, and are letting them lay, hoping something may turn up whereby they may be able to realize something for their discovery.

We want capital that will back the reliable prospector—we want prospectors in whom the capitalists have confidence, and, if they are not among us now, there is room here for them, and when they do come, and make their reports to capitalists who have faith in their discoveries, then our county will indeed, we think, show its vast richness. Our miners and prospectors should be careful and not overrate the extent and richness of our ledges or mines. Do not try to mislead strangers, the truth is good enough. Ask them to look and test the ledges and mines for themselves, and when they find that our ledges and mines will compare favorably with any on the Pacific coast, they will believe it, for the old saying is "that seeing is convincing," and persons must believe in what they see for themselves.—*Bedrock Democrat.*

A Mica Bonanza.

The Salt Lake *Tribune* thus speaks of a very rich mine of mica just discovered close by that city: "The mica mines are situated in North Mill Creek canon, about five miles from the line of the Utah Central railroad. The belt is about 1,000 feet in width and 1,000 feet in length, lying in a granite foundation, through which the mica is distributed in large quantities.

"Sheets have been obtained 3x4 inches, and abundance of the article can be obtained of that size. Development will doubtless open beds from which sheets of any size can be taken. A fine graded road runs from the railroad to the mines. The stream carries water sufficient to run forty stamps. Wood is to be found in inexhaustible quantities within one or two miles from the mines. The fortunate owners are Jerome Cross, Doc. Smith, and the Gray boys.

"The uses to which mica are put are almost numberless, a few of which we will mention; 1st. In sheets, for headlights in vessels, fronts in stoves, and in other places where it is exposed to severe heat or other agencies that would destroy glass. 2d. It is pulverized, and used largely in the manufacture of bronze, paints, and coatings for reflecting surfaces, such as locomotive headlights, reflectors and mirrors. Its value is, in sheets of various shapes and sizes, from 2x4, 3x3, etc., up to 10x12, and 12x15, from three dollars to nine dollars and a half per pound. In small masses, suitable for pulverizing, from seventy-five cents to two dollars and a half per pound, according to the quality.

"The amount in sight was almost incredible. Thousands of tons are in view, and the boys informed our reporter that they can easily ship a car load per week with a working force of four men. A car load (ten tons) of the lowest priced sheets would bring the neat little stake of $60,000. Taking it all in all, we unhesitatingly pronounce it one of the most valuable discoveries, both in a scientific and pecuniary point of view, yet made in the Territory. Analyses of specimens sent to San Francisco and New York prove this to be the genuine mica of commerce."

A Steam Magnet.—M. Donato Tommasi states that if a current of steam at a pressure of five to six atmospheres is passed through a copper tube of 0.08 to 0.12 inch in diameter, and coiled spirally around an iron cylinder, the latter is magnetized so effectually that an iron needle, placed at the distance of an inch or two from the steam magnet, is strongly attracted, and remains magnetic as long as the steam is allowed to pass through the copper tube.

Carrara Marble.

The working of the quarries of Carrara dates back to a very remote period. Under the Roman sway, these marbles were known and highly appreciated, and their reputation was such that they soon displaced the Grecian marbles of Paros and Pentelicus. The great portion of the monuments of Rome, and especially the Trajan columns, were constructed with marble from Carrara.

At the present day, this same stone gives rise to an important trade, and the little town of Carrara possesses no less than 720 quarries, of which 450 are now in full work. The working of these different quarries furnished, ten years ago, 50,000 tons, representing a value of about $800,000. In 1873, 97,940 tons were quarried, the value of which reached the amount of $1,800,000.

The marbles included under the name of Carrara are of several kinds and different qualities. The principal quarries belonging to this town, and which bear the names of Ricceaglis, Colonnata, Pisstrone, and Muglia, produce the most celebrated marbles. They are classed thus:—Statuery marble of first quality, veined marble, Bordiglio marble, and clear white marble. All the famous sculptors of the Renaissance period employed the first quality of these marbles for their *chefs-d'œuvre.*

The veined marble, more especially used in churches, for altars, tombs, etc., is less esteemed. The clear white marble constitutes the commonest variety, and gives rise to the most extensive trade; it is furnished to modern sculptors and architects in considerable quantities. This, again, is divided into different qualities, bearing the names of the quarries whence it is extracted.

The town of Carrara, the most active center of this branch of industry, possesses on the river Carrione forty-two sawmills, and in the town itself, or its immediate vicinity, there are 115 establishments where the marble is cut into blocks, polished and sculptured. More than 4,000 workmen, without counting their wives and children, are employed in the different operations of quarrying or polishing.

The polished or worked marbles are sold in Italy; the greater portion, however, is exported to England, France, Germany, Russia, Holland, Belgium, and often even to India and Australia. The provinces of North America have for some years past imported considerable quantities Notwithstanding the distance and customs dues, the Carrara marbles have become quite the rage in America, and every month blocks are sent out cut, numbered, and arranged for large constructions.

The trade in all the Carrara marbles is in the hands of Italian firms. Some English and American merchants have started two very important establishments in the town, but the Italian houses are the most numerous and extensive.

There are several other small towns in the neighborhood of Carrara, in which fine quarries are found, and all of which do more or less business in the way of producing marble for export. The small town of Massa has during the last few years taken an important part in the marble trade; it possesses 127 quarries in full activity, supplying 16,000 tons.

Among the best known of the smaller towns, is Aithissima, which furnished all the marble employed by Michael Angelo in the immense works which were entrusted to him by Popes Julius II. and Leo X. This quarry is still worked, and yields very fine statuary marble. The quantity it exports is estimated at 20,000 tons.

Other beds of marble are met with at different places in Tuscany, at Pieta Santa, and in the Apaunines, but at no other spot does the working attain the importance and the celebrity enjoyed by the marble of Carrara.

Thorough Workmen.

Says an exchange: "There is no more honorable position in life than that of a good craftsman in a successful occupation. His horny hand is a more honorable badge of public service than the bejeweled digits of the dainty clerk or man milliner. His labor-begrimed face or greasy working dress are proofs of the exaltation of his rank among men. An honest, competent workman has peers, but no superiors. But to deserve all his honor he must be competent—skilled in the mysteries of his craft. And it is no use for people to say that their superior intelligence makes up for everything; for a man with the wisdom of a Solomon could not constitute himself a perfect artisan without the practical experience which makes a man such. Journeymen are turned out in multitudes day by day, who have hardly an idea of the first principles of their trades; and many young men, hardly yet of age, are found bold enough to profess a thorough knowledge of two or more handicrafts, any and all of which they really know little or nothing about. Ask employers from whence they have their most skilled laborers, and they will tell you that they come from those workshops where long apprenticeships served to turn out thorough workmen; where engineering is not learned in a year—shoemaking in a month—or printing in a few days. There are many reasons why this whole subject of mechanical training should be pressed upon our young men who expect to live by mechanical labor. The great enemy of the workingman is the crowd of bad workers who are admitted to his status without the proper experience for which he has paid years of effort.

SCIENTIFIC PROGRESS.

Action of Sunlight upon Precious Stones.

Dr. Schnanss has directed nttention to the fact that certain minsrals are quite sensitive to ths action of the light. To many this mey sssm qnite snrprising, slthongh soms casss of this kind hsvs long heen known to minerslogists. Strangely enongh, this propsrty sxtends to the very bard minsrals, and reaches its mexiмam in ths very hardsst of all minsrals, ths diamond. Accordiag to Dr. Flight, under csrtain circnmstances ths colored diamond is as sensitive to light as chloride of silvsr. The ancienta knew that certsiu colored precious stones gradually grew palsr in the snnlight, and thet this was very distinctly the case with tha hesntiful grass green chrysoprass. They said that, when worn for a long time sst in a ring or pin, it finnlly lost a grsater part of its hsantifal oolor; nnd that this could he recovsred hy wrapping it up in a cloth eoaksd in wine and keeping it in a celler. Ths latter is cvidently one of the numerous phentasies of that sge, hat ths former statemsnt is a fact. Even the mnch harder, traasparsnt, dnrk green emsrald is also influsnced by light in time, ee the nnthor found to hie sorrow in the cnss of an emerald ring, which he hed worn ssvsn years.

The diamond, however, exhibits the most intsreeting phenomsna uadsr this influence. If colnrsd diamonds are highly heatsd, the color disappeare more or less completely, and in most cases permansntly. Sometimes, the color is merely ohangsd hy ignition, and the originnl color may reedily he restored by the influence of the snn's light. A diemond merohant named Martin sxposed a diemond to a very high tempersture, in ordsr to destroy its hrownish color, bnt ths stone hecame of n permanent rose red. Coster treated another diamond in tha same wey, and that too, turnsd rose red; hnt tha moet remarkable pert was thet this color wes only permanent in the dark, and dieappserod in four or fivs minutes if expossd to the aan's light, the stone neqniring a weak hrown oolor. This change also took plaes in a room where the light was hy no means bright. Anothsr diemond, of a dirty yellow color, was ignited in a current of hydrogsn in a porcslain tnhe and allowed to cool there. The color disappsared, hnt not the luetre. If this epscimen were sxposed to diffused light for six or seven minutee, its original yellow color retnrned. The experimsnt was repented in this way, the stone heing hsnted in chlorine gas at as etrong a heet ee conld hs ohtained hy saturating the gas ussd with benzol vepor; it was ferther heated at a lowsr tempsrature in a meroury hath, the diemond heing wrappsd in platinum foil. Each time the color disappeered snd remeined ehsant in the dark, hat ae soon as the etone wss exposed for a few minntee to diffnsed daylight, it regained its yellow color.

Thsse phenomene ere thought hy Dr. Schneuss to he related to that of phosphoresoence. In eddition to the cases mentioned hy him, we would rscall the fact, usuelly stated in text bocks on mineralogy, that n variety of topez from Brezil, when heated, assnmee a pink or red hne resemhling that of the Balss ruby.

The Mechanical Force of Light.—It mey not he altogether premature to teka a anrvey of the poasihle applicatioaa of the new power which Mr. William Crookea haa shown to he derivable from light. Seeing that, hy meaaa of the sun'a direct reys, he hae heen ahle to canse the venes of his emall radiometer to revolve four timea in a aecond, it becomes evident thet, with lerger end improved eppliances, we may hope to ohtein motive power cheaply from a practioally inexhanstible aonrce, namely, the ann itself. The fact thet luminone undulationa are capahle of exerting a motive force, of a nature so grosa as that required to turn the vanes of a poised croas, will aleo render the comprehension of the chemical disturhances which are often effected hy light, and which are exemplified in the union of ohlorine with hydrogen when axposad to sualight, in the production of the photographio imege, etc., a matter of maoh lesa difficulty than it waa heretofore.

The discoverer of these extraordinary phenomena confessea that he himself is unahle to account for them hy any eatisfactory theory, and wishes to avoid proposing any until a auffioient numher of faota have heen aocumnlated. Tbe facts then will tell their own tale.—*English Mechanic.*

Variation in the Earth'a Temperature.—M. Wellman, after reducing the hourly obsservations made at Berne, Switzerland, for aeven yeara, and deducting therefrom the lawa of dinrnal change of temperature, hae investigeted the effect of cloudinese on the daily variation, especielly at night. He finda that the radiating power of the earth'a aurface is everywhere and at all times the same. The temperature in the morning ie, he atatee, five or aix degreee higher in cloudy weather than when the weather ia olear. Aleo, that the aimple atmoaphere of the earth eurrounds it like a proteoting layer of clouda, and that without thia the emrth would experience daily an enormous variation in temperature. Even the clear aky, or rather the moisture preaent aa an invisihle vapor, protects the earth with an effioienoy equal to about one-third of that exerted hy a layer of clouds, against too strong a daily change of temperature.

An Eccentric Star.

The most singular fact connected with the proper motions of tha sters is that one or two stars are flying through space with such enormous rapidity that the combined attraction of all the stars visihla with the telescope could nevsr stop them. This sssms to hs especially ths case with a smnll star, invisihls to the naked eye, dssignated in astronomical literatura ss "Groombridge, 1830," from the name of the astronomsr who first recorded ita position.

Tha rate of motion of this star is ahout seven secoads per year—the greatsst sver known. It was hencs conoluded that it must hs very nsar us, and a nnmher of astronomsrs have sought to dstermins its parallax, hat have found it to he only nhont a tenth of a second. Its apparent motion in a yeer heing seventy timss the distance from the earth to the snn in a year, or 18,000,000 of miles every day, and more than 200 miles every second. From what we know of ths distribution, massss, and numhsr of ths stars, it seems prohahls that the attraction of all the hodiss in ths univsrse can nsver stop this headlong spssd nor hring this slar into nny orbit, and thet consequently it will pass through onr univsres, and leave it entirely in its passage through infiaite spacs. If we had accurate observations of the star'a position 3,000 or 4,000 years ago, we could speak with more certainty of its dsstiuy. Ws may expect that our poetsrity of a few thousand yeare hence will, hy the aid of the observetione and tahlee we shall transmit to thsm, hs ahle to come to a dsfinite conclusion respecting the ngs and the strnotura of the universe.—*Harper's Magazine.*

A New Method of Preparino Plaster of Paris for Caete.—Not a very long time since some lucky individual struck upoa the happy thought that plaster of paris wonld hs improved by mixing it with a solntion of alum, end snch in rsality proved to he the case. This induced a Frenchmen nemed Landrin to study the aotion of the alnm in this case, and he arrivsd at the conclusion thet its principal *role* was to convert eny ceustic lime, of whioh thers is always more or lsss present, into a snlphate. Starting with thie idee, he then attempted to accomplish the aeme result hy the use of otbsr sulphatee, and in this he succesded. Nsxt he tried the effect of using just enongh dilute snlphuric acid to effect this convereion into sulphnte, and afterwards oelcining it. Finally, he ascsrtsined thet the quicksst and simplest way was to immerse the nnhurnt gypsum for fifteen minutss in water containing eight or ten psr cent. of sulphuric acid, and thea calcine it. Prepered in this way, it set slowly, hut made excellent oests, whioh were perfectly white, instead of the nsnal grayish tint. The latter ie dns to the destrnction of a small amount of organio mattsr hy the slight exoess of sulphuric acid.

Interesting Experiments.—At a lete soirse of the Royal Society of London, several very interssting and instructive experiments wers performed illustrative of ths new and remarkahle phenomena in relation to heated iron—one, the lengthening of a har of soft iron within a helix of wire hy heat; another showing the remarkahle and anomelous changes which take place in the heeting and cooling of iron wire. Thns, while the iron ia first heating there ia a sudden coatraction or cooling. Aad eo again, when the heat is cut off, the wire cools a little, and then suddenly reheata and glows, afterwarda quietly passing down to a hlaokness. Now, the notahle points of these jerks or changes ere thet the iron, in the firat instence, loeee ita megaetism; and in the last jerk or oecillation regaine it.

This was the same meeting at which the recent discoveriea of Mr. Crookes in relation to the impect of light were ahown, aad which have already heen desoribed in these columna. The meetiag wea one of unueual interest, hoth to those present and to the canse of progressive soience.

Coggia's Comet.—Secchi hea jnst puhliahed some of hia recent observations on Coggie'e comet. He oombinea the spectroscope and polariscope with hia telesoope; the spectroscope ahowed that there were two apectra, one continuona and the other consisting of lnminous hands, agreeing with those of oxide of carhon; while the polariscope ahowed thet the latter apectrum was original light, while the continuous spectrnm wae reflected light, alao showiag that the latter came from the direction of the aun; conaeqaently that the contiauoua apectrnm was reflected sunlight. He proved thua that this comet ehone not only with reflected snalight, but hy ita own light alao, thereby revealing the natnre of its original luminosity. This is an instance of the highest dagree of refinement as yet ohtained in modern aatronomical reseerch.

Parasites on Wasp Stings.—A oorrespondent of the *Scientific American* saya: "The other day while I wae dissecting a waep, I took out his eting and found upon it a paraeite. It was oval in shape. Its lega had heirs around the jointa and around the feet. Its head was small oompared with the hody. Its *antennæ*, two in number, consieted of two joints; from the end projected two haire aa long ae the other part of the antennæ. Ita color wae white. If among your renders there ia one who can inform me oonoerning this parasite, I would he very glad to hear from them."

The discovery of another small planet, No. 144, haa been made hy Perrotin of Marseilles,

MECHANICAL PROGRESS.

Locomotive Construction.

Qnits a lengthy discassion was held hy the lete Convention of Railway Master Mechsnics, held at Cooper Iastitnte in New York. A committes had bsen eppointed et the meeting a yssr ago to collect facts with regard to locomotive construction, wear, eto., snd rsport the same to ths next suhsequent mssting of ths association. Circalars wers sent out to the vnrious locomotive huilders and railroad snperintendents, eto., from whom nnmerous replies were rsceived, which wsre colleted for the use and informstion of ths convention. No rsplies hsd hesn received which point to any improvements in the construction of boilers tending to iacrensed economy in fuel. Ons of the committee had tested a device for increasing hsating surfaco hy inssrting a numher of osst iron hollow glohss sscnred hy a neck into the crown sheet. While no accurate expsriments have heen made, it ie evident thnt some saving hes been effectsd, nnd there hne heen no trouhls from leaky joints or nnd eettling in ths glohe necks. A similer device is in use on marine hoilers. No replies have hsen receivsd concarning the Wsston boiler; and whils soms tests have hsen in progrssf, no detsils have heen resived. Rsplies received from msmhsrs using the Jauriet fire-hox do not enahla the committes to draw nay accurate comparison hstwssn it and tha ordinary fire-hox with hrick arch.

The uss of hnlanced valves eppeers to he sxtending, hut no dafinite advencs is reportsd. The committea helieve that chsepnese of construction may he promotsd without inonring risk of brsaksgs and with good reenlts as to wear, hy using cest iron for links.

The committee have rsceived no informstion leading them to helisve that sny satisfeotory improvemsnt has hsen made in spark arresters.

Oue of the membsrs, on n receat visit to Englsnd, wes forcibly impressssd with ths fact that no trouhle is there found from the throwing of fire, and wae lsd to helieve that it is worth a cerefnl expsrimsnt to dscide whether the arrengsment of nozzle and steck there nsed would give good resnlts in this country.

The committee visited one road where a Fairlie donhle trnck engine, as modified hy William Mason, has hsen in use twelve months with exoellent results. It is hslieved to he too soon, however, to pronounce sny opinion on this pattsrn of engins, espscielly in view of the heevy strains thrown upon the hoiler. If a powerful engine is nseded, those of the consolidation pattern are helievsd to answsr evary purpose.

Air Brakes.

The committes, while admitting the advantages of ths Westinghouse hrake, helisve that the air hrake of the future must oombine thoss advanteges with a simpler and cheeper compresssing apparatns, but in what way thet can hs attained is a prohlem yet to he eolved.

Rsfsrencs is mado to the Hsndsrson hydraulic brake, recently tested on ths Weetchester and Philadelphia road, and to the McBride hydraulio hraks, which is similer in principle to Henderson'a, hut differing in details, McBride having edopted the Westinghoase car fixturea complete. The committee ia of opinion that a flaid like water, having lesa elasticity then air and a alower movement, can not he ao deeirahle ae a means of transmitting power to a brake. Much atresa is laid hy inventora of brakes on their ability to make short stops, hut these ere too frequently accompanied with that sndden end disegreeahle concussion which the air hrake avoida.

The report containe a careful calculation of the retsrding power exerted hy a good continuous hrake in stopping a trein, say of engine and six cara, weighing one hundred and sixty tona in ell, and at a apeed of forty miles an hour oa a atraight treck, and enggests the compariaon of the theoretical resnlt with those ascerteined hy aotual experiment.

The committee regret that no reporta were received from roeds usfng the Smith vacnum hrake, ae a comparison of resulta with the air hrake would have heen inatructive. The Westinghouse air brake is now in use on over one hundred roads, the Smith vacuum hrake on thirteen, and the Loughhridge hrake on two.

Novel Marine Enoine.—A new marine engine, designed to economise apace, and to do away with all elides, eccentrics, link motiona and other reversing gear, has recently heen tried in a small steam yacht in England. It conaieta of three cylindera plecod side hy aide and connected hy a peculiar aystem of ateamporta that open and close hy movements from the three piatons that are mede to act as slidee. A three-throw crank joins the piatons to the ahaft and the three piatons; three connecting-rods and the crank make the working parts. The ports all meet in a three-way cock, and by ite movement the engine starts, stops, and reverses at will and inetautly. The cylinders and atroke are each seven inchea, and under ninety pounda preasnre, and 380 revolutions; the engine indicated forty-horae power, and the yacht made thirteen milea against a alack tide in seventy-five minates. The engine ia attracting muoh attention among engineers and hoat owners. An engine having three cylindera gronped together haa also heen recently patented in this country, but, from the drawinga publiahed, it aeems to he more complicated than the English engine.

Alloys of Platinum and Iron.

M. H. Sainte-Claire Devills and M. Debrec are engnged in ths study of the alloys that mey he made of pletinum with the oommon mstals.

In thsir experiments they havs ascertalnsd a method of separeting pletinnm from iridinm and iron, which they promiss to publish.

When oxids of iridinm is treated with a cnrrent of hydrogen, the iron hecomes metallio at a temperatare ranging from 200 deg. to 600 deg. centigrade; but thsn the metals are ellied, for if they are digested in hydrocbloric aoid, it is with difficnlty that a fsw hubbles of hydrogen ars ohtsinsd and a small qaantity of tha iron dissolvod, sven whsn this mstal sxists in the alloy to the extsnt of tsn psr csnt.

Iron end iridium, then, unite at a very low tempsratnre, nnd the chsmists nhove mentioned believe thst the same is ths cass with iron and platinum. M. Dsville does not agres with M. Dauhrse that iron will unite with pletinum ta the extent of nineteen psr csnt., although ths fact seems to he indiceted hy the natural megnetic platinum. According to Bsrzelins the highest proportion would he 12.98 per cent. The grannlee of netive platinum contain on an averege about five to six psr cent.

There are reasons for helieviag that native pletinnm, which is sometimes accompanied by netive iron nlmost pure, is of mstsoric origin; hut M. Boussingault found native platinum in the eoil in America.

The cupelletion of ferrnginons platinum is eeeily effected in calcareous crucihles. The platinum, like silvsr, contains lead end antimony. Iron oxidizes it like lsad, snd the magnetic oxids thus produced melte, bnt, in nniting itself with ths lims of the furnace, predaoing ferrite of limc, which is absorbed hy the walls of ths furnace. These ere, therefore, not inactive, as in the cupellation of silver. Finally, oemium and rntheninm, like antimony, produce volatile oxides whlch escape in the form of smoke, of osmic seid, and oxide of rnthenium.

Platinum which it is desired to purify from iron, may he cupelled in chlorine. Platinum hsated to 1,200 deg. or 1,500 deg. in chlorine, hecomes transformed into brillient crystels in all the hot parts of the apparatue. M. Cloez had previously caased platinum to crystsllize hy similer means. M. Baudrimont hes prodnced the seme siffect in the vapor of psrchloride of phosphorus.

The Slag Question.—The utilization of tbe sleg from furnecee, after long discussion, has pessed the experimentel and reached the profitahle, practical stege. Its reduction to a grenuleted suhstance hes opened a wide field for its use in verious arts. As a vitreous eand, it is mads into bricks hy mixing with a anitahle oement, and, mingled with lims, it mekes a good mortar. The hricks are prsssed and sun-dried at a cost of twenty-five per cent. less than common hricks, and as they are white, they ere qnite popular with builders. The saad, scattered on unhurnsd clay hricks, givss thsm an saahled face whsn hnrned, and, hy mixing with fire-cley, an exceediagly refrectory firehrick is produced. By verious other prooesses, this useful sandy prodact ia mede into cement, shingle for road-heds, hrick-dust for flooring, and for hedding in which to run hot metal in making pig iron. It hes also heen used for hallasting railroads, aad for ship'a hallast; hnt the demand for slag hricks is so good that it is thought theae two merketa will eoon be denied. The most common way of treating the slag is to run it from the furnace into a powerful atream of water that falls into n tsnk. The velocity of the water carriea the sand into the tank, end the water flowing under the molten metel is partly converted into steem thet materially aids in shattering and disintegreting it. From the tank, the sand ia raised hy means of an elevator, and the whole apparatus only demands the attendance of two hoys to keep it stirred in the tank, and power to move the elevator.

New Way of Cutting Veneer.—S. C. Carpenter and Dr. M. E. Williams, of Green Bay, Wis., have constrncted a novel and auocesaful machine for cutting veaeer. There ie a machine for cutting veneering from reund blocks, but it ia quite different from this. In that machine the knife is parallel with the log, and in eome kinds of wood the heanty of the grein is lost, while with the knife aet at an angle it is preserved, and this ia the merit of the new machine, which has a conical-sheped catter like a penoil eharpener, and commences cutting at the end of the log, the log feeding into the knife or the knife to the log on a lathe, the veneering coming off in the shape of a scroll. The machine outa the veneering one-twenty-fonrth of an inch thick, and the log would therefore out about 24,000 feet.—*Western Manufacturer.*

Compensating Cylinder.—A Bessemer hlowing engine recently erected at Pittsburg exhibits an interesting featare in a compensating cylinder designed to helance the thrust and pull of the engine. A small cylinder, standing next the steem cylinder, has ite piston-rod conneoted with the cross-head eo as to move it. A pipe from the hoiler opens into this cylinder below the piston, and there are no valves or alidea. The ateam flows freely in and out aa it moves up and down. The reault is, that the down atroke pushes against the elaatic cushion of the ateam, and the up atroke ie aided hy its pressure, and the thrust and pull of the engine is in a meaaure compensated and relieved.

MINING SUMMARY.

THE following is mostly condensed from journals published in the interior, in proximity to the mines mentioned

California.

AMADOR.

THE GOOD HOPE MINE.—Amador *Dispatch*, July 3: We are informed by Mr. Charles Peters, that he intends commencing work on the Good Hope mine, a short distance from town, immediately after the 4th. We hope that the work may he rapidly pushed forward, as there is but little doubt that the mine will prove very valuable if capital can be induced to thoroughly develop it.

CONTRA COSTA.

MORE COAL.—Contra Costa *Gazette*, July 3: Some 2 months since we noticed the fact of the existence of what appeared to be a good vein of fine coal at the head of Tassajara creek, on the claim of Sangmaster. We now understand that Mr. J. W. Dougherty and other persons of ample capital have associated with Mr. Sangmaster to open and work the vein, which is believed to be a heavy one of very superior coal.

THE LAFAYETTE MINE.—We learn that preparation is being made to put up a small mill at Lafayette for test working of the gold and silver bearing rock which seems to abound in that neighborhood. This machinery can be conveniently operated with the steam power of the flour mill, and will afford the best means of determining the value and working qualities of various descriptions of rock there in which these metals have been or may be found.

CALAVERAS.

"CLEAN-UPS"—GOOD RESULTS.—Calaveras *Chronicle*, July 3: In the language of the market reports, quartz "is lively." A number of up country mines, situated in the West Point and Mosquito districts, have cleaned-up during the week with results calculated to increase confidence in the permanency and importance of our mining interests. First on the list comes the celebrated Haskins mine, at West Point, with a clean-up of $10,000, the product of 60 tons of rock! That is an average yield of $166 per ton—as rich rock, we believe, as is mined in any portion of the State. For unassorted ore the product is absolutely enormous. This is not the first big clean-up from a small quantity of rock that has been made at the Haskins mine, and will not be the last by any means.

The crushing of one hundred and fifty tons of ore, taken from the San Bruno mine at Mosquito gulch, yielding $4,100—an average of nearly $28 per ton. The rock was unassorted, the entire ledge being taken out and put under the stamps. The quartz was mined in the 300-ft east level, and there is more rock, of a better quality, even, than that crushed, to be stoped from the chimney.

A crushing of rock from the Rickman mine in the Mosquito district—a recent location—has also lately been made. Thirty tons of ore were put under the stamps, yielding an aggregate of $1,200. When we state that the ore was taken from a depth of only 28 feet from the surface, the yield—$40 per ton—is marvellous. All the indications are for the development of a permanent, valuable mine.

A small quantity of rock—eight tons—taken from the old Vance mine near Mosquito, paid $264. That is an average yield of $33 per ton. Pretty good, considering that the rock was a "prospect lot" taken from an abandoned mine.

Twelve tons of ore taken from the mine owned by Messrs. Logeman & Rodgers, at Mosquito gulch, netted $185. The rock was taken from near the surface, and the prospects are good that the next crushing will yield more largely.

WEST POINT DISTRICT.—About $10,000, the result of 60 tons of ore from the Champion, were taken, as usual, to Volcann, Amador county, the gold dust market for this district.

The steam hoisting works for the new working shaft of the Mina Rica are completed. The shaft is now 175 feet deep.

The Enterprise Consolidated is the most energetic company in the county.

GLENCOE DISTRICT.—San Bruno and two other mines cleaned up large amounts lately.

Garland's 18 stamp mill is taxed to its utmost capacity. Some 100 tons of high grade ore are now awaiting their turn to be crushed.

PINE MOUNTAIN.—Inyo *Independent*, July 3: The prospects are that the Broder-Moffatt furnace will steam up in less than twenty-five days, possibly in half that time. The saw mill is now ready for operations and will be cutting timber the coming week. A contract has been let to furnish 100,000 feet of logs at the mill, which for a time will be kept going day and night.

MARIPOSA.

RIVER TUNNEL.—Mariposa *Gazette*, July 3: Recent developments in this great enterprise, which is superintended by our friend Burr, are of a very encouraging character, and appearances indicate a near approach to the vein. The heading is solid serpentine rock, and advances at the rate of about seven feet a day. Owing to the very large amount of rock taken out it is only possible for the machines to run sixty hours in the week. The rest of the time is taken up in removing the debris. Water is now gradually increasing and is regarded as a favorable sign, especially as the rock for the last two hundred feet has been very dry. It is proposed to cross-cut at one thousand feet and intersect the vein, which event may be expected in September. This will give the miners back-stopes of about four hundred feet in hight, increasing in extent as the tunnel advances. Since the last information reached us regarding the work, the heading has advanced to nine hundred and seven feet, and the last one hundred feet before the cross-cut is now in course of extraction. A great advantage was gained by introducing ventilating boxes from the Princeton fan, now set up at the river. During these hot days it is a positive comfort to enter one of these underground chambers and remain for a while.

NEVADA.

NORTH STAR.—*Foothill Tidings*, July 3: Rumor has it that the old North Star mine is to be started up again soon with a good force. It has been a mystery to those who knew the condition the stopes were left in—pay ore as plentiful as could be desired by a thorough business owner—why this mine was shut down, and it is sincerely to be hoped that whatever the reasons were there is foundation in the rumor of resumption.

AROENTA CONSOLIDATED. — Some splendid specimens of gold bearing quartz brought in from the croppings of this property this week turn our attention to progress thereon. This is an enterprise lately brought to life through the influence of some of our energetic, go-ahead citizens, by the consolidation of four parallel claims of 1,500 ft each, situated out near Deadman's Flat; one of these claims being an extension of the now noted Pittsburg mine. A short shaft upon one of the claims developed ore which worked $94 per ton at the mill, and also the fact that water came in too abundantly for this way of mining. Hence the consolidation of the four locations and the selection of a point from which a tunnel may be run in to open up the whole very cheaply and give in some places 200 ft of "backs." Some delay in getting lugging and timbers hauled prevented the starting of the tunnel as contemplated, but work will begin thereon in a few days and be pushed ahead as rapidly as possible. Such rock as we saw this week, brought in by the boys from the cropping of some of these claims, is not often found, and the miners who worked in the shaft till driven out by the water say there is plenty of gold in the rock.

NORWICH.—This is the name of a mine located on the first day of January of the present year, by Mr. James Pollard of this place. Many years ago Mr. Pollard worked awhile on this same ledge, and became so thoroughly impressed with its value that he did not let a moment pass beyond the time it became relocatable under the U. S. law before he took up a claim of 1,500 ft thereon. Subsequent explorations have proven the correctness of his estimate of the mine; the ledge already, at a depth of only 15 ft, being 18 inches thick and showing free gold in such quantities as to make an old prospector's eyes open wide, and plenty of galena and iron sulphurets. This mine is situated on the west bank of Wolf creek, below Boston ravine, on the celebrated Massachusetts Hill or Rocky Bar range and gives promise of redeeming the reputation of that once noted range. Several practical miners have associated themselves with Mr. Pollard in the ownership of the Norwich and the work of opening it up now goes on night and day.

PLACER.

GREENE MINE.—Placer *Herald*, July 3: The Greene mine is again running at full blast. This mine bids fair to do much good for the district and its owners, yet. The last run averaged about $21 to the ton, which is, to say the least, good. The west drift, as it is being driven ahead, develops a continuation of rich rock.

THE quartz mining interests in Ophir and Newcastle districts seem to be steadily on the increase. All the mills are kept running steadily, and in almost every instance, on remunerative ore. It is more than likely that one or two new mills will be erected at an early date.

THE OPENING DAY.—Last Thursday, the 1st day of July, 1875, though allowed to pass with but slight demonstration, marked a grand epoch in the history of Auburn, and we may say of Placer county. That day the Auburn gravel mining and ditch company turned the water through their new ditch and started two large pipes to washing out the rich gravel of Grizzly hill, located about three miles northeast of Auburn. This one company, whose courage and capital have so successfully overcome the obstacles in the way of opening up this new source of wealth, have ground enough to keep them washing for fifteen or twenty years, and theirs is but a garden patch compared with the immense fields of gravel lying near this town. The engineering feat of bringing water to these claims, through open ditch and pipe, the latter of which is over two miles in length, forming two inverted syphons on its line, and delivering the water on the claim from the main pipe, something unparalleled in the history of hydraulic mining, is due to the great skill of one of the best hydrostatic engineers in the world, H. Sohussler. But notwithstanding this new feature, the success of which was by many considered doubtful, everything and every feature of the outfit had been so well considered and closely calculated that when the water was turned on, all things worked together like a charm. Even the most sanguine were happily disappointed in the perfect success of the works, as scarcely a bobble occurred from the beginning to interrupt the steady progress of the giant work.

SAN DIEGO.

THE MINES.—San Diego *World*, July 3: We hear the work is proceeding now quite well at the Minerva, where they have a seven stamp mill. The yield of gold is reported as satisfactory, and the work on the mine is being pushed along under the management of Mr. Murphy, late of the mint at San Francisco. It is expected that this mine will render a good account of itself in due time.

The Oriflamme, near Julian, is reported as looking well, and the work being done gives a profitable yield.

The Tom Scott is being worked, and it is said to be in a satisfactory condition in all respects. Captain Frary, we believe, will make Tom tell well before a great while.

At the Stonewall there is little doing at present, except to pump out, and keep it ready for business, when the owners are ready.

We hear nothing from the other mines within the last few weeks. At the right time, when the crops are saved, it is likely the owners of the Bladen will be at work upon it. At present, little is doing.

SANTA BARBARA.

LOS PRIETOS.—Santa Barbara *Press*, July 3: Our reporter learns that all the miners engaged in the Los Prietos mines have been discharged and all work stopped. Last evening and this morning several teams arrived bringing in the workmen. Our reporter has been unable to learn the cause of this act on the part of the company, but no doubt there is good reason for it.

FROM THE MINES.—A number of men arrived last evening from the mines. They report that to-day the furnaces will be cleaned up and a fair idea can be formed of the value of the mines. Work on the road is nearly finished.

GOLD SPECIMEN.—Gold has been found on the Hill ranch, so it is said. Yesterday afternoon our reporter was shown a fine specimen of gold by Mr. Levy, the jeweler, who said that he had purchased it of a Mr. Merchant, living on the Hill ranch. The specimen is a large and beautiful one, and consists of a large quartz pebble full of seams, and on one end is attached a large piece of natural gold, which also runs through the seams. The nugget appears to be much worn, which must have been caused by water or wear in a pocket. Nothing definite can be learned where the gold was found and whether or not there are indications of a lead in the vicinity.

SONOMA.

LOCAL ITEMS.—Russian River *Flag*, July 1: The Brandt mine (Cinnabar district) has developed ore in both open cuts and tunnels, which assays from one to seven per cent. of metal. The mine is located a few miles east of Pine Flat, and has been bonded to E. Clarke (Superintendent of the Great Western) and Col. Swadley, (gold mining Superintendent of Amador county).

The Great Eastern mine (Lake district), adjoining the Great Western, is being worked by 10 men, and is developing splendid ore. About 200 tons are on the dumps.

The Mt. Jackson (Guerneville district) beat the Roaring Lion in their lawsuit this week. The ground was awarded to the former and the costs of suit to the latter.

The five retorts for the Great Eastern (Guerneville district) will be finished in about 3 weeks. There are perhaps 1000 tons of ore on the dump.

The Mt. Jackson furnace stopped work last week. It will be altered to a continuous furnace. While the alterations are in progress a bench of 3 retorts will probably be erected for reducing the high grade ore. Thirteen men are at work in the tunnels, taking out only the dirt that lies in the way. Enough good ore is now in sight to run the furnace a year.

SIERRA.

ST. LOUIS.—*Mountain Messenger*, July 3: A trip to Whisky Diggings, (Newark) last Sunday, afforded me the following items:

De Noon & Co. are going to run a tunnel into the Pilot claim No. 1, to prospect it.

The Ne Plus Ultra claim has contracted for a tunnel, 400 feet, expect to be through in three or four months.

North America has made a much larger contract for timbers this year than usual.

ENTERPRISE.—The Enterprise Quartz Co., of Poker Flat, under the management of our old friend Marchini, commenced work June 15th, and are getting along finely. They have a fine large ledge and it prospects well. Several tons have been taken below which worked from $15 to $20 per ton.

STILL SINKING.—The South Fork company are still sinking for bed-rock. They are down between thirty and forty feet.

TUOLUMNE.

MARES ANN DARROW QUARTZ CO.—Tuolumne *Independent*, July 3: The work in developing shaft No. 3 progresses steadily. The ledge gradually widens and is now nearly six feet in width. About a ton of rock, rich in sulphurets and occasionally showing fine granulated gold in fair proportion, is extracted daily. The new vertical hoisting shaft (No. 6) has again passed through quite a large seam of quartz carrying visible gold. The developments in all the shafts are such that is expected the company will be justified in erecting a couple of 20-stamp mills.

MINING PROPERTY TO BE SOLD.—The Heslep mining property, near Poverty hill, is to be sold at public auction on the 17th inst. The expected arrangements with English capitalists did not succeed. The property is believed to be very valuable and it is hoped will be purchased by those who are able to develop and work it.

ON Thursday we saw 350 ounces pure retorted gold at the express office, from the Soulsby mine. It was the yield of 250 tons of rock.

VENTURA.

ASBESTOS.—*Southern Californian*, July 3d: We have been shown by Mr. Gibson, some specimens of asbestos, pronounced a superior quality of this valuable article. It is found on the south side of the San Emedio mountains, in Ventura county. Mr. Gibson says he has traced upon the surface an immense body of it. He will soon return to give it a more thorough prospecting. He has also made some valuable discoveries of galena and silver and of gold in the same section of the country.

Nevada.

WASHOE DISTRICT.

CALEDONIA.—The new shaft is down 285 ft, the bottom in good blasting ground and the sinking progressing at the rate of 5 ft per day. This extraordinary progress, considering the size of the shaft, reflects much credit on the superintendent and foreman, especially when the great disadvantage of working under a strong flow of water is taken into consideration. Driving the drain tunnel to connect with the shaft, 120 ft below the surface, is making good progress, the face still in hard blasting rock. Sinking the main incline at the old works is being pressed with all the energy possible, the bottom in good sinking ground. It is down 365 ft below the 1000-ft station. The frame of the new hoisting works building, which is 106 ft long by 46 ft in width, is nearly covered in. This building is flanked on either side by a carpenter shop 30x80 ft, and a machine shop 40x60 ft in size.

LADY BRYAN.—Sinking the main shaft was resumed again this morning. Driving the main south drift on the 380-ft level is still prosecuted with vigor, the drift following the east clay wall of the ledge. The west cross-cut on this level is in a distance of 105 ft, the face in quartz of a whitish blue character, much resembling the low grade ores of the Comstock. The main south drift on the 250-ft level is also making good headway, running in the east edge of the ore vein. On the 180-ft level the east crosscut from the south drift has developed a fine body of milling ore 35 ft in width, with a small streak of poor ore 8 or 10 ft running through it. The hight and length of this body of ore has not been determined, but there is little doubt that it is simply a continuation of the body found in the west cross-cut from the south drift on the 70-ft level, at which point it was only 16 ft wide, and although milling ore, was not of so good a quality as that developed on the level below.

CONSOLIDATED VIRGINIA.—Daily yield, 600 tons of ore. The ore stopes and breasts are all looking splendidly throughout the mine, and promise to keep up their present yield for months to come. The yield so far the past month has been amply sufficient to insure a return of $1,500,000, and the payment of the regular $10 dividend. There is little of renewed interest in regard to the prospecting operations, as no new levels are being opened, and the old ones are so thoroughly penetrated by cross drifts and winzes that there is no expectation of any new or important developments for some time to come. Sinking the C. & C. shaft is making rapid progress, the erection of the new hoisting works is advancing rapidly, the mills are all running steadily, and everything looks bright and prosperous.

BEST ANN BELCHER.—The connection of the south drift on the 1700-ft level with the north drift from the Gould & Curry, was completed day before yesterday, giving a much needed supply of pure air, cooling off the level and affording great relief to the workmen.

CHOLLAR-POTOSI.—Sinking the new combination shaft is making good headway, considering the large amount of excavation necessary. It is down 50 ft, the bottom in excellent blasting ground. Sinking the main incline at the old shaft is progressing downward at the rate of 2 ft per day. The two main south drifts on the 1250 and 1150-ft levels are still driven vigorously ahead, the face of both in porphyry. Daily yield, 60 tons of ore, the assay value of which is $31 per ton.

OPHIR.—Daily yield, 220 tons of ore. This ore is being mostly extracted from the 1465-ft level. Opening out the incline station at the 1565-ft level is making steady and favorable progress.

BELCHER.—Daily yield 500 tons of ore. The yield of the ore breasts are unchanged, and the quality of ore extracted is fully up to usual standard. The yield of bullion for the month of June will be fully as good as that of May. The air shaft is completed to the 1300-ft level and is vastly aiding the development of the lower levels of the mine. Opening out the 1600-ft level is making good progress. The extraction of ore from the 1500-ft level has been commenced. The mills are all running, and the future prospects look favorable and bright.

CALIFORNIA.—This mine has been so thoroughly cross-cut and prospected on the 1500-ft level that the operations are now almost entirely confined to cross-cuts 4, 5 and 6, the face of each of these drifts being in rich ore. The face of the lateral drift running in the vein to connect cross-cuts Nos. 4 and 5 is also in fine ore.

YELLOW JACKET.—The pumps are still kept steadily running by the flow of water from the 1840-ft level. Sinking the north and south winzes below the 1740 ft level is making rapid headway.

SAVAGE.—Sinking the main incline is being pressed with all the vigor possible, the rock in

the bottom being a little tough, but blasting out well.

UTAH.—The new machinery is working well and the shaft will soon be drained of water, so that sinking tho shaft and prospecting the lower levels of the mine can be resumed with every assurance of future success.

SIERRA NEVADA.—At the 700-ft level of the old shaft, the drifts both north and south are still driven vigorously ahead, with but little material change in the character of the rock penetrated.

CROWN POINT.—Daily yield 550 tons of ore. No change in any of the ore producing sections of the mine. Driving the main east drift on the 1700-ft level is making fair headway, but has not yet reached the point at which it is expected to reach the ledge.

HALE & NORCROSS.—The main incline is down sixty-eight feet below the 2200-ft level, the bottom in fair ground, and the sinking making good progress.

GOULD & CURRY.—Everything is in good running order, and the water is being rapidly lowered in the shaft. The air connection on the 1700-ft level has been completed with the Best & Belcher, and cross-cutting and prospecting that level will now be the order of the day.

JULIA.—Sinking the main shaft is being pushed ahead with all the vigor possible, the rock in the bottom blasting out finely, and the Burleigh drills doing splendid execution. It is now down 380 ft below the 1000-ft level.

OVERMAN.—The water is drained from the shaft to a point 40 ft below the 1000-ft station, where it is held by the pumps. The necessary water tanks, pump hobs, etc., are being put in at both the 700 and 1000 ft stations.

EUROPA.—The new hoisting machinery was started day before yesterday, everything working with the utmost nicety and perfection.

LEO.—Good progress continues to be made in sinking the winze below the main tunnel level. It has to-day reached a depth of 143 ft, and the ledge matter looks more and more promising.

JUSTICE.—The north drift at the 800-ft level is progressing very well, showing excellent ore indications in its face.

COSMOPOLITAN.—The ore during the week has assayed very well indeed, both in the stopes and in the main drift, which is being extended northward, following the vein.

IMPERIAL-EMPIRE.—Every effort is being made to complete the connection of the upraise from the 2000-ft level and the winze from the level above, at the very earliest moment possible. The heat in the up-raise is simply terrific, it being almost an impossibility for the men to work even for a few minutes' time.

WOONVILLE CONSOLIDATED.—The shaft has passed through the ore vein, which, at that point, is nearly 50 ft in width, with nearly 30 ft of quartz and ore.

SUCCOR.—Driving the north and west drifts, on the 550-ft level, is being prosecuted with all the energy possible, with steadily increasing indications of finding pay ore in the west drift.

NIAGARA.—The new steam hoisting works will be ready to steam up by to-morrow morning. As soon as the machinery has been given a fair trial, sinking the incline will be resumed, when some excellent results may be looked for.

ORIGINAL GOLD HILL.—The ore body developed by the two southermost cross-cuts from the main south drifts, continues to improve in both quality and extent as further developed.

TROY CONSOLIDATED.—Sinking the shaft is making fine headway, the bottom in the same excellent and promising ledge matter, with spots of rich ore, mentioned in last week's report. Some of these bunches assay high in the hundreds, showing rich in black sulphurets of silver, with some gold. A valuable little bonanza might be developed here at most any time.

AMAZON.—Steam hoisting works have been contracted for, and it is expected will be on the ground ready for erection in four or five days more.

MINT.—The shaft is down 715 ft, the bottom in vein matter of a very favorable character, affording low assays. The sinking is making excellent progress.

DANEY.—The work of putting in the new boilers and machinery is making rapid headway, and everything will be in readiness to again resume sinking.

DAYTON.—The foundations are completed, and the new machinery is being placed in position as rapidly as it is possible for it to be accomplished.

CHERRY CREEK DISTRICT.

STRUCK IT.—White Pine *News*, July 1: On the 14th ult., the Star mine, at Cherry creek, struck a large body of ore in their new shaft, at a depth of 290 feet. The strike was made in the new double shaft which is being sunk west of the old workings.

CORNUCOPIA DISTRICT.

Elko *Independent*, July 1: The Leopard mill and mining company, of Cornucopia, not having sufficient milling capacity to meet its demands, has purchased of the Mineral Hill mines company the magnificent 20-stamp mill erected by the latter at Mineral Hill at a cost of $140,000, which will at once be taken down and moved to Cornucopia. This is a splendid mill, has never been used but little, and is as good as new. The price paid for the mill as it now stands was only $17,500, but by the time it is torn down, moved to its destination and put in running order, it is expected to cost the company $50,000. The machinery is expected to be ready to run in about 90 days, and then the bullion will commence to flow in large quantities from the "Horn." A large number of mines in that district have ore on their dumps, and only wait for a chance to mill it, which will probably be afforded them this fall, as we have been informed that as soon as the new mill is in operation the Leopard company will be prepared to do all the custom work that comes to it.

ELY DISTRICT.

THE CAMP.—Pioche *Record*, July 4: The hopes and expectations of many in relation to the future of our camp are in a fair way to be more than realized. The encouraging aspect of things in general may be taken as a fair exponent of the present favorable indications, and serve as a guarantee of future prosperity. During the month of June, Wells, Fargo & Co., alone have shipped $145,000 worth of bullion, and the aggregate of the present month will make a still better showing. Professor Stewart, in his prolonged visit, expressed his decided conviction of the existence of a belt of ore of no common magnitude.

RAYMOND & ELY.—The western ground is still being developed with about the same success as heretofore. The winzes being sunk in the 8th and 9th levels are going down very satisfactorily. Winze No. 4 on the 8th level is now about 32 feet in depth. Winze No. 1 on the 9th level east is down 122 feet; No. 2, on the same level west, 116 feet. There is a slight increase in the amount of ore being raised; it has averaged about 60 tons during the past week. The ore continues of the same grade and quality. The pump is doing its work well, and the work of sinking progresses uninterruptedly. Receipts for June, $98,368.58.

MEANOW VALLEY.—Are still running an east drift from No. 3, on the 1200-ft level. Work is also continued on the drift running from No. 5 to connect with the east drift. The usual quantity of ore is being extracted. The 170 tons of rock crushed at the Condor mill yielded $23.443 in bullion. This rock showed a marked increase in gold, which indicates that as the water level is approached the rock carries more gold.

NEWARK MILL.—This mill has been doing some pretty good work for the month of June, having worked 170 tons for the Meadow Valley mine, working $24,000, or $141 per ton, and 30 tons for the Alps, working $5,600, or $186.12½ per ton—a pretty fair showing both for the mill and mines.

ALPS.—The Alps mine is being worked as usual; the men being principally employed extracting ore, which is taken to Newark mill as soon as a sufficient quantity is on hand to be worked. The ore works, on an average, nearly $200 per ton.

WHITE PINE DISTRICT.

SMELTING COMPANY.—White Pine *News*, July 3: It is with great pleasure that we are able to chronicle the fact that our citizens are really about to incorporate a joint-stock smelting company, and that the work is progressing as rapidly as possible. It is astonishing that this matter has been delayed so long, where all the necessary appliances for successful smelting are so easily attainable in this district. Had the same energy and enterprise been display d two years ago, that now characterize our people, White Pine would to-day be second to no other mining center in the State. However, there is some excuse for this listlessness on the part of our citizens, who have from year to year been led to believe that outside parties intended to start smelting works in this district, and, as a consequence, did not deem it necessary for them to act in the matter. They now fully realize that it is necessary for them to take the matter into their own hands, and we feel positive in stating that the necessary amount of capital will be raised to put the Mattison smelting works in operation in the next 60 days, and that the new company will shortly thereafter inaugurate a healthy and lucrative state of affairs in the mining business of this locality. In our next issue we hope to be able to state that the nececessary amount of capital has been subscribed, and that the affairs of the "Hamilton mining and smelting company" are in successful operation.

SIERRA DISTRICT.

RICH DISCOVERY.—*Silver State*, June 23d: Some time since Thomas Comins, who has been engaged in mining on the eastern slops of the East range, about twenty miles south of town, accidentally discovered that a hill, over which he had traveled time and again, contained a large quartz lead in which gold was visible to the naked eye. The discovery of gold in the rock led him to examine the situation carefully, and, when satisfied that a rich ledge existed in the hill, he secured 1500 ft of it by location, naming it the "Goodrich." He had a sample of the ore assayed at the Humboldt reduction works, which contained $627 in gold and $13 in silver per ton. He then imparted the secret of the discovery to some friends here, who sent a man to look at the prospect. He reported favorably, and they located an extension on one end of the original claim, while a like claim at the other end was reserved for Joseph Ginacca. Mr. Ginacca took a look at the discovery a few days ago, and considers it one of the most valuable prospects found in this part of the State. He says there is an immense vein of quartz in the hill, the extent of which is not yet known, and that if it pays ten or twelve dollars a ton in gold, it can be profitably worked. We were shown some specimens of the rock by P. W. Johnson last evening, in all of which gold is visible to the naked eye. In addition to the gold, the quartz carries a brownish ore, apparently oxidized iron sulphurets, in which there is more or less silver. A wagon load of the rock, right off the croppings, is now at the reduction works, and if it pays $20 a ton, a lively camp will spring up at the mine immediately, as there are parties interested who can command capital to build mills. It is somewhat remarkable that this quartz ledge, which is said to be thirty feet wide, and in which gold can readily be seen, should have escaped the notice of the many prospectors who have repeatedly traveled over it, and that the discovery of gold, which now brings it into notice, should be the result of accident.

Colorado.

BULLION.—Georgetown *Miner*, July 3: The shipments of bullion from the Judd & Crosby reduction works for the week ending July 3, amounted to $8,141; and the shipments during the same time from the Stewart silver reducing company were $5,064.

VICTOR.—A new ore body was struck in this mine this week, which assays about 2,500 ounces silver per ton.

PAY ROCK.—The Pay Rock Consolidated mining Co. is now building a road from the Diver road to connect with their mine, which will cost $250. They will soon have in place an engine for hoisting and pumping. The company employs sixty-five miners; first-class ore runs high grade as usual; and there are now 200 tons third-class ore on the dump, ready for concentration as soon as Teal & Eddy are prepared to commence work.

FOUND AT LAST.—Boulder *News*, July 1: Years ago, in the flush times at Ward, Cy. Deardoff found what was supposed to be a lode, that, however, proved to be only a slide. It was wonderfully rich, but was soon worked out. Year after year since then prospectors have dug and hunted for the lode, but have never found it. Occasionally a pocket on the slide would be found where the dirt was so rich it would be sluiced out with good results. This year, like others, the ever hopeful prospector worked to find the lode, and worked at last successfully. One day Cy. Deardoff and Jim Sivits found the lost lode, and dug down onto the crevice. Sivits sold to Jo. Long, and now Deardoff & Long are busily at work taking out an abundance of rich quartz from a strong and unmistakable crevice. We are told that the ore prospects wonderfully rich.

NEW MINES IN GRAND COUNTY.—Late last fall Jas. Bourn and Alexander Campbell discovered rich float ore on the Rabbit-ear range, in Middle Park, about 70 miles west of Georgetown, and after diligently prospecting the country, struck several lodes. The approach of winter caused a cessation of developments, but as soon as the snow disappeared this spring, the boys started to work again. They have now found eight good mines, nearly all showing ore from the grass roots. One, the Silent Friend, in a shaft eleven feet deep, displays a continuous seam of mineral which assays 1140 oz. silver per ton, and will mill at least 700 oz. The ore is a gray honey-combed sulphuret, carrying silver glance, and deeply stained with carbonate of copper. Another vein yields from a 14-inch mineral body, ore running 150 oz. silver and 60 per cent. lead per ton. The specimens of light ore which we have examined, resembled the product of the Belmont mine in East Argentine, and that of the Comstock of Nevada. It is easily reduced, and held in high favor among our mill men. Messrs. Bourn and Campbell are working a force of ten men and piling up large amounts of ore, which they will soon haul over to Georgetown.

PARK COUNTY ITEMS.—A special telegram from Fairplay announces the discovery of rich placer diggings near the head of Pennsylvania gulch, about three miles from Fairplay. The dirt is said to average 50c to the pan, and several nuggets have been found. A good deal of excitement prevails and the usual rush of miners is making for the scene of the strike.

The placer miners at Hamilton are meeting with unusual good success. An immense amount of ore has been delivered to the smelting works during the week.

We are informed that the foundation will be laid, in a few days, for extensive chlorination works, and that the parties intend having them in operation in the shortest possible space of time.

Idaho.

IDA ELLMORE.—Owyhee *Avalanche*, July 2: The work below is confined principally to the eleventh, twelfth and thirteenth levels. The two former levels are being opened up, and a winze is in progress from the twelfth to the thirteenth. When the mine was in the hight of its prosperity, years ago, the rich ore, the taking out of which had such a marked influence on the condition of affairs in this camp, came from the third level and above. Having been exhausted in that direction, there is a well-founded belief that a continuation of the same rich vein exists somewhere in the vicinity.

GOLDEN CHARIOT.—A letter of the 3d says: In the 4th Minnesota level a fine body of ore has been struck, sixnate close to the shaft. The stopes about the 5th Chariot level are looking splendid. In the 2d level the drift north is still in a vein of ore, and in the winze, which is down to 40 feet, the ledge continues strong.

PAUPER.—A letter of the 1st says: The stopes are looking fine and ore that is immensely rich being extracted.

ILLINOIS CENTRAL.—On the 3d, the ledge in the 4th level was cut; the ore is rich and the vein about 15 inches wide. The winze from the 3d to the 4th level is of the same quality of ore—heavy black sulphurets.

Oregon.

THE VIRTUE MINE.—Owyhee *Avalanche*, June 24: This mine is situated near Baker City, Oregon, and is at present attracting considerable attention both at home and abroad. The ore is entirely of a gold bearing character, the bullion being 940 fine and worth $19.50 per ounce. The company have a magnificent 10-stamp mill in close proximity to the mine. The ore is run from the mine directly into the mill, which does away with the expense of hauling. Mike Hyde, formerly of Fairview, is superintendent of the Virtue. He is a gentleman of extensive practical experience in quartz mining, and we predict that he will have the Virtue on the list of dividend-paying mines as soon as he gets it in proper shape for yielding ore. Mr. Hyde passed through here on his way home from San Francisco a couple of days ago, and informed us that he has a new and complete set of heavy hoisting machinery on the way. He shipped it from San Francisco to Portland and thence up the Columbia to Umatilla, from which place it is being brought up by teams to Baker City. By that route, the freight from San Francisco to Baker City is only 4¼ cents per pound. As soon as the new hoisting works are ready for operation, the sinking of a new shaft will be commenced 500 ft east of the ledge on the surface, which will tap it at a depth of 1500 ft. The ore taken out of shaft, winzes and drifts, without any stoping, very nearly paid the expenses of working the mine during the past winter. The chute of pay ore is known to extend at least 1200 ft along the ledge, and when it is properly opened and stoping commenced, big bullion shipments are expected. The mine is splendidly situated for working. Living is cheap, and wood only costs $5 per cord delivered at the mill and mine.

Utah.

DRY CANON MINES.—Cor. Salt Lake *Tribune*: Mining enterprises are slowly but steadily advancing throughout this camp with rumors of a big sale. A half interest in the Queen of the Hills and Flavilla mine was sold during the past week, by Col. J. W. Johnson, to the Chicago silver mining and smelting company. Report says the sum paid was $350,000 in cash. This mine never looked as well as at the present time. The main incline is now at a depth of 750 feet, with seven feet of clear ore in the face, while the switch incline has reached 825 feet depth, with five feet of clear ore in the face. Cross cuts near the bottom show a continuous and true vein, with ore increasing rather than diminishing in volume. Within one year there has been over 3000 feet of work, and over 5000 tons of ore extracted from this mine prospect. The past week twenty tons of ore daily has been shipped, and the company will ship thirty tons daily during the present. The Hidden Treasure shipped forty tons daily during the past week, and intend increasing to fifty tons per day this week. The Emporia has about sixty tons ready for shipment this week. Numbers of companies, mines and prospects will start up as soon as the Mono gets under way.

General News Items.

JOHN MILLER, Secretary of the Western Development company, an adjunct of the C. P. R. R., who was arrested some days since for embezzlement, turns out to be a most precious scoundrel. Besides having stolen the funds of the company, he appears to have lived in this State for the past six years under an assumed name, his right name being Woodruff, and although having a wife and family in the East, he had married an estimable lady in Sacramento and been living in princely style in this city.

IN the case of Patrick Lenehan, who was killed by the premature discharge of a cannon at the dock of the P. M S. S. Co. last week, the coroner's jury have found that the officer in charge of the firing is censurable for negligence, and that the company is blamable for employing inexperienced men to handle the guns.

GEORGE WALKER, 22 years of age, shot himself in a lodging house in Oakland Tuesday evening. No friends and tired of life the excuse.

DURING the celebration at West Unity, Ohio, on the 5th inst., Peter Krindle was killed by the premature discharge of a cannon.

THE assistant light house keeper at Point Concepcion light was drowned, last Tuesday morning.

OF course the Beecher jury disagreed. They are reported to have stood nine for Beecher, three for Tilton.

TIM FLORENCE, an ex-member of Congress from Pennsylvania, died in Washington last week.

THERE were three suicides in this city on the 5th inst.

A NEW APPLICATION OF TELEGRAPHY ON RAILWAYS.—An English journal says: "A decidedly novel invention has been suggested during the last few days. It is to affix lamps to the telegraphs by the side of the railways, and enable the telegraph clerks at the nearest station to light them by electricity whenever there is danger on the line, the idea being that as soon as the driver of a train saw these lights burning he would bring his engine to a standstill, and remain standing until he received instructions to proceed."

Gold and Silver in Contra Costa County.

What further discoveries the finding of rock containing gold and silver at Lafayette may lead to we cannot tell; but already it seems to have been ascertained that nearly all the sedimentary rock formations of that neighborhood contain more or less of these metals. The first discovery a few weeks since was made in testing rock found by Mr. William Boardman, in sinking a well for domestic use. From the reddish color, he feared the rock might contain quicksilver, that would render it unsafe to use the water. To determine this matter an assay of the rock was obtained, and it was found to contain a trace of quicksilver, and gold to the value of about $14, and silver to the value of something more than $3 per ton. Further assays have been made in sinking the well shaft, which is now down some thirty feet, with about the same result. In the meanwhile surface inspection of the rock strata of the vicinity has pretty clearly defined their direction, pitch, thickness and general varieties. It is all of the sedimentary, metamorphic character common throughout this range of country, much of it of soft, granular, sandstone composition, and only partaking of crystalline structure where it has been highly heated. Rock of similar character and appearance to that found in the well shaft, taken from the surface croppings in various places about the neighborhood, has assayed from $9 to $13 per ton. From outcrop rock on the place of Mr. Nathaniel Jones, two miles from the well shaft, he has had an assay of $9.34 per ton. Small particles of free gold have repeatedly been found in the rock from various outcrops in the vicinity, but none of it partaking of the character of vein formation.

The theory upon which the presence of gold and silver in this sedimentary rock is accounted for, is, that the sediment was composed in part of the detritus of gold and silver bearing veins very finely reduced by attrition. Upon this theory, which does not seem unreasonable, we do not see why we may not find gold and silver in any or all the recent sedimentary formations, and the question will then be, how much of these metals must there be in the rock to pay for working it? As this question relates to rock in which the gold and silver is found about Lafayette, we are assured by experts that the cost of crushing and extracting would not exceed $3 to $5 per ton. If that is all, $17, or even $9 rock will pay well enough, if enough of it is to be had, of which there seems a great probability. Then, too, we are assured that a piece from a float fragment of rock, found in a creek bed near Lafayette, where there are other fragments of similar appearance, has assayed as high as $206.48 of silver to the ton. The source of these float fragments has not been found, but is supposed to be somewhere in the vicinity. There is no great degree of excitement about these recent and quite unlooked for discoveries, the verity of which cannot be doubted, since they are vouched for by numbers of old, well known and reliable citizens, cognizant of all they attest to; but there is certainly fair reason to believe that gold and silver mining may soon become one of our leading productive industries.—*Contra Costa Gazette.*

Gold in Ancient Architecture.

Mr. F. A. Skidmore recently gave a lecture at the Royal Architectural Museum, London, "On the Use of Gold in Ancient Architectural Enrichment, and its Influence on Conventional Forms." The lecturer observed that vast sums of money were being spent now-a-days on architecture, and architects took credit for accomplishing great things when they were simply working on the past in copying what they found in existence. This should not be. Architects should be constructors in the true sense of the term, or else go further back, and reproduce what was done by workers in gold. It was not at all uncommon in ancient times to use as much as ten owt. of gold in adorning temples, and at that period the goldsmith occupied a very high position. In decorative stonework there was often a marked difference, and this arose from the peculiarities of form taken by the metal when beaten. The stoneworkers had followed upon the ancient goldsmiths, and had simply copied the forms of decorations in gold and silver which they found in existence. He urged that this eternal copying was a great mistake; architecture at the present day was a failure, and that simply because it resolved itself, with architects, into a question of various old styles. They showed nothing of the constructiveness which science taught was necessary for true progress, and hence was what he regarded as a failure. He contended that architects ought not to stop at stone representation. If they were determined to rely upon and worship the past, they should go as far back as the goldsmith's period, and then they would understand why many of these stone representations took a particular shape. If they would reproduce the past, let them do it honestly and fairly. Go back far enough, and resuscitate the trade of the decorator in gold. There was no legitimate ground for halting where they now stood, as they were simply like imperfect translators, who had no thought of original work, or of going even to the root of the thing they had in hand.

A VETERAN carriage builder says that, although his clerks are very talkative during the day, they are always ready to shut up at night.

Palace Cars for the Central Pacific Railroad.

A recent number of the Dayton (O.) *Journal*, gives a detailed description of drawing room and palace cars, which are being built by the Barney & Smith manufacturing company, for the Central Pacific railroad company. The *Journal* says: "The general shape of the drawing room cars is similar to the standard Pullman, many of which have been built by the B. & S. Co. within the past ten years. Their color is a light shade of canary, with light tracings, and scroll work of darker and contrasting shades. The interior is finished in black American walnut, oiled, and most elaborate veneering of French walnut, engraved with fine lines of gold, and decorated with shields of unique marquetry, containing the monogram of the railway company in ivory on ebony. The silver lamps, with shaded glass globes, highly finished wood, elaborated with silver fixtures, in shape of curtain rods, coat and hat pins, and the embossed French plate glass and mirrors, give almost a dazzling tone to the entire coach. The seats, chairs, and sofas are upholstered with the finest grade of Cerise plush. The floor is covered with Brussels carpet, made expressly in colors and design to harmonize with the general finish. The windows are shaded with damask curtains, on spring rollers, which also, in color and figure, carry out the completeness of the interior finish. The berths are equipped with spring and hair mattresses, of the very best quality, linen sheets, pillow cases, etc.; in fact, every necessity and luxury possible to imagine.

"The body of the coach contains a smoking room, with an inlaid floor, supplied with a sofa and lounging chairs. The room is entirely disconnected from the main room, yet easy of access by means of a short passage which leads into the sleeping or parlor portion of the car. This room is divided into twelve sections, each section supplied with four seats, or two berths, two double sash windows, damask shades, and embossed mirrors. Each of these compartments is so arranged that it may be entirely closed from the others, and by the addition of a movable table, converted into a dining room.

"Next to the smoking room there is a larger and entirely private state room, supplied with arm chairs and a sofa, together with a ladies' dressing room, complete in each detail. At the opposite end of the car is the general wash room, closet, and steam heating arrangement, all finished with corresponding elegance.

"The drawing room day coaches for the Southern Pacific are of the same general appearance outside as the above, but are finished inside with an artistic combination of mahogany and rosewood, engraved with tracings in gold of leaves and flowers. These woods are so highly finished, and so handsomely carved, that they form a unique work of art. Revolving fauteuils, upholstered with crimson velvet, placed before French plate-glass windows, 5x3½ feet, form the seating arrangements.

Cornucopia District.

A correspondent of the *Silver State* says: Since my last, the influx to this place has ceased a little, and it is well for all that it should be so. Rome was not built in a day, nor do men get rich in that short length of time. After careful examination and close inquiry from the best sources, I am fully of the belief that this will in time make one of the

First Mining Camps in the State,

But it will take time for development. There are many good mines located and to some extent developed, and all show as far as worked good milling ore. The Leopard is an exceedingly fine mine. Late workings on it show such prospects that the company have come to the conclusion that they are warranted in putting up immediately a new

Twenty-Stamp Mill,

Which they are proceeding to do. This will give employment to some more of the idle men that are around here now. The Hussey mine is located near the Leopard, at the south end of town, and bids fair to be a valuable property. The Black Diamond mine, owned by A. D. Meacham and others, is highly spoken of, and will, undoubtedly, in a short time create quite a stir here as one of the rich bonanzas of the place.

The town is

Growing Quite Rapidly,

Sometimes I think almost too fast for the amount of business that is done here. In town there are four stores, seven saloons (with two under way), three restaurants and one lodging house, two butcher shops and one bakery, also there is quite an extensive adobe yard, with plenty of adobes on hand, which sell for twelve dollars per thousand.

The Leopard Mill Started

Up again, and will continue to run steadily if no accident occurs. There are two blacksmith shops here now—one is run by a Chinaman. Johnny Barrett, of your place, arrived here the other day with his outfit, and is now busily engaged in putting up his blacksmith and wagon shop.

TO TAKE OBSERVATIONS DURING A FOG.—A correspondent of the *Scientific American* suggests that observations might be taken from a captive balloon allowed to ascend above the strata of a dense fog.

A Peruvian Mining Centre.

Probably few of our readers have ever heard of the city of Pasco, high up among the Andes of Peru, but it is a place of no little mercantile importance, with 30,000 inhabitants, full of English and other European commercial houses, including among them discount and other banks. There are also several magnificent hotels and other houses of entertainment. Among its extensive treasures of copper, silver and gold, there are in the vicinity of Pasco 200 silver mines, in actual working, and there are nearly 1,700 mines of all sorts, permission to work which has been granted by the government to natives and foreigners, the proportion of metal being from 10 and 15 to 3,000 lbs. in a block of 50 cwt. It has been calculated that the mines of Pasco have produced 160,000,000 oz. of silver, being double, or more than double, all that the rest of Peru has produced during seventy-six years. The hill of Pasco is intersected with veins of pure silver, sulphides of silver and copper, carbonate of copper, and silver pyrites; and besides the 2,000 mines, there are 1,300 places where the gold cropped out. Its gold mines, which in 1805–10 yielded to the Spanish government about five millions of dollars, are now no longer worked, because the miners confine their labors to the silver. The hill of Pasco might become a great centre for a mining colony, and maintain 300,000 laborers with a tenth of the produce of the valley of Jauja. The mineral hills of Santa Rosa, Lauricocha, and Yauacsucha, with the forty little hills which surround them, all having the same geological formation, and united by the local railway, have 290 mines in working, and are intersected with iron pyrites and other minerals, which, when smelted, produce valuable metals, from bright, shining silver to sulphides of copper. The gold ores found in the hills of this district have always produced from two to four pounds of gold in a block of 5,000 lbs.

Why Arcs or Ellipses of Circles Please the Eye.

Prof. Muller, in a course of lectures in Berlin, offered a simple and mechanical explanation of the universal admiration bestowed on these curves. The eye is moved in its socket by six muscles, of which four are respectively employed to raise, depress, turn to the right and to the left. The other two have an action contrary to one another, and roll the eye on its axis, or from the outside downward, and inside upward. On the object being presented to the eye for inspection, the first act is that of circumvision, or going round the boundary lines, so as to bring consecutively every individual portion of the circumference upon the most delicate and sensitive portion of the retina. Now, if figures, bounded by straight lines, be presented for inspection, it is obvious that but two of these muscles can be called into action; and it is equally evident, that, in curves of a circle or ellipse, all must alternately be brought into action. The effect then is, that if two only be employed, as in rectilinear figures, those two have an undue share of labor; and by repeating the experiment frequently, as we do in childhood, the notion of tedium is instilled, and we form gradually a distaste for straight lines, and are led to prefer those curves which supply a more general and equable share of work to the muscles.

BESSEMER STEEL WORKS.—There are at the present time ten bessemer steel works in the United States—five of which are in Pennsylvania. In Sweden there are fifteen in operation. We have no data at hand for giving their numbers in other European countries; but the process is coming rapidly into use all over the civilized world, and bids fair to soon introduce steel into almost universal use for all purposes for which wrought iron is now employed. Thirteen years ago a shrewd Yankee partner of E. B. Ward, of Detroit, travelled over Europe, visiting all the steel works, in order to get an insight into the manner of making steel by the Bessemer process. In Norway and England it was difficult to get an inkling of the subject, so jealous were the manufacturers. But at the great Bessemer works on the Isle river, in the South of France, through the courtesy of its managers, he saw it all and became master of the subject. To-day it is likely to become the leading manufacture of America.

THE contract for furnishing the gas fixtures for the Palace Hotel has been awarded to Thos. Day & Co., of this city. The dining-rooms will be lighted by twenty-four light chandeliers. Each of the 755 sleeping rooms will be furnished with a five-light chandelier with center light extension arm. The office will have four twenty-four light chandeliers, one each in the ladies' and gents' reception rooms, reading room and bar room, and two in the ball room. On each of the marble mantles will be two standard lights, making 1,408 in the hotel. The bath and wash rooms will require 1,800 brackets. Around the balconies in the inner court will be 108 standard lights, with three and five-light clusters. At the entrance to the court will be rich brass bracket lamps, with coach lantern beveled edge glass.

IRON FOR PURIFYING WATER.—In relation to the value of iron for purifying water it is remarked that in 1857 Medlock took out a patent in England for the use of iron for removing all impurities from water. This method has been largely discussed, experimented upon, modified, criticised, and finally, we believe, generally abandoned and now revived again.

Iron in Architectural Structure.

In modern ordinary construction, the introduction of iron, more particularly as iron columns, is an every day characteristic. The tendency from the interior class of the materials used in many buildings, is to make the iron portion as light as possible, and sustain as immense a superstructure of stone or brick, and in some instances of wood, as a few slender pillars can be forced to support. It is not remarkable that when a fire occurs in such overloaded structures, the quantity of combustible material in the building brings about to almost a certainty the entire destruction of all parts of the building indiscriminately. What under most circumstances would be almost indestructible, becomes under numerous conditions the cause of more extended destruction than if the whole had been of less composite arrangement.

Few iron columns, when sound, of proper thickness and strength, and standing well on their feet, can ever be overloaded to a crushing degree by the weight of the mere front that is carried up over them. Nevertheless, it is in such situations that iron pillars are exposed to the greatest stress. It is the experience of all firemen in cities that when a fire in a building once becomes uncontrollable, the quicker the building burns or falls down, provided no life is lost, so much the better.

If an architect is left to the selection and disposition of the materials that are to enter into the building that he superintends, there is little to fear as to any dispsragement that the use of iron as a building material can offer; it is where a limit is placed upon his action that the incongruity of the materials and the unequal strength of the various parts, instantly manifest to the practiced eye that but little would be required to consummate the destruction of the fabric. It is admitted that a column that is abundantly strong when cold, will, when heated to a red heat, yield to its superincumbent weight. Such instances are, however, far less frequent than where a column of limestone or sandstone, and even granite, when subjected to a similar exposure, behaves in a very much worse manner. Iron may melt or crack when played upon, but how seldom it is that an iron front is rendered incapable of repair and future use, while nothing would be left of stone columns but dust, slabs and spalls. There is no defect in the application of iron that cannot be either remedied or partially obviated.

The foregoing thoughts were induced by observing that in an Eastern town a patent has been secured for an iron column that is in reality a column within a column. The invention consists in applying the principle of the fire-proof safe to an iron column. As in the case of the common iron pillar, solid cast iron columns sustain the whole weight of the superstructure, but outside of each solid column is a thin cast iron shell, and the space intervening between the outer shell and the inner column is filled with plaster of paris, the non-conducting properties of which are well known. No weight is allowed to rest on the outer shell, or the non-conductor that is used as filling, their only mission being to protect from the effect of heat the real support of the building, the inner column. These columns will be surmounted by an iron T girder, which is enclosed in a fire-proof casting of a similar nature, and the junction between the pillar and the girder is so formed that only the protected portion of the one touches the protected portion of the other, while the casing forms a tight joint, making the fire-proof armor complete. These columns are intended to take the place of the ordinary iron columns in ornamental fronts of buildings, as well as the interior of large warehouses where such supports are needed.

To a certain extent the outside sheathing might be as well galvanized iron as cast, it being adequate to all the requirements of the cast shell.—*Metals and Arts.*

Quicksilver in Arizona.

The Arizona *Miner* says: Everybody about town will recollect that three or four weeks ago there was a little stir on account of some cinnabar ore that was brought in by some prospectors. Numerous tests were made and quicksilver found in all the rock. Mr. John Malcomb and Joe Stone arrived in town Tuesday, having been out to make locations. They brought in about twenty pounds of ore, which can be seen in the cabinet at Thorne & Hutchison's saloon, and in the hands of Capt. J. P. Hargrave, also with H. A. Bigelow, at the Nifty saloon. The lode is situated on the Verde river, which it crosses several miles below Squaw peak, and shows for a long distance on both sides of the stream. Malcomb and Stone report that there are large holes excavated along the vein, evidently by Indians, who used the ore for paint. The ore is identical in appearance with the pieces which have been found in the old Indian camps for years past in Yavapai county. J. C. Clancy, who was killed May 10th, at the Crook mine, was the discoverer of the lode, and in the location just made his interest has been preserved. The other fortunate locators are John Malcomb, Wm. Kent, Dan Cannon, J. P. Hargrave, John A. Rush, H. A. Bigelow, P. S. Babcock, Pat. Hamilton, Pete Reed, E. S. Penwell and Eli Fender. Now we need a man that understands working cinnabar ores to take hold in earnest.

Good Health.

Milk Diet in Typhoid Fever.

Dr. L. R. Rogers, of Albany, esnde to the *Medical Record* the following account of his management of a severs caee of typhoid fever on the milk diet principls:

Tha point to which I wieh to call sttention is the dist part of the treatment. Ae soon as I felt snre that ahe was goiag to have a regular "run" of fever, I commenoed to give milk--fresh, raw, oow's milk, from one oow, and not more than twelve honrs old at any time. I gave, dnring the hight of the disease, from one and one-half to two qnarts per day; overy hour at first, then every half hour, and tor over two weeks every quarter honr, without any water or other food, except a few times when I tried beef tea and other dietary preparations. Tne latter in every instance raised her pulse and fever, and thickened the fur on her tongue. Her bowels gave no trouble, moving by injeotions ouce in four or five days, the dejections like thoee of an infant. Qninine and stimulants made her worse every time when tried, and the severe pain in back and limbs, which came on every day about eix P. M., was qnieted in ten or fifteen minutes by a mild ourrent of Faradio electricity from the back of the neck to the sacrum of the feet, which was continued twonty or thirty minntes.

Thie trestmeat I need for thirty-two oonsec. utive days, giving each time a good night's rest, free from pain, without snything in the shape of opiates. I had the best counsel the oonnty afforded, and the oase was oonsidered hy all who saw it one of the most severe.

Small doses of the sulphite of soda were all the medicine she took that did not disagree, and I gave this simply to prevent decomposition in the milk.

There were many fatal oases in the epidemio, hut all who bore milk well recovered. In thie caee, although ehe had the nouriehment in one and one-half to two quarts of the beet milk, ehe continued to get weaker and weaker for over four weeke, which shows very plainly that any other diet would have failed to meet the emergenoy.

Milk oontains all that is needed to nonrieh and keep up every part of the eyetem, nearly, and is always the same; while our best dietary mixtnres are wanting in many things needed by the economy, and cannot be made twice alike. I have since that time used milk very freely in all stages of various diseases, and have had reason to be well satisfied with it as the best diet for both adults and children.

I do not put forth thie oase as one to copy from in the particular treatment, bnt simply to show that the best artiole of diet that the wo ld conteins, either in disease or in convalescence, and one always obtainable, is too often neglected, and complex dietary compounds used instead. The patient in this instance was confined to the house over eight weeks, and made an excellent recovery. She was thirty-six when it occurred, and is now forty-three, and has never been sick since.

Avoid Protracted Toil.—The work of the day should be conducted in the best manner. Thorough, careful, intelligent work during seven or eight hours is much more profitable than ten hours of hurried work. In cities, merchants and business men seldom apply themselves more than six hours a day, and probably the greater part of the best work done in that city is performed in less than five hours each day. There is no reason why farmers who create the wealth of the world should labor more hours than they who manage this wealth. Formerly, constant toil was required to support a family, because all work was done at a disadvantage, tools of all kinds were poor, and labor saving machinery was unknown. More actual work was required in the last generation to make the clothing of a family than is now required to buy the clothing, and the food added, and every year the farmer has new advantages and powers in this direction. It is for this reason that the farmer should seek to enlarge his means for acquiring information, and of rising to new dignity. This he can only do by having more leisure, and by avoiding protracted toil. There is no good reason now why he may not unite culture and elegance with rural pursuits.—*Micawber.*

Applying the Stomach Pump.—In the Glasgow *Medical Journal*, Dr. McEwen recommends that in the use of the stomach pump the head should be bent forward on the introduction of the tube, instead of backward, as is generally taught in books. When the head is thrown backward, he says the spine becomes convex anteriorly, and as the tube is passed along it has a tendency to impinge upon the larynx; but when the head is bent forward then the mouth, pharynx and œsophagus form a curve along which the tube glides gently into the œsophagus, and at the same time is directed away from the larynx.

A species of dysentery or approximation to light cholera has been prevalent in Ulsh and vicinity, for a short time, assuming the character of an epidemic. In the cases of several children and adults the attacks have proved speedily fatal.

Death Indoors.

Multitudes of persons have a great horror of going out of doors for fear of taking cold; if it is a little damp, or a little windy, or a little cold, they wait, and wait and wait; meanwhile weeks and even months pass away, and they never, during that whole time, breathe a single breath of pure air. The result is, they become so enfeebled that their constitutions have no power of resistance; the least thing in the world gives them a cold; even going from one room to another, and before they know it they have a cold all the time, and this is nothing more or less than consumption; whereas, if an opposite practice had been followed of going out for an hour or two every day, regardless of the weather, so it is not actually falling rain, a very different result would have taken place. The truth is, the more a person is out of doors the less easily does he take cold. It is a widely known fact that persons who camp out every night, or sleep under a tree for weeks together, seldom take cold at all.

Very many of our bad colds, and those of a most fatal form, are taken in the house, and not out of doors; taken by removing parts of clothing too soon after coming into the house, or lying down on a bed or sofa when in a tired or exhausted condition from having engaged too vigorously in domestic employments. Many a pie has cost an industrious man a hundred dollars. A human life has many a time paid for an apple dumpling. When our wives go to work, they become so interested in it that they find themselves utterly exhausted before they know it; their ambition to complete a thing, to do their work well, sustains them till it is completed. The mental and physical condition is one of exhaustion, when a breath of air will give a cold, to settle in the joints, to wake up next day with inflammatory rheumatism, or with a feeling of stiffness or soreness, as if they had been pounded in a bag; or a sore throat to worry and trouble them for months; or lung fever to put them in the grave in less than a week.

Our wives should work by the day, if they must work at all, and not by the job; it is more economical in the end to see how little work they can do in an hour, instead of how much. It is slow, steady, continuous labor which brings health, and strength, and a good digestion. Fitful labor is ruinous to all.—*Hall's Journal.*

Useful Information.

Toughened Glass—Its Applications.

Our readers are already apprised of the new process for toughening glass, what toughened glass is, how it is produced, etc., but perhaps it may be interesting to consider some of its many applications. A lecturer in England alluding to this matter recently said: "It therefore only remains for me to indicate the direction of its practical application. I say 'indicate,' for were I to enumerate all the purposes to which it can be usefully applied, I should simply become wearisome. It is possible that there is not one corner in the whole domain of the arts, sciences, and manufactures, where its presence will not in time be made manifest in some way or other, and its usefulness appreciated, whilst for purposes pertaining to social life its application would seem to be unlimited. The miner would have a safer safety-lamp than ever Davy gave him, and the engineer's gauge glass would stand the highest steam pressure and alternations of heat and cold without fear of mischance. In chemical work it would supersede lead for tanks, and the present costly and unreliable glass pumptubes would be far less expensive, and infinitely more durable. So with brewers; they would find it a most useful friend in their vats, which they could thoroughly and easily cleanse, and keep free from secreted stale germs of organic life, which develop and reproduce themselves in the process of fermenting beer, in a highly objectionable manner. For water pipes it would offer the advantages of strength without corrosion. As sayers, I am told, would use it instead of platinum in some processes. In silk-spinning machinery slider eyes, or guides, which are so soon cut through by reason of the speed at which the silk passes through them, would be rendered very durable if made of toughened glass. Another application, which has suggested itself to an ingenious American gentleman since the first notice of M. de la Bastie's invention appeared, is the manufacture of printing types and rollers for printing presses, and this idea is now being developed into practical form. Seeing the wide range of domestic and social wants which toughened glass promises to meet, I know not where to begin, and were I to begin I should not know where to end. I can only observe in this connection that toughened glass promises to supersede porcelain and similar wares, and to add a real and permanent value to glass utensils of every kind. It will probably supersede enamel on culinary utensils, and in other similar directions."

A Fine Imitation Marble.—An elegant imitation of marble is made in Dresden for architectural purposes, by impregnating sandstone with silicic acid and alumina. In Naundorf such stones are prepared, which are intensely white, transparent and capable of taking a polish.

Rules for Mechanics.

To get an engine into line and square the shaft, set up two lines, one parallel to the axis of the cylinder or through the cylinder, if possible, and the other perpendicular to the first, in the same plane. These are reference lines to measure from, to bring the shaft and guide into line.

To find the length of a driving belt before the pulleys are in position, add the circumference of the two pulleys, divide the product by two, and add the quotient thus obtained to double the distance between the centers of the two shafts, which will give the length of belt required. For a crose belt add the circumference of the two pulleys, multiply the product by three, and divide by two; the quotient added to double the distance between centers of both shafts will give the length required.

To find where to cut belt holes in floors, measure the distance in inches from center of driving shaft to under side of floor; on the upper side make a mark over the center of shaft. Now measure the distance from center of shaft on machine to be driven to floor, making a mark on the floor immediately beneath the center, then measure the distance between the two marks. Transfer these figures to a board or paper, draw off the driving and driven pulleys after finding their diameters at the distance from each other and the floor line previously obtained, and draw the lines representing the belt cutting the floor line, which will show where the belt passes through the floor. The drawing can be made to a scale to reduce it to convenient dimensions, maintaining the proportions. The holes may now be marked off on the floor and cut with a certainty of being correct. In making the drawing it is best to do it full size on the floor if room can be had, and allowance must be made for the thickness of flooring.

When a system of pulleys or blocks is operated by a single rope, the charge which can be sustained by the lower block is equal to the weight applied to the end of the rope multiplied with the number of ropes supporting the block.

Thus when the upper and lower blocks possess one pulley each, the load will be supported by a twofold rope, for two pulleys by a fourfold rope, and therefore in the first case every pound on the end of the rope will support two, and in the second case four pounds on the blocks.

The pressure obtained by a screw is found by multiplying the force applied to the lever with twice its length, and with the number 3,1416, and dividing the product by the distance of the screw threads.

This rule is founded on the facts, first, that a screw is nothing but a curved inclined plane, of which the circumference is the length and the distance of the threads the hight; and second, that the force is applied by a long lever outside the screw, and moves around the screw at a distance equal to the length of the lever, in a circle to which the diameter is equal to twice the circle or radius, and the circumference equal to twice the radius multiplied by 3,1416.

It is also observed here that for every total revolution of the screw, it descends as much as the distance of the threads, while the force applied moves through a distance of several feet in the large circle at the end of the lever.

Stains for Wood.

Green.—Take three pints strong vinegar, four ounces beet verdigris, ground fine, one-half ounce sap green; thoroughly mix these ingredients.

Purple.—Take one pound of chipped logwood, three quarts water, four ounces pearlash, and two ounces powdered indigo. Boil the logwood in the water for half an hour; then add the pearlash and indigo.

Cherry.—Take three quarts rain water, four ounces annetto; boil in a copper kettle till the annatto is dissolved, then put in a piece of potash of the size of a walnut. Keep the mixture over the fire half an hour longer, and then it may be bottled for use.

Mahogany.—Wash the wood with diluted nitric acid (ten parts of water to one of nitric acid). For rose-wood, glaze the same with carmine or Munich Lake. Asphaltum, thinned with turpentine, forms an excellent mahogany color for new work.

Blue.—Dissolve copper filings in aquafortis; brush the wood with it, and then go over the work with a hot solution of pearlash (two ounces to one pint of water) till it assumes a perfectly blue color.

A good blue pigment for painting skies is not easily obtained because the most perfect materials for that purpose are so difficult to obtain. Ultramarine, French ultramarine, and cobalt are the three articles used. The most natural color for skies and distances is made from cobalt. It is a permanent color, and needs to be used with care, but under skillful manipulation, any desired effect can be produced.

Fire Proof Roofs and Stairs.—If you will have wood floors and stairs, lay a flooring of the thickest sheet iron over the joists, and your wood upon that, and sheath your stairs with the same material. A floor will not burn without a supply of air under it. Throw a dry board upon a flat pavement, and kindle it as it lies if you can. Prevent drafts, and, though there will be fires, no houses will be consumed.

Domestic Economy.

Luncheon in the City.

The two most common subjects of complaint with wives and mothers of limited income in this and other large cities are, first, that they are debarred from society by the expense of the ordinary methods of hospitality; and secondly, that the habits of city life separate them from the companionship of their children. The wife of a man in moderate circumstances tells you that she cannot afford to give balls, kettledrums, or even dinners to her friends; that her boys and girls scurry off to school after a hurried breakfast, and dine at noon alone; for, being a woman of sense, she will not allow them to eat the heaviest meal of the day at six or seven P. M., the hour when their father comes home to dinner. The family dinner at mid day, and the evening tea of island towns, at which parents and children gather about the table and learn to know one another through the interests and feelings of every day, are almost unknown in the same grade of social city life.

Now we suggest that luncheon is a meal of undeveloped opportunities to the housekeeper and mother. We do not by any means refer to the elaborate state luuches given by leaders of fashion during the last two or three years, where the floral decorations alone cost a liberal annual income. But there is no reason why any housekeeper should not, with a little personal trouble, convert her children's dinner into a delicately served savory meal to which she could invite informally two or three of her lady friends. It is emphatically a woman's meal; and husbands need not hint cynically that the chief dish will be gossip. There is no better talk than that of three or four cultured, clever women, alone together; none which would be more civilizing and effective on children. How is a child to acquire good breeding if it is not brought socially into contact with well-bred people? American children in cities are crammed with all kinds of knowledge, but they are left to the companionship of servants and of one another; who can blame them if they too often betray the ideas and manners of the kitchen and the ball ground?

The dishes on the lunch table should be light—but prettily served. A meal of cold meats, pickles, creams, fruit, thick chocolate, with dry toast, etc., can be more easily made attractive, as every experienced housekeeper knows, than the heavy coarsee of a dinner. It is advisable, too, for this noonday meal, to color the table warmly. The majority of economical housewives buy the plain white china for every day use, but it has, to us, a chilly and meager air in conjunction with the ordinary napery. There are equally cheap sets of both English and French china of delicate and rich colors, which, under skillful handling, convert an ordinary meal into a picture. The most beautiful and (where there is any garden room) the cheapest table decoration is, of course, flowers. A little care and trouble will provide this without expense. Morning-glory, Cobea, wild ivy, and Lemii will grow each in a foot square of the back yard, and bestow themselves skyward thereafter, and with a few boxes of Coleus in an attic window, will crown your board with splendor like jewels, until the snow comes. This daily lunch requires, perhaps, time and care; but our reader will find her reward at the end of the year, if she have established the custom in her house of a wholesome, unhurried, dainty meal, where she can meet her children and friends cheerfully and with little cost.—*Scribner.*

How to Keep Meat Fresh a Long Time.

We have for authority the *Inter-Ocean* for saying that the following recipe is worth the subscription price of any newspaper in the land:

As soon as the animal heat is out of the meat, slice it up ready for cooking. Prepare a large jar by scalding well with hot salt and water. Mix salt and pulverized saltpeter in the proportion of one tablespoonful of saltpeter to one teacupful of salt. Cover the bottom of the jar with a sprinkle of salt and pepper. Put down a layer of meat, sprinkle with salt and pepper, the same as if just going on the table, and continue in this manner till the jar is full. Fold a cloth or towel and wet it in strong salt and water, in which a little of the saltpeter is dissolved. Press the cloth closely over the meat and set in a cool place. Be sure and press the cloth on tightly as each layer is removed, and your meat will keep for months. It is a good plan to let the meat lie over night after it is sliced, before packing. Then drain off all the blood that oozes from it. It will be necessary to change the cloth occasionally, or take it off and wash it—first in cold water—then soak in salt and water as at first. In this way farmers can have fresh meat the year round. "I have kept beef," says the writer, "that was killed the 12th of February, until the 21st of June. Then I packed a large jar of veal in the same way during the dog days, and it kept six weeks."

Gravy for Veal or Chicken.—Put a tablespoonful of butter in a hot frying pan. When it begins to brown dust a tablespoonful of flour into it, stirring constantly with a spoon; and salt and pepper; then in one pint of milk—cream, if you have it; let it boil five minutes and pour over the dish of meat.

MINING AND SCIENTIFIC PRESS

W. B. EWER.....SENIOR EDITOR.

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San Francisco:

Saturday Morning, July 10, 1875.

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Ventilating Mines.

Levi J. Heury, of this city, has recently patented through the agency connected with thie office a process for ventilating, purifying and cooling the air of mines, wells, sewers, vaults, etc. It consists principally in the employment of water, which is carried in suitable pipes to various parts of the space to be operated on and is discharged through spray jets or nozzles. This spray, when falling down the shaft, will carry mechanically entangled with it a considerable amount of air, while similar spray jets in various parts of the space below will serve to cool the air. One form of the apparatus to be used in mines may be described as follows:

At the top of a mining shaft a connection with a hydrant or tank of water should be made, through the medium of any metallic pipe or India rubber hose. The pipes for the main supply of water should be permitted to descend the shaft. At every 100 or 200 feet, a jet or nozzle is securely connected with the pipes or wiuze, so that in its downward course the water may be thrown out in the form of a spray. These sprays may be put in any required place.

The action of a spray of water in purifying the atmosphere is too well known to require any further explanation. In addition to this cooling of the air a further advantage is gained in forcing downward of a body of cool air on account of its becoming mechanically entangled with the falling spray, thus furnishing a certain amount of air for the purpose of ventilating the lower levels of a mine. The spray of falling water is also very valuable as a protection against fire in such mines or shafts as are excessively dry, and the full strength of the timbers will be better preserved by this wetting.

In order to increase the circulation of cool air in the mine, the inventor further utilizes the water which passes down the pipes, by connecting the pipes at certain points with the box or case of a water wheel, said wheel being turned by the momentum of passing water. The pipes are continued below the wheel case, and the different discharge openings below will cause a sufficient current to rotate the wheel. This wheel is connected with a fan-blower at a suitable point, so that this fan will take a portion of the air cooled by the spray and force it downward through pipes to different points where it can be used in the mine. The water to be used as above described, may be taken either from the surface, or it may be collected in tanks at different parts of the mine or shafts, care being taken that sufficient fall is given to produce the necessary result. For local use by the miners on low levels of deep mines where the temperature is elevated and the air close and stifling, flexible tubes are connected with the main pipe, or with the tanks, and these tubes are provided with spray nozzles, which are always within easy reach of the operator, and may in some cases be attached to the body so that if desired a spray may be thrown over the person. Extra faucets or cocks are connected with the pipes which pass through the timbers, and which, in case of fire in the timbers, can at a moment's warning be turned on by workmen, thus giving a sense of safety in the event of a fire in the mine.

The Hope Iron Works.

This institution is the latest addition to the list of San Francisco iron works, having just started active operations. Mr. W. W. Hanscom, formerly of the Ætna iron works, is proprietor. The works are located on the corner of Minnesota and Santa Clara streets, on the Potrero, and cover a space of 100x200 feet. The main building is 40x160 feet, the machine shop taking up 80 feet, the pattern shop 50 feet and the blacksmith shop 30 feet. The offices and drafting room are at the extreme end of the main building, and are neatly fitted up. The foundry building covers a space of 40x100.

Mr. Hanscom has made a study of the proper arrangement of the works, so as to facilitate operations as much as possible and make everything convenient for handling. In the foundry is a cupola furnace of six tons capacity, with a No. 5 Sturtevant blower. The pipe leading the air from blower to furnace is much larger than is usually considered proper, but Mr. Hanscom says by the arrangement he has made, he gets as large a blast as if he used a blower two sizes larger with smaller pipe. Coke is used altogether for smelting purposes, and the screenings for fuel. This is found advantageous, and another industry is utilized.

In the machine shop the machinery is all new and first-class. The tools were made to order by Bement & Son, of Philadelphia, and are the best that could be procured. There are now four lathes in the shop and two on the way, from twelve inches up to seven feet capacity, to turn from ten feet up to twenty-four feet in length. There is also an eight-inch shaping machine, and a twelve-inch slotting machine. At present the works are run by a ten-horse power engine for the machine shop and a four-horse power engine for the foundry. There are also two drilling machines, a bolt cutting machine, steam hammer, etc.

The shops are all arranged on one floor, to save the trouble of stairs. The buildings are lofty and well ventilated, and the different shops arranged in relative positions to accord with the usual progress of work.

These works have been running only about six weeks, but they already give employment to twenty-five men, and work is rapidly accumulating. Mr. Hanscom will make a specialty of stationary and marine engines. He has made a study of steam engine progress, and takes the greatest interest in their manufacture and work. He makes a style of vertical engines with a broader base than usual, in which several improvements are combined. The patterns and designs for this engine are now being made in the shop.

At these works there is now a hoisting engine under way for a Washoe mining company's prospecting operations; also a thirty-five horse power engine for a mine in Idaho. Mr. Hanscom is also building a launch engine which will be exhibited at the coming Mechanics' Institute exhibition. The launch is thirty feet long by six feet beam. These works will make a specialty of marine machinery of all kinds, and Mr. Hanscom intends turning out some steam launches which will be a credit to California. He has grown up in California, and feels a natural pride in manufacturing articles of this class which will show that California mechanics can do as well as those elsewhere.

No inconvenience is felt by the distance of the works from business centers. The town is rapidly growing over toward the Potrero, and before many years most of the iron works will probably move in the same direction. Many of the foundry men have talked of moving to the Potrero for some time, but Mr. Hanscom has taken the initiative. The idea he had in starting this shop was that all the shops were doing a great deal of general work and built everything, including engines. If he makes a specialty of engines he is confident that he can build them cheaper than shops which do not. As good work is required in this line here as in any part of the United States. The people here expect more work out of an engine than is usually the case. In order to compete successfully with older firms, Mr. Hanscom bought the best tools possible, with no regard to cost, and engaged the best workmen, in all departments, that he could procure. With good tools, good workmen, a convenient shop, pride in his work and long experience, he is confident that he can build up a successful business, and turn out work which will reflect credit on himself and our home industries.

Testing Iron and Steel.

The board appointed by the President of the United States under the provisions of an act of Congress of March 3d, 1871, "to test iron and steel and other metals," has instructed a committee composed of R. H. Thurston, L. A. Beardslee, U. S. N., and Q. A. Gillmore, U. S. A., to continue an investigation of those modifications of the various properties of the metals which are produced by changes of temperature. The committee are desirous of supplementing these experimental researches with such results of other experimental work and of observation as may be obtainable from authentic sources; they have therefore issued a circular soliciting such contributions from investigators and observers as may be deemed valuable in assisting the task assigned them.

The behavior of rails and of machinery exposed to the extremes of temperature observed in northern latitudes, where exposed to wear or to breakage, will be likely to afford valuable data. The character of the fracture and the texture of the abraded surfaces, as well as the statistics ordinarily collected, should be noted. Specimens exhibiting peculiarities of behavior or appearance, and photographs of masses which it may not be convenient to forward, will be of value. Where exact quantitative analysis of metals exhibiting unusual characteristics can be given, they will add effectively in the determination of the causes of such peculiarities.

The statistics of well managed railroads are expected to afford useful and reliable information. Rolling mills producing rails and other forms of rolled iron which are tested by the drop, may be able to furnish more accurate statements of the effect of changes of temperature in modifying resistance to shocks.

Some experimental work has already been done in this field, and it is desired that the results of such researches may be communicated in as great detail and with as much accuracy as possible. Published monographs, reference to papers published in scientific, engineering or other periodicals, and unpublished papers, will be received as valuable contributions.

All assistance rendered the committee in the endeavor to ascertain the character of the change of the force of cohesion produced in the metals and their alloys by variation of temperature, to determine the mathematical expression of that law, and to obtain such formulas, either exact or approximate, as will make these results conveniently and practically available to engineers and constructors, will be properly acknowledged. It is to be hoped that some of our iron workers on this coast will do what they can to assist the committee in their labors, as no doubt many of them might furnish valuable data if they are disposed to take the time to write out the results of their experience. Prof. R. H. Thurston is chairman of the committee, and may be addressed at the Stevens Institute of Technology, Department of Engineering, Hoboken, N. J.

The Mechanics' Institute Exhibition.

It should be borne in mind by those interested, that after July 20th the managers of the Mechanics' Institute will reserve no space in the pavilion for exhibiting at the approaching fair. Already more than three-fourths of the space has been applied for, and notwithstanding the increased area provided for exhibitors this year, it is more than probable that the demand for space will exceed the capacity of the pavilion. A few weeks since we made brief mention of a number of the more important exhibits for which space had been secured. Since then, we have to note several other novelties. A quartz mill, complete in all its appointments for feeding, crushing, and amalgamating ore, will make plain to novices the running method by which our inventive genius entices the precious metals from their association with baser minerals.

The Board of Managers consists of the following named gentlemen: A. S. Hallidie, James C. Patrick, Henry L. Davis, D. E. Hayes, Asa R. Wells, P. B. Cornwall, Chas. Elliot, George Spaulding, H. S. Smith, W. P. Stout, Jeremiah Browning, J. H. Stontenborough, R. B. Woodward and James Spiers.

President Hallidie has appointed the following committees:

Auditing Committee—Stout, Browning and Hayes.

Committee on Building—Wells, Smith and Spiers.

Committee on Circulars and Classification—Patrick, Spaulding and Stoutenborough.

On Printing and Advertising — Spaulding, Stoutenborough and Stout.

On Power and Machinery—Spiers, Smith and Elliot.

On Rules, Regulations and Rewards—Browning, Patrick and Davis.

On Music and Decorations—Davis, Woodward and Cornwall.

On Privileges—Elliot, Spaulding and Woodward.

On Location—Hayes, Browning and Spiers.

On Police— Smith, Davis and Cornwall.

On the Horticultural Garden— Woodward, Stoutenborough and Davis.

All communications in regard to space and matters relating to the exhibition, should be addressed to the Secretary of the Board, Mr. J. H. Culver, No. 27 Post street.

Roasting Ores.

Written for the MINING AND SCIENTIFIC PRESS by O. H. AARON.

Notwithstanding the growing tendency to discredit the efficacy of fire in the purification of human souls, there is, at the present time, among mine owners, a marked revival of faith in plutonic agencies for the salvation of the precious portions of our ores from eternal perdition in the tailrace.

Without disparagement of the redeeming grace of the Patchen process, which I have excellent reason to believe is destined to do a good work on the Comstock ore, nor of my own, which is still in use in Mono county, leaving nothing to be gained by roasting, in the treatment of the partzite ores of that section, I venture to think there are but few cases in which an ore containing over $50 per ton, in silver, cannot be more profitably treated by roasting than by raw working; especially now that the chief difficulties are removed by the excellent mechanical appliances which the genius of a White, a Stetefeldt, have given to metallurgy.

I mention the names of White and Stetefeldt particularly because, on the one hand, the efforts of their predecessors in this line, myself among the number, have met with but little success, and on the other, those of their successors seem to be merely modifications, more ingenious than beneficial, of the vertical shaft of Stetefeldt, and the revolving cylinder with "grooves, cavities or projections," of White.

The features connected with roasting, which have caused that process to be regarded with distrust heretofore, are, firstly, dry crushing, which is somewhat hastily assumed to be essential; secondly, the cost of fuel; thirdly, the large quantity of salt required; fourthly, the high price of labor, together with the difficulty of getting or keeping skilled workers; and, fifthly, the increased initial cost of works. I propose to consider these objections seriatim.

As to dry crushing, it is urged that a mill with a given number of stamps can crush only half as much dry as with the aid of water. This is partly due to the fact that, when the ore is to be roasted, it must be crushed, in general, finer than is absolutely necessary when it is to be worked raw in pans, which, in that case, may be made to do a part of the work which must otherwise be done in the battery. This grinding, however, takes power and consumes iron, and it is yet a mooted question, among mill men, whether it is more economical than fine crushing in the battery.

Granting, however, that the ore may as well be crushed in the battery so as to pass through a 40-mesh screen, which is fine enough for roasting, it still remains true that more work can be done in the wet way than in the dry.

But, aside from the fact that it is better to get the silver out of one ton of ore than to throw two tons away, dry crushing is not absolutely necessary for roasting. The ore may be crushed wet and dried in a revolving iron cylinder by the waste heat from the roasting furnace, the cylinder being provided with "liftere" which carry the ore upward as it revolves, and, by the concussion of its fall, prevent the formation of lumps or break them to powder when formed. A cylinder for this purpose is provided by Mr. White when desired.

To the objection that crushing finer will yield an increased proportion of slimes, I answer, save the slimes by causing the water to return to the battery, instead of letting it run away; ore cannot be too fine for roasting in White's furnace, unless it is intended to extract the silver by leaching, of which hereafter.

But the process of crushing ore dry is not necessarily so slow as is often supposed. The Northern Belle mill is now crushing dry at the rate of forty-two tons per day with only twenty stamps, and though it is admitted that such a result is exceptional, and is doubtless traceable in part to the soft and friable nature of the ore, yet much is also due to perfect construction and skillful management of the battery. The real difficulty lies, not in the crushing, but in the discharge of dry ore, and this is greatly increased when it is not perfectly dry but contains even so little as one per cent. of moisture, a quantity which cannot be perceived by the eye. If the ore is soft, with but little quartz, it is almost certain, though apparently dry, to contain from two to seven per cent. of water, and as heat is always produced by the concussion of the stamps in a battery, this water evaporates, and condenses again, more or less, on the screens which, thus moistened, become clogged with fine dust. I have often in cold weather seen little streams of moisture trickling down the upper part of the mortar, in the feed opening, caused in this way.

Another effect of moisture, when the ore contains slate, clay or iron-stone, in fact almost anything except quartz, is that it cakes under the stamps, which then pound on top of the mass without penetrating, or making it fly against the screens, so that the discharge is entirely arrested till repeated blows and the heat generated cause the cake to break up, when the discharge is quite rapid for a time. It may be thought that these remarks are uncalled for, as driers are very generally used; but my observation has shown me that the usual means are not sufficient to give the best results; the ore must contain no moisture which

can be evaporated at the temperature of the battery. The arrangement of screens described and illustrated some months ago in the Press, will also greatly increase the duty of a dry battery, besides offering other advantages.

The cost of fuel is reduced to such a low figure by the use of the new furnaces, as no longer to constitute a valid objection to roasting, as one cord of wood suffices for from fifteen to eighteen tons of ore.

The next item is salt, of which the quantity required is, in general, less than formerly, and as some is always used in raw working, together with other chemicals which are not required when the ore is roasted, the difference in expense is not great, and may probably be offset against the greater loss of quicksilver in the former.

The most serious objection to roasting, that referring to workmen, however applicable to the old reverberatory furnace, can no longer be urged in defence of a wasteful method of treating our ores. White's furnace, roasting fifteen or eighteen tons ors in twenty-four hours, requires only four men, two on a shift, to work it, and of these only one on each shift need be a skilled workman, and his responsibility is limited to the maintenance of a proper and uniform heat, under the direction of the millman.

An increased initial outlay for works cannot be avoided if amalgamation is to be used, though probably the outfit for roasting and leaching would not cost more than for raw pan working. This point, however, should not weigh with those who have the means of working their mines in the best manner.

I will here suggest to mine owners that many costly failures are to be attributed to their neglect of employing a metallurgist till after the works are erected. In many cases mills have been built before a mine has been developed, but even when, as is proper, the miner has been first called on to establish the existence of a paying mine, it is usually seen that the next expert employed, instead of being the metallurgist, is the millwright, who, being required to take a contract for "a mill" of so many stamps, and in general being familiar with only one kind, viz: the stereotyped "Washoe pan mill," builds one which is not adapted to the ors to be treated, and as a possible change of programme is never provided for, it results that when such a change has to be made, the new arrangement must suffer under many inconveniences, and therefore works at a disadvantage. I could cite cases in point, but prefer to let readers make their own application.

The more judicious plan for parties about to embark in a mining enterprise, not being themselves familiar with details, would be, after having satisfied themselves that their mine will justify the erection of reduction works, and having also ascertained the description of ore it will yield, to employ a competent metallurgist, and, if necessary, to go to a little expense for apparatus to enable him to make all needful tests and experiments, whereby to ascertain what process of treatment is most suitable to the ore and surrounding conditions. When, and not before this has been thoroughly done, the employment of the mechanic is in order to co-operate with the metallurgist in constructing, under his supervision, a suitable and economical plant.

At the present time quite a number of companies, having decided that roasting their ore is a necessity, are deliberating as to which of the many furnaces now in the market will be the best for their purpose. Among numerous competitors for public favor, White's revolving cylinder, with continuous feed and discharge, is one of which I can speak from actual observation and information on which I can rely. One of these furnaces has been doing excellent work at Hutches' canon, in Esmeralda county, for about two years, and I know for a fact that much of the ore roasted in it quite successfully was of a character which I should hesitate to undertake treating in a reverberatory furnace, as it contained a very large percentage of lead.

Another has been recently put up at Benton, where the ore from the Camanche mine, formerly worked raw by my process, has of late quite changed its character, and is now a very refractory compound of pyrites, galena, blende, fahlerze, etc. This furnace is also doing good work, chloridizing, at last accounts, to eighty-five per cent., and as the operator is a novice in roasting, better results are looked for shortly.

Both of these furnaces receive the ore at that end of the cylinder which is farthest from the fire box; the cylinder is therefore slightly inclined downward toward the flames, which, entering at the lower end, traverse its whole length in one direction, while the ore, mixed with salt, alternately lifted by the rotation of the grooved cylinder, and falling through the flames, gradually, in the course of fifteen minutes, works its way towards the fire box and falls into a chamber, whence it is drawn to the cooling floor, and is then ready for the pans.

Another modification of this furnace, in which the ore is blown into the cylinder (which in this case inclines downward away from the fire,) at that end at which the flames also enter, was put up some years since near Benton. It also did excellent work, chloridizing, by my tests, up to eighty five and one-half per cent. and by those of the operator sometimes as high as ninety-two per cent. The mill, however, being in many respects defective, and in bad hands, soon ceased to run.

Of these two methods of working White's furnace, some prefer one and some the other. White's patents include both. Those who prefer to feed at the end farthest from the fire, proceed upon the theory that the ore must be heated gradually, in order to prevent sintering, and certainly this view is sustained by observed facts in the working of reverberatory furnaces; but in all chemical operations it is emphatically true that circumstances alter cases; in other words, conditions modify results.

In the reverberatory furnace the ore lies in a mass upon the hearth, exposed to heat throughout, but to the oxidizing action of air only upon the surface; the most industrious workman can keep a small portion only in movement at any given moment. The heat must, therefore, be as low as is consistent with combustion of the sulphur, till time enough has elapsed to allow the workman, by stirring the ore, to expose every particle to oxidation, otherwise the fusible sulphurets will sinter.

In the furnace in question the conditions are quite different. Cool ore is constantly poured in, accompanied by a blast of cool air, both of which tend to moderate the intensity of the heat at that point. The blast of air entering with the ore scatters it in a shower in which no particle is in contact with another, but each is surrounded by an atmosphere of unburned air, which is gradually, though rapidly, heated; and in which the sulphurets, in minute particles, are readily oxidized, at least superficially, before they even touch the lower side of the cylinder, which is kept red hot from end to end, and, by its revolution, causes the ore to fall many times through this *feu d'enfer* (hell of a fire), before it finally reaches the point of exit, exposed throughout to the action of glowing gases of sulphurous, sulphuric, and hydrochloric acids, chlorine and volatile chlorides, and, being oxidized at an early stage of its progress, is in the best condition for chloridation, and for the decomposition of arseniate or antimoniate of silver which may have been formed.

The plan of feeding with a blast, at the fire end of the cylinder, enables the treatment of a larger quantity of ore than the reverse, because, as the current of air aids the progress of the ore, it follows that the smaller particles, which are the soonest roasted, pass most quickly through, while the coarser and heavier portion remains for a longer time exposed to the action of the fire. Now, precisely the reverse of this takes place when the furnace is fed at the other end, for then the ore must travel against the draft, and the smaller particles are retained the longest, excepting those which, from their lightness, are at once carried away to the dust chambers, while a certain portion is kept oscillating backward and forward, as the force of the draft or that of gravity preponderates. Also, the advantage of the blast in furnishing a copious supply of oxygen just when and where it is needed, is entirely lost, as no blast can be used; while an auxiliary fire is required, just as in the Stetefeldt furnace, to roast the fine dust which cannot pass through the cylinder.

For these reasons, and knowing that the furnace has done good work when fed at the fire end, as well as the other way, I desire to retract, at least for the present, any remarks I may have made to the effect that White was feeding his furnace at the wrong end, and I would advise others to suspend judgment, and avoid committing themselves to what may prove to be an error which a candid consideration of the new conditions involved would have prevented.

As the Jefferson company have ordered one of these furnaces, which will be put up with a blast, the question of "which end" will soon be answered; and, as White's different patents cover both methods, it is to be presumed he will finally adopt the one which proves to be the best, though at present he prefers to feed with a blast.

It is hardly necessary to enlarge upon the advantage of a continuous feed and discharge, but, for the benefit of those who fear that the ore may pass too quickly through the cylinder, I will state that the more recent plans embrace an arrangement by means of which the inclination may be altered at any moment, so as to cause the ore to pass as slowly as may be desired.

When we have persuaded mine owners, for their good, to look favorably on the roasting process, we will try to call attention to methods of extracting the silver without the use of expensive quicksilver, and amalgamating machinery. Let us hasten slowly.

The Black Hills.

The Black Hills gold excitement has in a measure subsided, although a number of enthusiastic prospectors still have golden visions of that tract of country, notwithstanding the contradictory reports which have been made public from time to time. At last we seem to have something apparently reliable from a person sent out under Government auspices. The Interior Department has received a full and complete report from Professor Jenny, chief of the scientific expedition sent out to investigate the condition of the supposed gold fields in the Black Hills. The report confirms the first dispatch of Professor Jency, in which he said that nothing had yet been discovered that would warrant extensive mining operations in the Black Hills. His report was in direct contradiction of the glowing tales of correspondents, and opens up a question of veracity. The report proceeds at once to explode the stories about the rich fields on French creek. It says this is the spot where the miners have said the washing of loose dirt in the digging panned out twenty-seven cents per pan. He worked out nine buckets of the same material, and only secured twenty-two cents out of the whole. He says the best of the dirt does not average a cent and a quarter per pan. There is some gold found, but it exists in very small quantities, and is spread over such a large area of territory as to make practical digging a failure. The next point Professor Jenoy will examine will be in the Cheyenne river, north of the present camp.

In all probability this report will be as little believed as those discouraging ones which came before; and the prospectors will recognize nothing but their own experience as authentic. Those enthusiastic individuals who have money and time to spare can then try their luck, but our advice to those having good claims or steady work, is to stay at home and attend to their business and let the Black Hills alone for the present.

Colorado Scenery.

We have been able to give the readers of the Press several illustrations of the magnificent natural scenery to be met with in Colorado, as made known to us by views obtained by Prof. Hayden, in his exploration of that section. Those heretofore published have been so warmly commended by our readers, that we this week present another, which we think not less beautiful than those preceding it. Whiterock peak is thus described:

At the head of Teocalli creek is a high mountain peak which we named Whiterock, from the fact that a seam of white or light gray igneous rock, sixty feet wide, passes through the middle of the summit vertically. The material is quite soft, disintegrating into moderately coarse sand. The rocks composing the mountain are quite varied in texture, though all evidently of igneous origin. The jointage is in many cases vertical, separating the mass into blocks varying from a few inches to two or three feet cube. This vertical jointage gives a sort of columnar appearance to the sides of the peak in the distance. The sides are also deeply furrowed. There are three sets of master-joints, with a multitude of smaller ones. The consequence is that the sides of the mountain and the several amphitheaters are covered with immense quantities of *debris*. The whole mass is filled with water and ice during the winter, and in the spring, as the ice and snow melt, it moves down the declivities slowly, like a glacier. Sometimes cavities or reservoirs are made, and the melted snows form beautiful little lakes.

WHITEROCK PEAK.

From the summit of Whiterock Mountain the view on every side is most remarkable, presenting the aspect of chaos, as if the entire group of stratified rocks, which originally covered the area now occupied by the Elk mountains, had rested on a vast pasty mass of the granite, but which, by forces generated in this pasty mass, had been lifted up and tossed, as it were, in every direction. The faults are very numerous and of huge dimensions. Sometimes a group of strata is broken off, so that one portion is from 100 to 2,000 feet above the other portion. Sometimes 1,000 to 2,000 feet will be elevated by a force acting very nearly vertically, so that some of the loftiest peaks, as Maroon Peak, 14,000; Black Pyramid, 13,000, and many others nearly as high, are composed entirely of stratified rocks inclining at small angles. Again, the beds are tipped off from the granite core at all angles from 10° to a vertical, and not unfrequently past a vertical, and there are in the Elk range the most wonderful instances of the complete overturning of immense groups of beds, so that for several miles there is a double series, from the Silurian up to the Cretaceous, inclusive, and then rising upward in inverse order, as is shown at the head of East river and near Snow Mass peak.

At the celebration at Rocklin, Placer county, on the 5th inst., four men, including a Chinaman, were severely injured by the premature discharge of a small cannon. It was the old story,—the piece became red hot and the powder ignited as it was put in.

Work at the Wilmington bar is progressing satisfactorily. The *Enterprise* thinks dredging has brought to the surface indications which give assurance of a permanent channel.

It is reported that thirty-five bridges were destroyed by the recent floods in the south of France.

Miscellaneous Notices.

QUICK-SILVER.

UNITED STATES PATENT OFFICE.

The Quicksilver Mining Company of New Almaden, California—Trade-mark for Quicksilver Flasks.

Statement of trade mark No. 1199, registered October 19, 1873; application filed September 29, 1873.

Specification describing a trade-mark, used by the Quicksilver Mining Company, a company chartered by the State of New York, and working and operating quicksilver mines at New Almaden, Santa Clara county, State of California, for Quicksilver Flasks.

Our trade-mark consists of the letter "A" straddling a circle. This letter has generally been painted upon the upper end of each flask, bottle, or jar in which the quicksilver is contained, its usual position being such that the opening or mouth in the upper end of the flask, bottle or jar will be between the spreading angular sides of the letter, the cross-mark of the letter passing along close to the edge of the hole.

This trade-mark we have used in our business for ten years last past. The particular goods upon which we have used it are quicksilver flasks, and it has always been applied as above described.

THE QUICKSILVER MINING COMPANY.
By J. B. RANDOL, Manager.

This trade-mark is also registered in the office of the Secretary of State, Sacramento, California, and all producers and dealers in quicksilver are cautioned not to use the said trade-mark.

For New Almaden Quicksilver, apply to
THOMAS BELL, Sole Agent,
Over Bank of California, San Francisco.

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J. B. RANDOL, Manager.

New Almaden, April 5, 1875.

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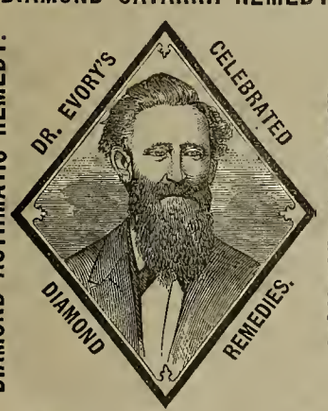

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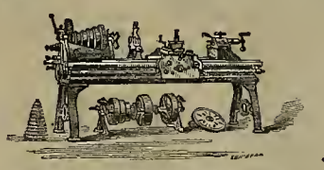

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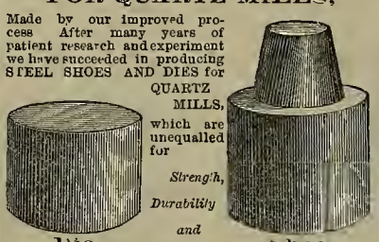

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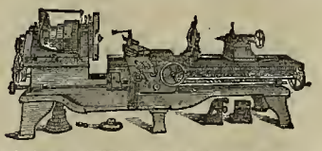

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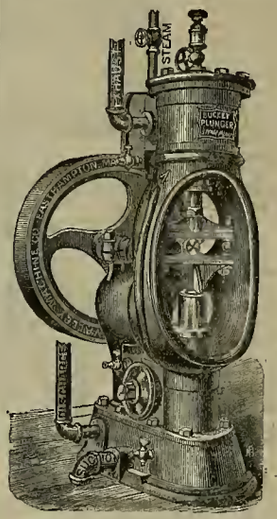

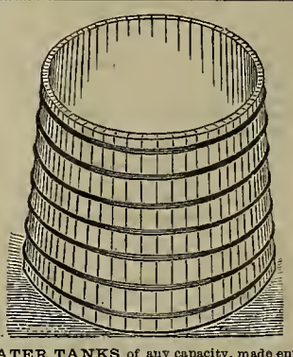

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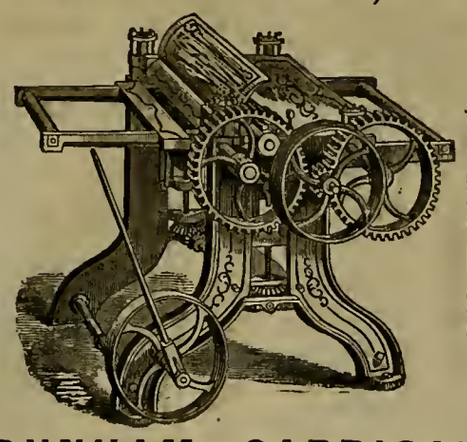

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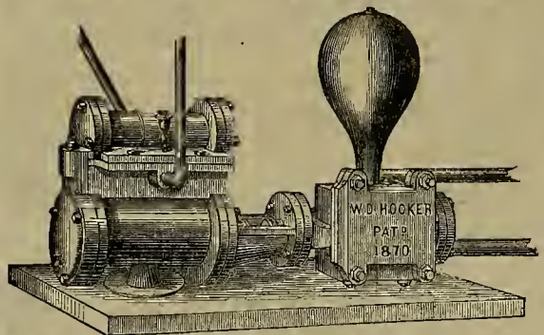

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Varney's Patent Amalgamator.

These Machines Stand Unrivaled,

For rapidity pulverizing and amalgamating ores, they have no equal. No effort has been, or will be spared to have them constructed in the most perfect manner and of the great number now in operation, not one has ever required repairs. The constant and increasing demand for them is sufficient evidence of their merits.

They are constructed so as to apply steam directly into the pulp, or with steam bottoms, as desired.

This Amalgamator Operates as Follows.

The pan being filled, the motion of the muller forces the pulp to the center, where it is drawn down through the apperture and between the grinding surfaces.—Thence it is thrown to the periphery into the quicksilver. The curved plates again draw it to the center, where it passes down, and to the circumference as before. Thus it is constantly passing a regular flow between the grinding surfaces and into the quicksilver, until the ore is reduced to an impalpable powder, and the metal amalgamated.

Setlers made on the same principle excel all others They bring the pulp so constantly and perfectly in contact with quicksilver, that the particles are rapidly and completely absorbed.

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Ores worked by any process.
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Analysis of Ores, Minerals, Waters, etc.
Plans furnished for the most suitable process for working Ores.
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Merchant Tailors,	Gents' Furnish'g G'ds,
Bootmakers,	Furniture Dealers,
Hatters,	Jewelers,
Hotels,	Piano Fortes,

Wine Merchants, Etc., Etc.

Sales at S. F. Stock Exchange.

FRIDAY, A. M., JULY 2.

450 Andes.....2⅞
10 Alpha.....2⅞
225 Belcher.....20@20¼
230 Best & Belcher.....44@44¼
100 ....do.....h 8...44⅛
100 ....do.....h 30...45⅞
400 Bulli n.....38@38½
50 Baltimore C n.....3¾@3½
80 Belmont.....3¾@3⅝
900 Calif rnia.....56⅜@56¾
5 Caledonia.....8
70 Chollar.....18
185 Con Virginia.....323½@325
125 Confidence.....17⅜
555 Crown Point.....25@25¼
500 Cosmopolitan.....32½@
100 Daney.....50
50 Eclipse-Mill.....4½
20 Eureka Con.....7
90 Gould & Curry.....15⅝@15⅞
105 Golden Char.....2½@2¾
50 ....do.....h 90...2⅝
1115 Gale.....1¾@1¾
950 Gila.....
400 Imperial.....6⅝@6⅝
50 Justice.....89@90
110 Julia.....11
50 Jackson.....1½
70 Knicker.....2¾
100 Lady Wash.....1½
125 Lady Bryan.....2½
410 Mexican.....17⅜
176 Mint.....2⅜@
150 Maryland.....75c
565 Mexican.....17⅝@17½
300 Mahogany.....
80 ....do.....b 30...5
300 New York.....1¾@1⅞
200 Niagara.....65
200 Orig Gold Hill.....2⅝
830 Ophir.....45⅞@45½
70 Overman.....55@55½
125 Pacific.....1¾@1⅞
920 Prospect.....4½
130 Raymond & Ely..45½@45⅝
50 ....do.....s 30...44½
30 Savage.....88
430 Sierra Nevada..12¾@13
300 S Chariot.....62½@63c
250 Succor.....
60 Tiger.....45c
105 Union.....5⅝@6
820 Woodville.....1⅞@2
320 Wells-Fargo.....15c
600 Yellow Jacket...72@71½

TUESDAY, A. M., JULY 6.

70 Alpha.....16
610 Andes.....3@17⅝
100 Belcher.....24
30 Best & Belcher.....44½
100 Bullion.....38
10 Chollar.....69
485 Crown Point.....25@25½
85 Con Virginia..325@324½
1790 California.....8½@8⅞
20 Caledonia.....18
400 Cosmopolitan.....25c
230 Daney.....50c
5 Empire Mill.....5
250 Florida.....3
75 Gould & Curry.....15½
200 Globe.....1¾
150 Imperial.....6¾
100 Julia.....1
575 Kossuth.....15c
350 Lady Wash.....1½
25 Mexican.....17½@17⅝
150 Mint.....30c
160 New York.....1¾
100 N Carson.....22c
200 Niagara.....70c
150 O G Hill.....1
450 Ophir.....44¾@45
50 Overman.....55@55½
260 Pacific.....1¾@1⅞
120 Rock Island.....12½@13
70 Savage.....8.90
5 S Nevada.....12¾
15 Seg Belcher.....12
20 S Hill.....
90 Union.....6¾@6⅞
25 Utah.....4¾@5
800 Woodville.....1¾@1⅞
250 Wells-Fargo.....15c

AFTERNOON SESSION.

35 Belcher.....23¾@24
515 California.....51¾@51
210 Con Virginia.....325@330
30 ....do.....h 30...332
20 Crown Point.....25
70 Eureka Con.....67
225 G Chariot.....21½@22
360 Gila.....9¾@10
100 Gould & Curry.....15¾@15¾
25 Hale & Nor.....15
450 Illinois Cen.....4½
400 Jackson.....1⅝@1½
550 Jefferson.....1¾@1

SALES OF LAST WEEK AND THIS COMPARED.

THURSDAY, A. M., JULY 1.		THURSDAY, A. M., JULY 8.	
405 Andes	2¾	105 Alpha	17@17½
100 Alpha	16½@16	250 Andes	3⅛@3⅜
255 Best & Belcher	43@42½	10 Am Flat	2⅛
85 Belcher	23@24	4 0 Best & Belcher	45¼@ 6
30 Bullion	3½	60 Bull on	38@39⅝
20 Baltimore Con	3½	80 Baltimore Con	3½@3⅝
10 Cuollar	6	80 Belcher	24@24½
795 Crown Point	26@25	165 Crown Point	26@26⅝
105 Confidence	17¾@18	40 Chollar	19@19½
885 Gould & Curry	15½@15¾	30 Caledonia	16¼@16⅜
250 Con Virginia	319@320	240 C nfidence	17¾@18
100 Cosmopolitan	40@.50	75 Con Virginia	324@325
15 Caledonia	16	175 Daytoa	2⅜
160 Daney	50c	50 Daney	50c
85 Dayton	12½	100 Eclipse	6¾
300 Florida	3	55 Empire Mill	5.20
25 Eclipse	6⅞@6¾	1195 Gould & Curry	15¾@16
40 Gould & Curry	15¾@15⅝	70 Hale & Norcross	3⅛
575 Gl he	1⅞@1¾	850 Imperial	10⅞
100 Georgia	2	10 Julia	2⅛
10 Hale & Norcross	3⅛	145 Kentuck	12¾@13
125 Imperial	6⅝@6¾	20 Knickerbocker	2⅛
50 Justice	86	570 Lady Washington	1⅝
30 Julia	10⅜	140 Lady Bryan	1⅝
150 Kossuth	15c	1640 Mexican	18¾@19
100 Knickerbocker	2⅛@2¾	125 Maryland	75c
385 L dy Bryan	2⅝@2	200 North Carson	25c
485 Mexican	17⅜	140 New York	1⅝@2
100 Carson	20c	1270 Ophir	45¾@46
75 New York	1¾@2	70 Overman	57½
365 Ophir	44¾@45	350 Prospect	4⅛
200 Orig Gold Hill	1	60 Pacific	2
50 Overman	55½@55	100 Rock Island	12⅜
200 Pacific	1⅞	30 Savage	90@91
400 Prospect	4⅛	230 Sierra Nevada	13½
570 Rock Island	12@12¾	100 South Cal	13½
60 Savage	85	160 Succor	1@13c
100 S R Island	75c	210 S Hill	6¾@6⅝
150 Succor		10 Seg Belcher	30
140 S Hill	6¾@6⅞	470 Union Con	6⅞@6⅞
200 Union Con	6	20 Utah	7@7½
110 Utah	5¼@5⅜	45 Woodville	1⅞
130 Woodville	1⅞@2	60 Yellow Jacket	75
50 Wells-Fargo	15c		
45 Yellow Jacket	72		

AFTERNOON SESSION.

200 Andes	2⅜	100 Bullion	30
25 American Flag	2	6 Belmont	3
650 Best & Bel	45@45⅛	200 Condor	50c
75 Belcher	22½@24	55 Con Virginia	322
300 Coudor	50c	175 Eureka Con	61@62
100 Crown Point	25⅜	165 Golden Chariot	17½@2
1025 California	56¼@56⅝	1515 Gila	9¼@9½
38 Con Virginia	324@325	50 Hillmore	1½
75 Empire	5.00	850 Jackson	1½@1⅝
530 Golden Chariot	2½@2⅝	75 Julia	13
3175 Gila	4⅞@5	30 K K Con	4½
480 Illinois Cen	4½	610 Leopard	16½@17
100 Jackson	1¾@1⅞	100 Mexican	17½@18
405 Jefferson	4¼@5⅛	240 Mahogany	2¾@2¾
1020 Lady Bryan	2½	700 Mansfield	25c
1135 Mahogany	5@5¼	485 Ophir	45½@45¾
45 Meadow Valley	5½@6	475 Poorman	3⅞@4
120 Mansfield	22c	50 Panther	1½
710 Mexican	17½@17⅝	35 Pioche	2
240 Ophir	45⅛	20 Rye Patch	1⅜
500 Poorman	4	1035 Raymond & Ely	45½@46
325 Phœnix	1¾	90 Rock Island	12½
65 Rye Patch	1½	195 South Chariot	37½@38c
200 Leopard	17		
55 Mexican	17¼@17¾		
200 Meadow Valley	6		
160 Mahogany	5..4½		
200 Mansfield	25c		
40 Ophir	44¾@44¾		
60 Poorman	6¾@6		
200 Pacific	2		
150 Raymond & Ely	45@45½		
200 Rye Patch	1½		
50 S Chariot	62½c		
10 Savage	90		
50 Union	6		
100 Utah	5¼		
60 War Eagle	1@1¼		
15 Woodville	1⅞		

WEDNESDAY A. M. JULY 7.

100 Alpha	16@16½	100 Mexican	17½@17¾
145 Andes	3@3⅛	200 Meadow Valley	6
165 Belcher	24@24¼	160 Mahogany	5..4½
325 B st Belcher	47@47½	200 Mansfield	25c
140 ....do	5..5	40 Ophir	44¾@44¾
200 Bullion	38@40	60 Poorman	6¾@6
610 Baltimore Con	3¼@3⅜	200 Pacific	2
400 ....do	h 30...3⅝	150 Raymond & Ely	45@45½
330 Chollar	70@72½	200 Rye Patch	1½
253 Confidence	19	50 S Chariot	62½c
245 Crown Point	25⅝@26¾	100 Savage	90
335 Con Virginia	325@332	100 Union	6
255 Gould & Curry	16@16¼	100 Utah	5¼
35 Hale & Norcross	3¼	60 War Eagle	1@1¼
385 Imperial	7@8	15 Woodville	1⅞
100 ....do	h 30...7½		
595 ....do	b 5...7		
215 Julia	11½		
100 Kentuck	13		
100 Knickerbocker	2⅝@2¾		
47 Kossuth	62½@15c		
220 Lady Bryan	2½@2⅝		
1600 Mexican	18½@19¼		
100 ....do	b 5...19¼		
200 Maryland	75c		
50 Mint	25c		
125 New York	1¾@2⅛		
100 Nata son	25c		
50 Occidental	3		
1300 Ophir	46@46¾		
10 ....do	s 5...46¾		
90 Overman	56@55¾		
350 Prospect	4½		
200 ....do	h 30...4½		
420 Pacific	2		
1000 ....do	s 30...2		
245 Rock Island	12½		
50 Savage	90		
640 S Nevada	13@13½		
20 S Nevada	13@13½		
10 Seg Belcher	28		
100 Succor			
15 S Hill	6¾@7		
10 Utah	5		
120 Union Con	6½		
700 Wells-Fargo	15c		
70 Woodville	1.95@2		
30 Yellow Jacket	75		

AFTERNOON SESSION.

45 American Flag	2¼@2⅜		
100 Ap s	15c		
100 Belmont	3		
185 B & Ba cher	46@47¼		
40 Bullion	40		
85 Con Va	325		
220 California	56¾@56⅝		
60 Crown Point	26⅜@26⅝		
350 Eureka Con	61@65		
280 Gila	9¾@10		
400 ....do	b 5...9¾		
370 G Chariot	21½@22		
1420 Globe	1¾@1⅞		
260 Gould & Curry	16@ 6¾		
30 Hohn & Hunt	75c		
100 Ida Elmo e	1¾		
400 Illinois Cen	4½		
425 Jackson	1¾@1⅝		
5 Jefferson			
40 K K Con	5		
235 Leopard	17		
640 Meadow Valley	6½@7½		
430 Mexican	18¾@.85		
900 Man field	@2⅜		
95 Mahogany	2¾@3⅜		
335 Opnir	45¾@46		
300 O G Hill	@1¼		
50 Phœnix	1⅜		
25 Pioche	@		
10 Pauper	75c		
40 Poor man	4		
180 Raymond & Ely	0@51		
30 ....do	s 30...50		
600 Rock Island	12½		
10 Sierra Nevada	13⅜		
250 War Eagle	50c		

MINING SHAREHOLDERS' DIRECTORY.

Compiled every Thursday from Advertisements in the Mining and Scientific Press and other S. F. Journals.]

ASSESSMENTS.—STOCKS ON THE LIST OF THE BOARDS.

Company.	Location.	No.	Amt. Levied.	Delinq'nt.	Sale.	Secretary.	Place of Business.
Baltimore Cons M Co	Washoe	9	1 00	June 30	Aug 3	Aug 23	C A Sankey	331 Montgomery st
Buckeye G & S M Co	Washoe	14	25	July 1	Aug 7	Aug 26	C A Sankey	330 Montgomery st
Caledonia S M Co	Washoe	13	3 00	July 7	Aug 21	Aug 31	R Wegener	414 California st
Chariot Mill & M Co	San Diego Co	Cal	4	25	June 24	July 27	Aug 17	F Swift	419 California st
Dayton G & S M Co	Washoe	8	1 00	June 8	July 15	Aug 5	W E Dean	419 California st
El Dorado South Cons M Co	Nevada	6	1 00	July 6	Aug 11	Aug 31	W Willis	418 California st
Empire M & M Co	Washoe	18	1 00	May 28	July 3	July 21	W E Dean	418 California st
Eureka M & S Co	Wash e	5	6	June 1	July 9	July 31	A C Rice	308 California st
Florida S M Co	Washoe	2	75	June 15	July 20	Aug 10	L Hermann	320 Pine st
Golden Fleece G & S M Co	Washoe	3	10	June 16	July 16	Aug 16	J P Moore	320 California st
Imperial S M Co	Washoe	22	1 00	June 29	Aug 3	Aug 20	W E Dean	419 California st
Jacob Little Cons M Co	Washoe	1	10	May 31	June 10	July 20	W R Townsend	330 Pine st
Justice M Co	Washoe	15	3 00	June 19	July 19	Aug 19	Jas Kennedy	Merchants' Ex
Kossuth M Co	Washoe	4	1 00	June 12	July 15	Aug 21	F E Lntz	419 California st
Leviathan M Co	Wash e	1	50	May 29	July 6	July 28	F E Lntz	507 Montgomery st
Nevada G & S M Co	Washoe	1	25	June 3	July 8	July 27	Joseph Maguire	4 9 California st
New Yo k Cons M Co	Washoe	14	50	June 22	July 27	Aug 16	H C Kibbe	419 California st
New York M Co	Washoe	5	50	June 22	July 27	Aug 16	H C Kibbe	419 California st
North Bommfield G M Co	Cal	33	1 00	June 16	July 26	Aug 13	Thos Bury	320 California st
Occidental Gold Hill M Co	Washoe	3	50	June 4	July 9	July 28	W M Holman	401 California st
Overman S M Co	Washoe	32	3 00	June 25	July 30	Aug 19	R Wegener	414 California st
Pictou M Co	Washoe	8	25	July 2	Aug 6	Aug 23	S Phillips	408 California st
Rock Island G & S M Co	Washoe	8	1 00	May 19	June 21	July 12	J W Clark	418 California st
Savage M Co	Washoe	19	5 00	June 24	July 28	Aug 17	F B Gaines	419 California st
Silver Hill M Co	Washoe	6	2 00	June 8	July 14	Aug 4	W E Dean	419 California st
South Chariot M Co	Idaho	11	75	June 10	July 13	Aug 4	F Swift	419 California st
Utah S M Co	Wa hoe	10	2 00	June 7	July 9	July 30	W E Dean	419 California st
War Eagle M Co	Idaho	10	1 00	June 30	Aug 5	Aug 25	L Kaplan	Merchants' Ex
Wells Fargo M Co	Washoe	2	10	June 23	July 26	Aug 13	O H Bogart	402 Montgomery st
Woodville Cons M Co	Washoe	2	60	June 25	July 29	Aug 18	W M Helmann	401 California st
Woodville G & S M Co	Washoe	10	60	June 25	July 29	Aug 18	W M Helmann	401 California st

OTHER COMPANIES—NOT ON THE LISTS OF THE BOARDS.

Bancereta M & M Co	Cal	1	25	June 17	July 17	Aug 2	J W Tripp	408 California st
Black Hawk Coal M Co	Cal	1	5	June 23	July 30	Aug 16	H A Powell	520 Montgomery st
Champion Cons M & S Co	Nevada	1	1 00	May 7	July 6	July 25	J M Buffington	311 California st
Cherry Creek M Co	Nev		3	25	May 18	June 21	July 15	D F Verdenal	409 California st
Edith Q M Co	Cal		4	25	June 3	July 19	Aug 11	Wm Stuart	113 Leidesdorff st
El Dorado W & D G M Co	Cal	9	10	00	June 8	July 6	July 22	H Elias	416 Montgomery st
Emma Hill Cone M Co	Utah		2	50	June 14	July 9	Aug 19	L C Fowler	302 Montgomery st
Fresno Q M Co	Fresno Co	Cal	2	25	June 14	July 24	Aug 14	R Wegener	414 California st
Gold Mountain M Co	Amador Co	Cal	4	25	July 1	July 23	Aug 7	W A Knapp	116 Leidesdorff st
Gold Run M Co	Washoe		12	15	June 5	July 12	July 30	C C Palmer	41 Market st
Hartford M Co	Washoe		3	30	June 26	July 28	Aug 14	E F Stone	419 California st
Idaho S M Co	Inyo Co	Cal	1	10	June 4	July 3	July 21	Daniel Buck	331 Montgomery st
Illinois Central M Co	Idaho		3	75	May 21	June 21	July 19	H L Brown	402 Montgomery st
Jackson M Co	Eureka	Nevada	7	50	June 25	July 29	Aug 19	H C Kibbe	419 California st
Lady Washington M Co	Washoe		4	50	June 16	July 20	Aug 9	H C Kibbe	419 California st
Los Prietos M Co	Cal		3	25	June 2	July 9	July 31	S H Smith	6 Montgomery Av
Misers Dream S M Co	White Pine	Nev	2	40	June 21	July 31	Aug 19	W F R S Hindler	Cor Cal & Spring
Missouri Q M Co	Cal		2	50	June 22	July 26	Aug 24	F H Rogers	330 Pine st
Morning Star G & S M Co	Cal		25	1 00	June 21	July 24	Aug 11	O H Bogart	402 Montgomery st
Mossing Hydraulic M Co	Cal		2	31½	June 28	July 31	Aug 19	C S Healy	Merchants' Ex
Mountain View Cons M Co	Nevada		1	50	June 24	July 28	Aug 16	C S Healy	419 California st
Mount Savage M Co	Utah		2	10	June 12	July 26	Aug 17	D F Verdenal	409 California st
Northerly Five-Cent Hill M Co	Cal		2	2	May 31	July 3	July 19	J M Buffington	311 California st
Omega Gold Mountain M Co	Cal		6	5	June 8	July 13	Aug 2	David Winder	Merchants' Ex
Orleans M Co	Grass Valley	Cal	5	2 00	May 30	July 6	July 28	G P Thurston	315 California st
Pioneer Cons M Co	Eureka	Nev	3	10	May 18	June 23	July 13	C S Neal	419 California st
Red Jacket M Co	Idaho		7	50	May 21	June 25	July 16	Wm Willis	418 California st
Scorpion S M Co	Washoe			25	May 26	June 30	July 21	G R Spinney	320 California st
Silver Spring M Co	Cal			5	July 3	Aug 19	Sept 1	T B Wingard	3 8 California st
Starr King S M Co	Elko Co	Nevada	11	25	May 21	June 26	July 17	L Kaplan	Merchants' Ex
Table Mountain Alpha M Co	Cal		7	10	June 5	July 18	Aug 2	Leander Leavitt	401 California st
Umpire Tunnel & M Co	Utah		4	5	May 20	July 1	Aug 2	Wm Small	531 California st
Wm Penn Cons G & S M Co	Washoe		3	6	May 19	June 28	July 20	J F Boggs	424 Montgomery st
Wyoming G M Co	Nevada Co	Cal	6	35	May 11	June 12	June 30	J M Buffington	311 California st

MEETINGS TO BE HELD.

Name of Co.	Location.	Secretary.	Office in S. F.	Meeting.	Date
Best & Belcher M Co	Washoe	W Willis	419 California st	Annual	July 12
Chollar-Potosi M Co	Washoe	W E Dean	419 California st	Annual	July 12
Eclipse, Winters & Plato G H C M Co		J Marks	419 California st	Annual	July 17
Florence M Co		Scott Sutton	220 Montgomery st	Annual	July 15
French Gold Hill M Co	Nevada	J Mello		Annual	July 15
Howard Hill G M Co	Nevada	F J Hermann	418 Kearny st	Special	July 17
Imperial S M Co	Washoe	W E Dean	419 California st	Annual	June 14
Kelsey G & S M Co	Cal	Called by Trustees	331 Montgomery st	Special	July 26
New York Hill M Co	Cal	Called by Trustees	408 California st	Special	July 20
Newark M Co	Washoe	W Willis	419 California st	Annual	July 19
Pauline M Co	Idaho	W F Bogart	402 Montgomery st	Annual	July 15
Pictou M Co	Washoe	S Phillips	408 California st	Annual	July 19
Savage M Co	Washoe	E B Holmes	419 California st	Annual	July 18
Union Cons M Co	Washoe	J M Buffington	419 California st	Annual	July 17
Utah S M Co	Washoe	W E Dean	419 California st	Annual	July 13
Washington & Creole M Co	Ely Dist	F D Cleary	Merchants' Ex	Annual	July 14

LATEST DIVIDENDS (within three months)—MINING INCORPORATIONS.

Name of Co.	Location.	Secretary.	Office in S. F.	Amount.	Payable.
Black Bear Quartz	Cal	W L Oliver		25	June 17
Con Virginia M Co	Washoe	Chas H Fish	401 California st	10 00	July 12
Empire G M Co	Sierra Co	Cal O Collischou		2 Dividends—$5 Each	July 8
Empire M Co	Cal	D A Jennings	491 California st	50	June 15
Eureka Con Cnlidated M Co	Nev	W W Traylor	419 California st	2 00	July 6
Excelsior M & M Co		Frank Swift	419 California st	1 00	April 10
Jefferson S M Co		C A Sankey	331 Montgomery st	50	May 15
Leopard M Co		R H Brown		50	June 15
Manhattan S MCo	Nevada	Chas S Neal	419 California st	1 00	June 5
Northern Belle M & M Co		W Willis	419 California st	1 00	June 15
Oneida M Co		L Kaplan	Merchants' Ex	50	June 24

METALS.

[WHOLESALE.]

WEDNESDAY M., July 7, 1875.

American Pig iron, ₱ ton	— —	@	46 00
Scotch Pig Iron, ₱ ton	46 00	@	48 00
White Pig, ₱ ton	— —	@	46 00
Oregon Pig, ₱ ton	— —	@	46 00
Refined Bar, bad assortment, ₱ lb	— —	@	— 3½
Refined Bar, good assortment, ₱ lb	— —	@	— 4
Boiler, No. 1 to 4	— —	@	— 5½
Plate, No. 5 to 9	— —	@	— 5½
Sheet, No. 10 to 14	— —	@	— 6
Sheet, No. 16 to 20	— 5½	@	— 5¾
Sheet, No. 22 to 24	— 6	@	— 6½
Sheet, No. 26 to 28	— 6½	@	— 7
Horse Shoes, per keg	7 50	@	8 00
Nail Rods	— 10	@	—
Norway Iron	— 9	@	—
Rolled Iron	— 6	@	—
Other Irons for Blacksmiths, Miners, etc.	— —	@	— 4½
COPPER.—			
Sheathing	— 35	@	—
Copper Tin'd	— 37½	@	— 4
O'Neil's Pat	— 37½	@	— 40
Sheathing, ₱ lb	— 40	@	— 24
Sheathing, Yellow	— —	@	— 25
Sheathing, Old Yellow	— —	@	— 23½
Composition Nails	— 24	@	—
Composition Bolts	— 24	@	—
STEEL.—English Cast, ₱ lb	— 20	@	— 25
Anderson & Woods' American Cast	— —	@	— 16½
Drill	— —	@	— 16½
Flat Bar	— 18	@	— 22
Plow Steel	— 9	@	— 10
TIN PLATES.—			
10x14 I C Charcoal	12 00	@	12 50
10x14 I X Charcoal	14 00	@	14 50
Roofing Plate I C Charcoal	11 00	@	11 50
Banca Tin	— 30	@	— 32
Australian	— 28	@	— 30
Zinc.—By the Cask	— —	@	— 11
Zinc, Sheet 1x2 ft, No 7 to 10 ₱ lb	— —	@	— 11½
do do 7x3 ft, No 11 to 14	— —	@	— 11½
do do 8x4 ft, No 8 to 10	— —	@	— 11½
do do 8x4 ft, No 11 to 10	— —	@	— 12
NAILS Assorted sizes	4 25	@	8 70
QUICKSILVER, nerb	— 65	@	— 70

LEATHER.

[WHOLESALE.]

WEDNESDAY M., July 7, 1875.

City Tanned Leather, ₱ lb			28@29
Santa Cruz Leather, ₱ lb			26@28
Country Leather, ₱ lb			24@25
Stockton Leather, ₱ lb			25@29
Jndot, 8 Kil., per doz	$50	00@	54 00
Jodot, 11 to 13 Kil., per doz	68	00@	79 00
Jodot 14 to 19 Kil., per doz	90	00@	94 00
Jodot, second choice, 11 to 16 Kil. ₱ doz	57	00@	74 00
Cornellian, 12 to 16 Ko	57	00@	67 00
Cornellian Females, 12 to 13	63	00@	67 00
Cornellian Females, 14 to 16 Kil	71	00@	76 50
Simon Ullmo Females, 12 to 13, Kil	63	00@	67 50
Simon Ullmo Females, 14 to 15, Kil	70	00@	72 00
Simon Ullmo Females, 16 to 17, Kil	73	00@	75 00
Simon, 18 Kil., ₱ doz	61	00@	63 00
Simon, 20 Kil. ₱ doz	65	00@	67 00
Simon, 24 Kil. ₱ doz	72	00@	74 00
Robert Calf, 7 and 9 Kil	35	00@	40 00
French Kips, ₱ lb	1	00@	1 25
California Kip, ₱ doz	40	00@	8' 00
French Sheep, all colors, ₱ doz	8	00@	15 00
Eastern Calf for Backs, ₱ lb	1	00@	1 20
Sheep Roans for Topping, all colors, ₱ doz	9	00@	13 00
Sheep Roans for Linings, ₱ doz	5	50@	10 50
California Russett Sheep Linings	1	75@	4 50
Best Jodot Calf Boot Legs, ₱ pair	5	00@	5 25
Good French Calf Boot Legs, ₱ pair	4	00@	4 75
French Calf Boot Legs, ₱ pair	4	00@	—
Harness Leather, ₱ lb		30@	37
Fair Bridle Leather, ₱ doz	48	00@	72 —
Skirting Leather, ₱ lb		33@	37½
Welt Leather, ₱ doz	30	00@	50 00
Buff Leather, ₱ foot		17@	⅞
Wax Side Leather, ₱ foot		17@	

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Gold, Legal Tenders, Exchange, Etc.

[Corrected Weekly by CHARLES SUTRO & CO.]

SAN FRANCISCO, July 7, 3 P. M.

LEGAL TENDERS in S. F., 11 A. M., 86 to 86¼.

GOLD in N. Y., 117½.

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LONDON — Consols, 93 to 93⅛; Bonds, 102⅛

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SAMPLE COPIES.—Occasionally we send copies of this paper to persons who we believe would be benefited by subscribing for it, or willing to assist us in extending its circulation. We call the attention of such to our prospectus and terms of subscription.

The Mining Share Market.

Mining stocks continue dull, with small sales and low prices. Even the usual occasional "spurt" seems to have deserted the market, as no animstion at all is shown. As far as the Comstock mines are concerned, everything is being vigorously and successfully worked. The usual dividend paying mines furnish their quota this month, but this seems to have little effect on the market. From many places come news of strikes, but this news does not elevate the stocks, and in some instances has depressed them. The dullness is explained by the Virginia *Enterprise* as being due to the stringency of the money market. This has had in turn its prevailing cause in the immense shipments of bullion and coin during the last month. One reason for this transfer of coin and bullion has been the advanced premium on gold which has prevailed of late. It will be sufficient for our purpose, however, to refer to the shipments made through Wells, Fargo & Co. during the month of June.

From the 1st of June to the 29th, inclusive, silver bullion to the amount of $2,220,643 22 found its way East per Wells, Fargo & Co. alone. There were also during the same time bars of gold forwarded by them to the amount of $137,927.71. But the greatest amount by far was shipped in gold coin. This item alone amounted to $3,275,100, making, with the bullion above mentioned, the enormous amount of $5,633,670.93 sh ped during the month of June alone away from the Pacific c ast.

This drain is felt in all branches of business, and has a depressing eff ct on the stock market.

A FEW WORDS TO FEEBLE AND DELICATE WOMEN.

By R. V. Pierce, M. D., of the World's Dispensary, Buffalo, New York.

Knowing that you are subject to a great amount of suffering, that delicacy on your part has a stroog tendency to prolong, and the longer it is neglected the more yon have to ondure and the more difficult of cure your case becomes, I, as a physician, who is daily consulted by scores of your sex, desire to say to you, that I am constantly meeting with those who have been treated for their ailments for months without being benefited in the least, until they have become perfectly discouraged and have almost made up their minds never to take another dose of medicine, nor be tortured by any further treatment. They had rather die and have their suff rings ended than to live and suffer as they have. They say they are worn out by suffering and only are made worse by treatment. Of anything more discouraging, we certainly cannot conceive, and were there no more succe sful mode of treating such difficulties than that, the principles of which teach the reducing and depleting of the vital forces of the syst m, when the indications dictate a treatment directly the reverse of the one adopted for them, their case would be deplorable indeed. But lady sufferers, there is a better and far more successful plan of treatment for yon, one more in harmony with the laws and requirements of your sy tem. A harsh irritating cantic treatment and strong medicines will never cure you. If you would use rational means such as c mmon sense should dictate to every int lligent lady, take such medicine as embody the very best invigorating tonics and nervines, compounded with special reference to your delicate system. Such a happy combination you will find in my Favorite Prescription, which has received the loudest praise from thousands of your sex. Those languid tiresome sensations causing you to feel scarcely able to be on your feet or ascend a flight of stairs; that continual drain that is sapping from your systems all your former elasticity, and driving the bloom from your cheeks; that continual strain upon your vital forces that renders you irritable and fretful, may all be overcome and subdued by a persevering use of that marvelous remedy. Irregularities and obstructions to the proper workings of your systems are relieved by this mild and safe means, while periodical pains, the existence of which is a sure indication of serious disease that should not be neglected, readily yield to it, and if its use is kept up for a reasonable length of time, the special cause of these pains is permanently removed. Further light on these subjects may be obtained from my pamphlet on diseases peculiar to your sex, sent on receipt of two stamps. My Favorite Prescription is sold by druggists.—*Com.*

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MINING AND SCIENTIF

The Editorial Excursion Party.

This party, whose prospective visit we noted a few weeks since, left New York according to programme on the 3d inst., and we have before us a dispatch informing us that they arrived at Omaha on the 6th, where a public reception and banquet was given them. They were to leave Omaha on the 8th and are expected to arrive in San Francisco on the 16th, where they will meet with a hearty welcome.

That part of their programme which remains to be fulfilled from the date of our paper to their arrival in this city is as follows:

July 11th, Sunday, Salt Lake City, attending preaching at the Mormon tabernacle; 12th, visit to American Fork canon; 13th, leave Salt Lake for Ogden; 14th, at Reno; 15th, arrive at Sacramento and remain over night; 16th, reach San Francisco 5:45 P. M., and stop at Occidental, Lick and Grand hotels. July 17th to August 12th, will be devoted to visits to Geysers, Yosemite, Big Trees, gardens, vineyards, orange groves, etc.

The names and editorial connections of the members of this party are as follows:

H. T. Williams, Ag. Ed. N. Y. *Independent*, Ed. *Ladies' Floral Cabinet* and *Horticulturist*, N. Y.; Mr. A. C. Stockin, Cor. Maine *Farmer*, Augusta, Me., *Morning Star*, Dover, N. H., and Rep. Mass. Press Association, Boston, Mass.; F. D. Curtis and wife, Cor. *Times*, Troy, N. Y., *Weekly Sun*, N. Y. City, and Rep. Farmers' Club, N. Y.; C. W. Bryan and wife, Ed. *Union*, Springfield, Mass.; N. A. Willard, Ed. *Rural New Yorker*, N. Y. City; Rev. W. Clift, Cor. New England *Farmer*, Boston, Mass., and Asse. Ed. *American Agriculturist*, N. Y.; J. W. Tuck and ladies, Cor. *Press* and *Star*, Providence, R. I., Cor. *Witness*, N. Y. City; J. R. Dodge and Wife, Ed. Reports U. S. Department of Agriculture, Washington, D. C., and Cor. *Prairie Farmer*, Chicago, Ill.; G. M. Tucker, Ed. *Country Gentleman*, Albany, N. Y.; C. L. Flint and ladies, Ed. Mass. *Ploughman*, Boston, Mass., Reports Mass. Dept. of Agriculture.; B. D. Evans, Ed. *Record*, Westchester, Pa., and Cor. *Press*, Philadelphia, Pa.; Prof. L. T. Townsend and wife, Cor. *Post*, Boston, Mass.; J. S. Hayes and wife, Cor. *Daily News*, Boston, Mass.; Rev A. E. Winship, Cor. *Globe*, Boston, Mass.; Emily L. Wyman, Cor. *Democrat and Chronicle*, Rochester, N. Y.; H. Sedgwick, Cor. *Times*, N. Y.; B. K. Bliss and ladies, and Miss M. Warren, New York; A. Carryll, Little Falls, N. Y.; F. C. Sessions and wife, Columbus, O.; G. C. Brackett, Cor. *Christian at Work*, N. Y.; Miss Mary A. Brackett, Braintree, Mass.; Rev. O. N. Fitch, Cor. *Courant*, Hartford, Ct., and *Palladium*, New Haven, Ct.; Prof. C. S. Harrington and wife, Cor. *Methodist*, New York City, and *Transcript*, Boston; Prof. J. K. Taylor, Cor. *Inquirer*, Philadelphia; W. H. Lambert, Cor. *Traveller*, Boston, Mass.; Rev. J. O. Means, Cor. *Congregationalist*, Boston, Mass.; G. H. Chapin, Cor. *Watchman and Reflector*, Boston, Mass.; Hon. J. P. Edge, Penn. State Legislature; Prof. L. J. Evans and wife, Cor. *Gazette* and *Times*, Cincinnati; W. A. Wilde, Cor. *Press*, Portland, Me.; C. P. Rugg and lady, New Bedford, Mass.; J. Wilcox, Cor. *Evening Telegraph*, Philadelphia, Pa., and *Republican*, Chester, Pa.; T. J. Edge, Cor. *North American*, *Evening Bulletin* and *Practical Farmer*, Philadelphia, Pa.; A. S. Morss, Cor. *Zion's Herald*, Boston, Mass.; M. H. Sargent, Cor. *Journal*, and Sec. Cong. Pub. Society, Boston, Mass; J. V. Edge; S. Higgins and wife, Cor. *Bulletin and Advertiser*, Norwich, Ct.; R. Pratt, Cor. *N. E. Journal of Education*, Boston, Mass.; W. F. Almy, Fall River, Mass. Henry T. Williams, Treasurer and General Manager.

New Incorporations.

The following companies have filed certificates of incorporation in the County Clerk's Office at San Francisco:

CINCINNATI M. Co.—July 1. Location: South Fork mining district, Shasta county, California. Trustees—Wm. T. Reynolds, E. W. Roberts, R. R. Craig, Chas. J. Pillsbury and George Freeland. Capital, $10,000,000.

THE CRUSADER MINING Co.—July 7. Location—Mariposa county, California. Trustees—James A. Pritchard, A. White, F. W. Wiswell, F. L. Kreider and L. A. Raymond. Capital, $4,000,000.

NATIONAL TELEGRAPH Co.—July 7. Object, the construction, conduct and maintenance of telegraph lines between the cities of San Francisco and New York, and all other principal cities and towns in the United States and Territories thereof, and in the Dominion of Canada. The estimated length of said telegraph lines is 75,000 miles. The principal place of business of said corporation is San Francisco. The term of existence of the corporation shall be fifty years. Directors—Michael Reese, Calvin W. Kellogg, James R. Keene, Faxon D. Atherton, William Sharon, William Burling and Alfred A. Cohen. Capital, $25,000,000, divided into 250,000 shares of $100 each, and of said capital there has been at the date hereof actually subscribed $7,500,000, and ten per cent. thereof has been paid to the treasurer of the said corporation. Alfred A. Cohen is President of said corporation and William C. Ralston, Treasurer.

INCREASE OF CAPITAL STOCK.—The Rock Island G. & S. M. Co. has increased its capital stock from $2,400,000 to $10,000,000.

THE Petaluma woolen mill is in successful operation, the spinning of knitting yarn having been commenced last Wednesday.

IT seems to be an assured fact, judging from what the *Register* says, that they are to have a woolen factory at Napa.

THE entire business portion of Tulare City was destroyed by fire last Tuesday afternoon.

GRADING has commenced on the Petalnma and San Rafael railroad.

PATENTS & INVENTIONS.

A Weekly List of U. S. Patents Issued to Pacific Coast Inventors.

[FROM OFFICIAL REPORTS FOR THE MINING AND SCIENTIFIC PRESS, DEWEY & CO., PUBLISHERS AND U. S. AND FOREIGN PATENT AGENTS.]

By Special Dispatch. Dated Washington, D. C., July 6th, 1875.

FOR WEEK ENDING JUNE 22ND, 1875."

MEDICAL COMPOUND.—Jennette Cooper, S. F., Cal.

FINGER BAR FOR HARVESTERS.—Victor N. Collins, Nordhoff, Cal.

FARE BOX.—Asa E. Hovey, S. F., Cal.

STAMP CANCELER.—Myer Lewis, S. F., Cal.

DOOR SECURER.—Louis Marks, S. F., Cal.

VENEER CUTTING MACHINE.—Geo. W. Swan, S. F., Cal.

PLANING MACHINE.—Henry C. Holloway, San Diego, Cal.

HAY, COTTON AND WOOL PRESS.—Maria McBurney, admx. of Wm. H. McBurney, decd., Sac., Cal.

CARPET CLEANER.—David B. Scofield. Baker City, Ogn.

FAUCET.—Louis Chaize, San Jose, Cal.

GOVERNOR FOR STEAM ENGINES.—F. M. Merrell, Marysville, Cal.

RE-ISSUE.

TYPE CASTING MACHINE.—J. A. T. Overend, S. F., Cal.

——The patents are not ready for delivery by the Patent Office until some 14 days after the date of issue.

NOTE.—Copies of U. S. and Foreign Patents furnished by DEWEY & Co., in the shortest time possible (by telegraph or otherwise) at the lowest rates. All patent business for Pacific coast inventors transacted with perfect secrecy and in the shortest possible time.

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Examinations of Patents made here and a Washington.
Examinations made of Assignments Recorded in Washington.
Examinations Ordered and Reported by TELEGRAPH.
Interferences Prosecuted.
Opinions Rendered regarding the Validity of Patents and Assignments.
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Our Agents.

OUR FRIENDS can do much in aid of our paper and the cause of practical knowledge and science, by assisting Agents in their labors of canvassing, by lending their influence and encouraging favors. We intend to send none but worthy men.

J. L. THARP—San Francisco.
B. W. CROWELL—California.
A. C. CHAMPION—Tulare, Fresno and Inyo Counties.
JOHN ROSTRON—California.
A. C. KNOX, California.
G. W. MCGREW—Santa Clara county.
CHAS. T. BELL—California, Oregon and W. T.
D. J. JAMES—Australian Colonies.
JAMES KEARNY—California.
WILSON SPENCER—California.

A COMPLIMENT.—It is proper to say that the MINING AND SCIENTIFIC PRESS is the best publication of its class on the Continent, and we are glad to know that it is appreciated and liberally patronized by those in whose interests it is published.—*Placer Argus.*

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1am-16p

UNITED STATES

Mineral Land Laws, Revised Statutes,

And Instructions and Forms Under the Same.

We have just issued a pamphlet containing the general mineral land laws of the United States, with instructions of the Commissioner of the Land Office. The contents of this pamphlet comprise all of the Government laws with relation to mineral lands of interest to the mining community, as follows: Mining Statute of May 10th, 1872, with Instructions by the Commissioner of the Land Office; Mining Statute of July 26th, 1866; Mining Statute of July 9th, 1870. Forms required under Mining Act of May 10th, 1872, as follows: Notice of Location; Request for Survey; Application for Patent; Proof of Posting Notice and Diagram of the Claim; Proof that Plat and Notice remained Posted on Claim during Time of Publication; Register's Certificate of Posting Notice for Sixty Days; Agreement of Publisher; Proof of Publication; Affidavit of $500 Improvements; Statement and Charge of Fees; Proof of Ownership and Possession in Case of Loss or absence of Mining Records; Affidavit of Citizenship; Certificate that no Suit is Pending; Power of Attorney; Protest and Adverse Claim; Non-Mineral Affidavit; Proof that no Known Veins Exist in a Placer Claim, etc. There is also given the U. S. Coal Land Law and Regulations thereunder. The work comprises thirty pages, and will be sold, post-free, for 50 cents. It should be in the hands of every one having any mining interests. DEWEY & CO.,

Publishers of MINING AND SCIENTIFIC PRESS, S. F.

N. B.—We have also added to the above publication, the REVISED STATUTES OF THE UNITED STATES, so far as relates to Mining Laws.

The Large Circulation of the MINING AND SCIENTIFIC PRESS extends throughout the mining districts of California, Nevada, Utah, Colorado, Arizona, Idaho, Montana, British Columbia and to other parts of North and South America. Established in 1860, it has long been the leading Mining Journal of the Continent. Its varied and reliable contents giving it a character popular with both its reading and advertising patrons.

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m6-m2

Mining and Other Companies.

Bandereta Mill and Mining Company—

Location of principal place of business, San Francisco, California. Location of works, Coulterville Mining District, Mariposa County, California.

Notice is hereby given, that at a meeting of the Board of Directors, held on the 17th day of June, 1875, an assessment, No. 1, of twenty-five (25) cents per share was levied upon the capital stock of the corporation, payable immediately, in United States gold coin, to the Secretary, at the office of the company.

Any stock upon which this assessment shall remain unpaid on the 17th day of July, 1875, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Monday, the 2d day of August, 1875, to pay the delinquent assessment, together with costs of advertising and expenses of sale.

J. W. TRIPP, Secretary.

Office, room 15, No. 408 California street, San Francisco, California.

Electric Mining Company—Principal place

of business, San Francisco, State of California. Location of works, Lincoln Mining District, Butte County, State of California.

Notice is hereby given, that at a regular meeting of the Board of Directors, held on the 22d day of June, 1875, an assessment of Five cents per share was levied upon the capital stock of the corporation, payable immediately, in United States gold coin, to the Secretary, at the office of the company, in San Francisco, Cal.

Any stock upon which this assessment shall remain unpaid on the 26th day of July, 1875, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Monday, the 16th day of August, 1875, to pay the delinquent assessment, together with costs of advertising and expenses of sale.

A. B. PAUL, Secretary.

Office, No. 318 California street, San Francisco, California. Room No. 13.

Geneva Consolidated Silver Mining Com-

pany. Location of principal place of business, City and County of San Francisco, State of California. Location of works, Cherry Creek Mining District, White Pine County, State of Nevada.

NOTICE.—There are delinquent upon the following described stock, on account of assessment (No. 5) levied on the 13th day of May, 1875, the several amounts set opposite the names of the respective shareholders, as follows:

Names.	No. Certificate.	No. Shares.	Amount.
I T Milliken, Trustee	10	78	$ 19 50
I T Milliken, Trustee	14	50	12 50
I T Milliken, Trustee	67	100	25 00
I T Milliken, Trustee	93	1800	450 00
I T Milliken, Trustee	94	741	185 26
I T Milliken, Trustee	134	1750	437 50
I T Milliken, Trustee	136	5376	1343 76
Charles Camden	23	312	78 00
Charles Camden	43	1250	312 50
James T Maclean	36	750	187 50
James T Maclean	133	45	11 26
H Barrolhet	32	1250	312 50
Robert McBeth	34	1250	312 50
S M Theall	47	625	156 25
Jeremiah Callaghan	53	625	156 25
C B Land	54	313	78 25
William Condon	128	125	31 25
Joseph Mollgg	129	125	31 25
James Parsons	130	125	31 25
Donald McLean	131	126	31 25
Alexander Taylor	132	100	25 00

And in accordance with law, and an order of the Board of Directors, made on the 13th day of May, 1875, so many shares of each parcel of said stock as may be necessary, will be sold at public auction, at the office of the company, room 14, 302 Montgomery street, San Francisco, Cal., on Wednesday the thirtieth (30th) day of June, 1875, at the hour of 12 o'clock M., of said day, to pay said delinquent assessment thereon, together with costs of advertising and expenses of sale.

I. T. MILLIKEN, Secretary.

Office, Room 14, No. 302 Montgomery street, San Francisco, Cal.

POSTPONEMENT.—The above sale is postponed to Thursday, the 15th day of July, 1875, at same hour and place above mentioned. By order of the Board of Directors. I. T. MILLIKEN, Secretary.

San Francisco, July 7th, 1875.

Gold Mountain Mining Company—Princi-

pal place of business, San Francisco, Cal. Location of works, Lower Rancheria, Amador County, Cal.

Notice is hereby given, that at a meeting of the Board of Directors, held on the 1st day of July, 1875, an assessment (No. 4) of twenty-five cents per share was levied upon the capital stock of the corporation payable immediately, in United States gold and silver coin, to the Secretary, at the office, No. 116 Leidesdorff street, San Francisco, Cal.

Any stock upon which this assessment shall remain unpaid on the 7th day of August, 1875, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Monday, the 2d day of August, 1875, to pay the delinquent assessment, together with costs of advertising and expenses of sale.

W. A. KNAPP, Secretary.

Office—116 Leidesdorff street, San Francisco, Cal.

Morning Star Gold and Silver Mining

Company. Location of principal place of business, San Francisco, California. Location of works, Great Mogul District, Alpine County, State of California.

Notice is hereby given, that at a meeting of the Board of Directors, held on the 21st day of June, 1875, an assessment, No. 25, of one dollar (1.00) per share was levied upon the capital stock of the corporation, payable immediately, in United States gold coin, to the Secretary, at the office of the company, room 1, No. 402 Montgomery street, San Francisco, California.

Any stock upon which this assessment shall remain unpaid on the 21th day of July, A. D., 1875, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Saturday, the 14th day of August, 1875, to pay the delinquent assessment, together with costs of advertising and expenses of sale. By order of the Board of Directors.

O. H. BOGART, Secretary.

Office, room 1, No. 402 Montgomery street, San Francisco, California.

Silver Sprout Mining Company—Principal

place of business, San Francisco, State of California. Location of works, Kearsarge Mining District, Inyo County, California.

Notice is hereby given, that at a meeting of the Board of Directors held on the third day of July, 1875, an assessment of five cents per share was levied upon the capital stock of the corporation, payable immediately in United States gold coin, to the Secretary at the office of the company in San Francisco.

Any stock upon which this assessment shall remain unpaid on the tenth day of August, 1875, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Wednesday, the 1st (first) day of September, 1875, to pay the delinquent assessment, together with costs of advertising and expenses of sale. T. B. WINOARD Secretary.

Office—No. 318 California street, San Francisco, (Room No. 13.)

Umpire Tunnel and Mining Company—

Location of principal place of business, San Francisco, Cal.

NOTICE.—There are delinquent upon the following described stock, on account of assessment levied on the 20th day of May, 1875, the several amounts set opposite the names of the respective shareholders as follows:

Names.	No. Certificate.	No. Shares.	Amount.
Be l, W A, Trustee	213	100	$5 00
Beal, W A, Trustee	262	30	1 50
Beal, W A, Trustee	265	10	50
Beal, W A, Trustee	266	11	55
Beal, W A, Trustee	277	10	50
Beal, W A, Trustee	278	10	50
Beal, W A, Trustee	279	10	50
Beal, W A, Trustee	300	100	6 00
Beal, W A	201	50	2 50
Bromley, T A	222	100	5 00
Bromley, T A	223	100	5 00
Bromley, T A	224	100	6 00
Buffington, J M	321	350	17 50
Butler, Wm	196	400	20 00
Butler, Wm	197	800	40 00
Butler, Wm	198	1300	65 00
Cochran, J T	301	100	5 00
Davis, W W	22	500	25 00
Davis, W W	23	50	2 50
Davis, W W	24	50	2 50
Davis, W W	25	50	2 50
Davis, W W	26	50	2 50
Davis, W W	155	1500	76 00
Davis, W W	156	100	6 00
Davis, W W	157	100	6 00
Davis, W W	158	100	6 00
Davis, W W	159	100	6 00
Davis, W W	312	100	5 00
Davis, W W, Trustee	302	1000	60 00
Davis, W W, Trustee	304	500	25 00
Davis, W W, Trustee	306	600	25 00
Davis, W W, Trustee	306	710	35 50
Dunseth, J D	201	130	6 50
Eakins, P A	4	10	50
Eakins, P A, Trustee	288	40	2 00
Eakins, P A, Trustee	296	50	2 50
Edgerly, Samuel	50	20	1 00
Edgerly, Samuel	59	20	1 00
Edgerly, Samuel	56	20	1 00
Edgerly, Samuel	68	20	1 00
Edgerly, Samuel	75	10	50
Edgerly, Samuel	82	10	50
Edgerly, Samuel	91	50	2 50
Edgerly, Samuel	237	100	6 00
Edgerly, Samuel	238	100	5 00
Edgerly, Samuel	239	100	5 00
E gerly, Samuel	240	100	6 00
Edgerly, Samuel	241	100	5 00
Edgerly, Samuel	255	100	5 00
Edgerly, Samuel	256	100	6 00
Edgerly, Samuel, Trustee	281	50	2 50
Finch, J W	226	100	6 00
Finch, J W	227	100	6 00
Finch, J W	248	100	6 00
Finch, J W	229	100	6 00
Finch, J W	230	100	5 00
Finch, J W	231	100	5 00
Finch, J W	232	100	5 00
Finch, J W	233	100	5 00
Finch, J W	234	100	5 00
Finch, J W	235	100	5 00
Flood, F L	327	40	2 00
Gains, H A	257	40	2 00
Lamar, J B	324	1000	50 00
McPhetridge, E	284	250	12 50
Moodie, G W	207	300	16 00
Newman, G W	335	186	9 30
Smith, J P	308	100	5 00
Smith, J P	309	100	6 00
Smi h, J P	310	100	5 00
Smith, J P	311	100	6 00
Smith, J P	325	500	25 00
Smith, J P	326	500	25 00
Squier, David	208	60	3 00
Van Honten, J, Trustee	188	100	5 00
Van Honten, J, Trustee	190	20	1 00

And in accordance with law, and an order of the Board of Directors made on the 20th day of May, 1875, so many shares of each parcel of said stock as may be necessary, will be sold at public auction, at the office of the company, room 1, No. 531 California street, San Francisco, Cal., on the 2d day of August, 1875, at the hour of one o'clock P. M., of said day, to pay said delinquent assessment thereon, together with costs of advertising and expenses of sale.

WM. SMALL, Secretary.

Office—Room 1, No. 531 California street, San Francisco, California.

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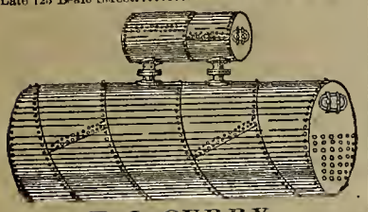

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24v17-qy

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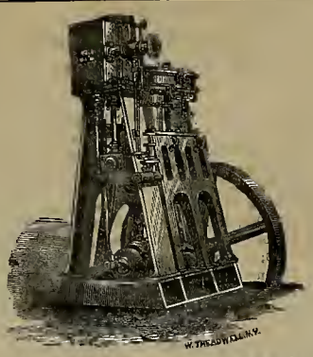

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OF ALL KINDS.

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QUICKSILVER FURNACES, CONDENSERS, &c.

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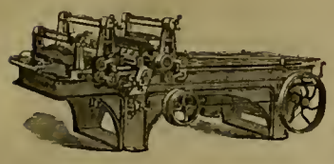

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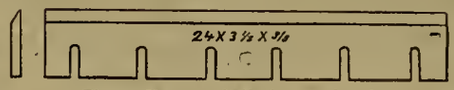

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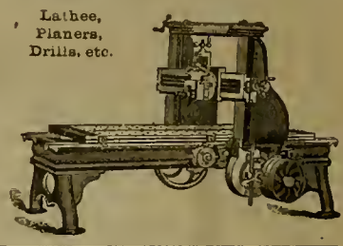

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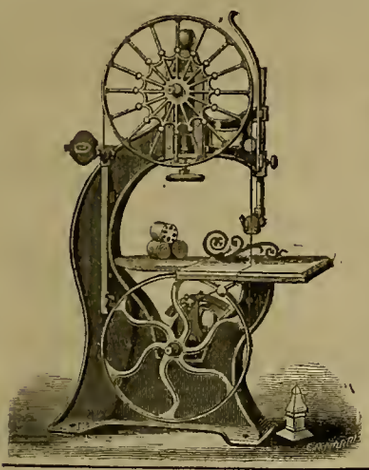

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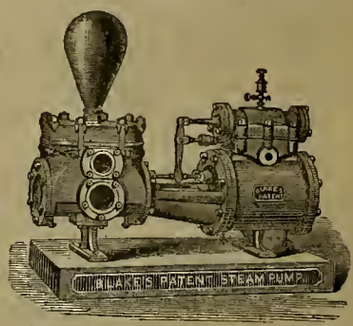

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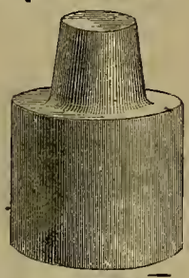

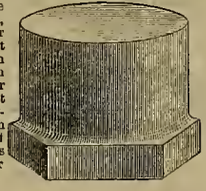

[PATENTED MAY 26TH, 1874.]

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We take pleasure in stating that owing to the rapid increase in our orders, our Pittsburg Manufacturers have been compelled to add largely to their works—a new gas furnace and heavier trip hammer—and are thus enabled to reduce the cost of steel and at the same time produce Shoes and Dies superior to any yet manufactured. We have consequently reduced the price to 16 cents per pound and solicit a trial order, guaranteeing that you will find them at least 10 per cent. cheaper than the best iron. There are no Steel Shoes and Dies made excepting under our patent and sold at this office, or by our authorized agents, though certain Eastern manufacturers advertise Steel Shoes and Dies which are only cast iron hardened by the addition of a composition. They will not out-wear two sets of common iron, though called steel. They are very brittle and are not capable of being tempered, flying from under the hammer like cast iron. Our Steel Shoes and Dies are in use in many of the largest mills on the Pacific Coast, and all who have tried them pronounce them cheaper and far superior to iron in every respect, even at the old price of 20 cents per pound. Their advantages over iron are cheapness on first cost, increased crushing capacity, time saved in changing and in setting tappets, increased value of amalgam by absence of iron dust and chippings, and a saving of 75 per cent. in freight. It takes 60 days to fill orders from the manufactory East. Price 16 cents per pound shipped at San Francisco. Terms liberal.

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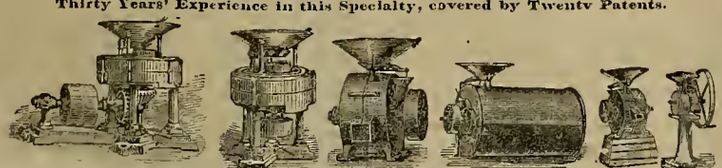

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Send stamp for Illustrated Catalogue containing cut of each design and price-list.

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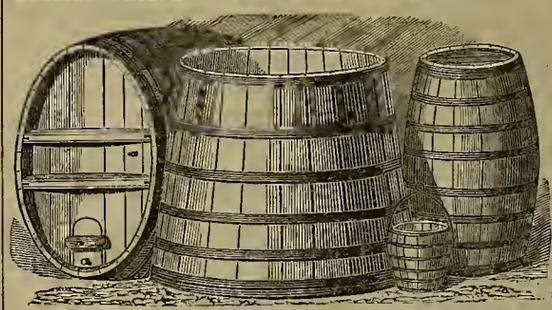

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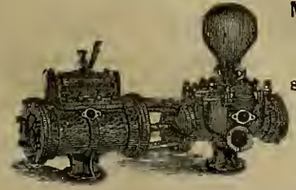

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Patented May 26, 1868.

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For hard and wet Rock, Iron, Copper, etc., and Submarine Blasting.

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The Pacific Coast Twelve Per Cent. Consols.

NEW METHOD WITH ASSURED ADVANTAGES.

A rapidly growing interest ie heing taken in the Pacific Coast Twelve Per Cent Consols, in consequence of tbe many advantages offered in regard to investment, interest and dividends. So much uncertainty exists in connection with nearly all mining and other speculative companies, tbere ie something very assuring in an incorporation wbich not only guarantees twelve per cent. per year to all stockholders, but provides for the bonest payment of dividende. Tbe Twelve Per Cent. Consols were incorporated on the 12th of February last, for tbe purpose of transacting a general business in buying and selling mining propertiee, city real estate, and agricultural and other lands, in the States and Territories of the Pacific Coast. Determined to do only a strictly legitimate business, the Directore rejected the old method in vogue hy mining companies generally, and adopted a new one which secures to all parties who become sbareholders, eqnal advantages in the business transacted. By the provisions of tbe by-laws,

A Sinking Fund

Is to be made of one-balf the proceeds of the total captal stock, which sball be sold on the joint account of the original co-owners. The stock will he classified as follows: Sinking Fund, mining property, city real estate and agricultural lands. Before any stock is issued in any class, the property will be appraised by the owners, and the stated value entered upon the hooks of tbe Company. Shares for not more than fifty per cent. of the valuation will be issued in any of the classes, and the amount of sharee offered for sale in any one class, exclusive of the sales of stock in the Sinking Fund, will not be allowed to exceed 50,000, if sold at less than the par value of a dollar per share,

Guarantees of Safety.

In regard to the Sinking Fund, which will constitute fifty per cent. of the par value of the stock, all moneys received as the proceeds of salee of stock on account of tbe fund will he deposited with some solvent banking institution, which pays interest on deposite invested in interest hearing stocks, honds and other securities, wbicb can he realized on in thirty days, and in no case will it be lawful for the directors or trustees to invest any moneys of the Sinking Fund in the purchaee of stocks, honds or other securities of any incorporation whatever, which shall have failed to pay interest or dividende for a period of six monthe preceding any proposed investment pertaining to tbe Sinking Fund of the Company.

Payment of Interest.

The by-laws further make poeitive provision for the payment of interest, monthly on all stock issued in each claee at the rate of twelve per cent. per annum, payable on tbe 5th day of each montb. Another important concession ie that any ebareholder has tbe option to take stock in payment for interest at par value in any claes that may be preferred. No assessment will he levied until the total stock of tbe Sinking Fund shall have been sold and paid out as provided by the by-laws. Indeed, so secure ie the plan of tbe Company that in caee the whole capital stock of the Company should be sold immediately and the Sinking Fund invested ae provided, tbe proceede would be sufficient to pay the interest for eight years and a half on the total capital stock. Perhaps no other company in the world has ever been able to present as brilliant a certainty.

Dividends.

Stockholders will not only be sure of their twelve per cent. per annum, hut will share in all the surplus profits. The dividends will be paid from the profits and salos of property, and only on ehares of consols that have been issued for property valued and entered on the books of the Company. As there can he very little question that tbe traneactions of tbo Company will be very extensive, and that the profits will rapidly reach something handsome, tbe dividend prospect should eerve ae a strong inducement to stock purchasers, for perhaps in no other direction can they he positive of receiving one per cont. a montb for money invested, and almost a certainty of large yearly dividends in addition.

A further provision can be made at any time by the Company by setting aside the percentage agreed upon of the sales of the properties of the Company. The main object of the directors is to incorporate a more legitimate and assured method of transacting business in mining and property than has bitherto obtained on thie coast. They are therefore resolved to touch nothing hut hone fide investmente, and to make it a rule to have nothing to do with speculative values. Every possible care will be taken to protect the intereste of shareholders; and in order that they may be constantly posted in the traneactione of tbo Company, a monthly statement of affaire will bo preparcd hy the officers, and the booke will he at all times open for inspection.

Sharee for the firet series iesued for mining property in Washoe, Storey and Lyon counties, and on tne Comstock lode in Nevada, and for account of Sinking Fund, will be ready for delivery to subscribers and purchasers to-morrow, at Greenbaum & Co.'s, 306 Montgomery street. Tho set selling rate will be one-twenty, and the buying rate one-nineteen. Tho principal office of the Company ie at 306 Montgomery street. T. Phelps is the President, and W. S. Reynolde the Secretary.

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Thursday Noon our last forme go to prees. Communications should be received a week in advance and advertisements ae early in tho week as possible.

No AGENTS are authorized to receive subscriptions for this paper at less than our advertised rates.

TO LUMBERMEN OF THE PACIFIC.

We were awarded the $100.00 *Gold Prize*, First Prize *Silver Medal* in the Great National Sawing Contest, had at Cincinnati, September, 1874, and *First Prize Silver Medal* for the *Best Cross-Cut Saw;* two First Prize Medals for the *Best Saw Swage* and *Cross-Cut Saw Attachment;* also the First Premium in the Great Sawing Match at the Provincial Fair, in Canada, and several First Premiums in State and County Fairs wherever any Celebrated Damascue Tempered Saws have been tested. Emerson's Patent Planer Toothed Sawe for General Work. Emerson's Patent Clipper Toothed Saws for heavy feed, and our Solid Toothed Sawe of all descriptions, AT GREATLY REDUCED PRICES, and sold UNDER FULL WARRANTEE. We cannot afford to make a poor saw. *Only seven days by mail from San Francisco.* Send your address on postal card for illustrated circular and price list.

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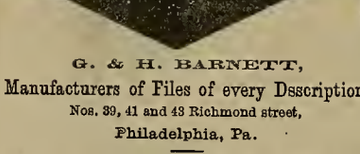

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BANK

—OF—

SAVINGS and DEPOSIT,

405 California Street.

Semi-Annual Statement, July 1, 1875.

CAPITAL.

Subscribed Capital	$200,000 00
Paid-up Capital	100,000 00

ASSETS.

Real Estate, Loans on Mortgage, Loans on United States, City and County Bonds, and Interest due thereon	$1,133,977 54
Office Furniture	2,250 00
Cash on hand	35,406 89
	$1,171,634 43

LIABILITIES.

Term Deposits	$601,491 27
Ordinary Deposits, Certificates of Deposit, and all other liabilities	470,143 16
Paid-up Stock Capital, being Guaranteed Fund, above all liabilities	100,000 00
	$1,171,634 43

Number of Depositors	2,885
Increase in tbe past six months	810
Gross earnings for tbe past six months	$63,681 57
Expenses for the past six months	6,117 21

Rate of Dividend: Term Deposits, twelve per cent.; Ordinary Deposite, nine per cent.; being an average dividend of ten and five-eighths per cent. per annum.

H. KOFAHL, Cashier.

THOS. GRAY, President.
J. C. DUNCAN, Secretary.

DIVIDEND NOTICE.

California Savings and Loan Society,

512 California Street. The Directors have declsred a Dividend of Nine and Six-tenths (9 6-10) per cent. per annum on Term Deposits, and Eight (8) per cent. per annum on Ordinary Deposits, for the half year ending on the 30th of June, 1875, free from Federal Tax, and payable on and after Tuesday, 6th of July, 1875. By order.

D. B. CHISHOLM, Secretary.

DIVIDEND NOTICE.

San Francisco Savings Union—532

California Street, corner Webb. For the Half Year ending with June 30th, 1875, a Dividend has been declared at the rate of Nine (9) per cent. per annum on Term Deposits, and Seven and One-half (7½) per cent. on Ordinary Deposits, free of Federal Tax, payable on and after July 12th, 1875. By order.

LOVELL WHITE, Cashier.

Knight's American Mechanical Dictionary,

A Cyclopedia of Science, Art and Manufactures, one of the finest as well as most useful books ever published. Nothing else will take its place. It ie tbe only work in existence which gives an adequate view of tbe present advanced state of mechanical science. Full information regarding over 20,000 separate subjects, with above 5,000 Illustrations, costing One Hundred Thousand Dollars ($100,000). It will be issued in 38 parts, or three hound volnmes. The price of each part ie 50 cents, payable on delivery. Prices for each bound volume: Cloth, $7; sheep, $8; half morocco, $9.

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DR. RUSSELL,

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MINING AND SCIENTIFIC PRESS.

An Illustrated Journal of Mining, Popular Science and General News.

BY DEWEY & CO., Patent Solicitors.

SAN FRANCISCO, SATURDAY, JULY 17, 1875.

VOLUME XXX Number 3.

Signaling Apparatus for Railroad Trains.

Mr. A. N. Towne, the well known general superintendent of the Central Pacific railroad compsny has recently pstented through ths Scientific Paess Patent Agency, an spparatus for signaling railway trains, which is of interest to sll railroad mea. It serves not only ss a means of allowing the condnctor to signal the engineer for ordinary train purposes, hnt will automstically sound the signal in osse one or more csrs shonld hecome detached from the train, snd thns give notice to the engineer that the train has psrted.

Inside the cah, at some conveuient point, is placed a differentisl magnet, and its lower end is connected hy mesns of a wire with a battery inside or helow the cah. The armature is connected with a platina faeed screw, hy mesns of a platins faced spring, snd the screw connected with the hsttery hy a wire. The armature is also connected with the upper coils of the msgnet hy a wire. A hell hammer is attsched to the armature and s hell or gong is secured at the proper point to receive the stroke of the hell hammer, when the armature is caused to vihrate hetween the magnet and the screw. A wire leads from the hattery, passing through the tender, and thence thronph each car of the train, heing connected hy a suitahle coupling hetween each two cars. After passing through the train the wire is carried hack again and its opposite end is attached to the upper coil of the electro-magnet. A single wire, however, could he nsed and the return circuit made thronph the csr wheels and one of the rails of the track, or a steel hrush could he arranged to move along one of the rails and complete the connection.

The particular location of the wire is immaterial, but the inventor prefers to carry it thronph the train in the same location as the ordinary bell cord.

From the shove arrangement it will he evident that an elec'ric current will be msintained from the hattery thronph the train wires, msgnet, wires connected with the hattery, and wires connected with the armsture, so that that two cnrrents thus msintained will render the magnet inactive, and the armsture will be held against the screw as long as hoth curreats remsin intact; hut should the train current through the wires hecome hroken by the rupture of the wire or otherwise, the single cnrrent thronph the other wires and magnet wi'l cause the armature to vihrate between the poles of the msgnet and the screw, thus alternately making snd hreaking the conuection and causing the hell hammer to strike the hell. This action will he kept up nntil the single circuit is either permanently hroken or s double circuit again complet ed.

To connect the sections of the wire between esch two csrs, a short hrass tuhe is nsed, which is attached to one end of each section, while a short hrsss rod is sttsched to the opposite end. These rods and tuhes c.uple together by sn ordinary hayonet joint, or other simple locking joint, so thst they can he connected or disconnected. In the length of the wires is inserted a compensating spring to provide for the shortening of the wire hy contraction snd to prevent any slight disturhance hy turning curves and hy accidental strains upon the wires from interfering with its operations This spring is placed in a hrass h.rrel or cylinder and the cylinder is secured to the ceiling of the car. A spindle or rod pa.ses thronph the spirally wound spring, and this spindle has a short harrel on its inner end, against which the end of the spring hears. Inside of this short harrel is another spring which operates against a piston in the cylinder to force a short rod out through the end of the harrel.

When the spindle with its surrounding spring and short harrel is inserted into the harrel or cylinder, the p'int of the short rod will first strike the opposi:e head of the cylinder and he pressed into the hsrrel, when the end is screwed upon the opposite or other end of the harrel so as to confine the spring in the cylinder. The wire which leads from the msgnet or bsttery is cnt, and one end is attached to a screw in the permanent head of the cylinder, while the other end is secured to the spindle at the opposite end of the cylinder. The cylinder is snitahly monnted, so that the current will pass through the screw, rod snd spindle in order to pass from one wire to another.

By drawing npon the wire which is attsched to the spindle, the spring is compressed and, as a matter of course, the end of the short hsrrel is drswn sswsy from the opposite hesd of the cylinder; hnt as the harrel moves away from it, the spring in the barrel will force the rod outward and thus preserve the contact without breaking the circuit, as long as the strain on the wire through the train is not strong enough to compress the spring sufficiently to sepsrate the rod from the hesd of the cylinder.

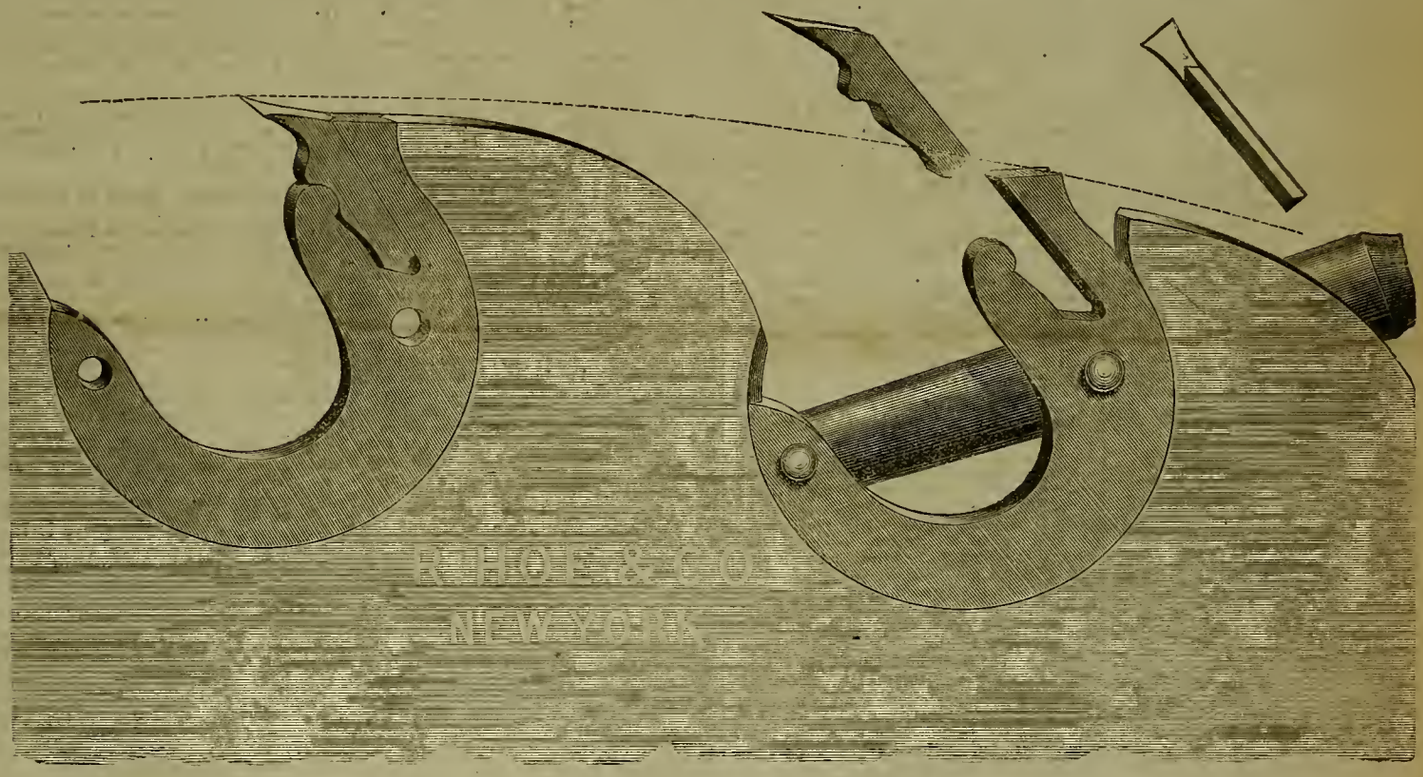
By drawing with sufficient force upon this wire the conductor can compress the spring so as to separste the rod from the head of the cylinder and thus hreak the circuit for the purpose of resign alling the engineer.

By the above described or equivalent arrsngement, an electro magnetic signal sppsrstus can he applied on railway trains which will automatically sound a signal in case one or more cars become detached from the forward portion of the train, and which will also serve for ordinary signaling purposes.

Improved Chisel Tooth Saw.

The sccompanying engraving represents a new chisel tooth saw, in which the teeth are highly tempered hits of steel, about an inch snd a quarter in length, confined securely in place without wedges. No filing is required to keep the teeth in order. They are cspshle, it is stated, of cntting 45,000 feet of lumber at an expense of not over three cents per thonsand, aud require no expert work to replace or keep them in order.

The method of removing and inserting the



HOE & CO.'S IMPROVED CHISEL TOOTH SAW.

toeth is shown on the right of the illustrstion. *E* is the wrench which is applied to the shank snd turned forwsrd sufficiently to relieve the jaw *C*, which will open and allow the tooth to come out. In the act of turning in, the projection on the inner edge of the jsw *B* closes into the depression in the front of the tooth, thus holding the latter firmly.

The first trial of this saw took place during the Cincinnati Exposition of last year. The dismeter of the tool wss 56 inches; teeth 36 inches. An osk log 16x16 was to he divided into twelve hoards and a poplar log, 20x20, into sixteen hoards. The following is the record of the saw: For oak—revolntions, 602; feed, 2¼; time, 1 m. 58 s.; nnmher of perfect hosrds, 12; horse power indicated, 98.82; square feet of lumher per minnte, 90; percentage of power used, 0.720. For poplar—revolutions, 605; feed, 3⅜; time, 2 m. 45 s.; perfect hoards, 8; imperfect, 8; horse power, 114.73; square feet of lumher per minnte, 109.1; percentage of power used, 0.689. This saw was very successful in this trial, having a higher percentage in its favor of any, in perfect hoards. It is mannfactured by Messrs. R. Hoe & Co., 504 Grand street, New York.

The new mill for the Csliforniа mine is advancing rapidly, the foundations for the machinory heing complete, wi h the exception of laying the coping stones for the engines. All the men are employed on the works than can he given room, as it is the intention of the management to complete its erection and get the mill going at the very earliest moment possihle.

All the machinery for the Lady Washington mine, on the Comstock, has now arrived except the pnmp engine, and the whole will he placed in position as soon as practicahle, the fonndations heing fully completed.

On the Glohe Consolidated mine preparations are heing made for the erecti n of new snd powerfnl pumping machinery for draining the lower levels of the mine.

At the Dayton mine, on the Comstock, the new boilers are in place; also the engines and nearly all of the other pumping and hoisting machinery.

The Albany, Oregon, sack factory is turning out sacks at the rate of 2,000 per day.

CORRESPONDENCE.

Drift Mining in Plumas and Sierra Counties

EDITORS PRESS:—The growing importance of the drifting gravel mines of Sierra and Plumas counties warrants the assumption of their being acceptable to the columns of the PRESS in a series of descriptive articles, as observed by years of practicsl experiencs as a miner and roving prospector.

Drifting or Tunneling Mines

Hold the chief place and are of paramount interest; yet qnartz and hydraulio interests are of very considerable importance.

The mines of the chief towns to be noted are Howland Flat, Gibsonville, Newark, (Whiskey Diggings,) Port Wine, Monte Cristo, Forest Oity and Allegbanytown, all lying on the great Blne lead which traverses this portion of the State in a northerly and sontherly direction. At different points of divergence are to be noted other mines of past fame and present importanoe. No better beginning can be made than to start from ths now famous town of

Forest City.

This is one of the few mining towns whose fame is of the psst and present. The town was justly celebrated for the richness of its mines as esrly as 1852. It is qnite impossible to get at anything like an accnrate statement of products or dividends, owing to the looseness in bnsiness matters of the early-day miner. We were all then satisfied if in onr little claims we got our fonr, five or six hnndred dollars per week on the investment of onr own manual lahor, and cared nothing for any data, book accounts or fignres. If our mines paid we were satisfied. As illnstrating the past valne of the mines of the plaoe I may cite as a fair example the now defunct

Live Yankee Mine.

This was as large a mine as was located on the Blue lead, thongh small compared with the amonnt of gronnd allowable to he held by a company at the present time. The location embrsced fifteen hnndred feet lengthwise of the lead by two hnndred and fifty in width, or one-half the width of the channel, making it equivalent to seven hnndred and fifty feet of the entire width and length of the lead. The prodncts of the mine were something over $800,000, and the dividends were over half a million. The general average of other mines was as great. Bnt the time came when the opened mines became comparatively exhausted and the significant assertion had obtained, the town had gone hopelessly

Down.

From 1866 to 1870 everything was on the wane. Deserted mines, deserted cabins, were everywhere met with. Population deoreased and everywhere there was a sort of sad loneliness to be met with relieved by no bright prospects. Abont this time a fire wiped ont the town, and of course the poor becsme poorer, while there were no rich to grow richer. The well nigh snppressed energy of the people bnilt up a little—as much ae the few wants of the people reqnired—hnt all was dead. The grass grew in the streets and the sportive and irrepressible gost grszed where he would, untrammeled by fence laws or city ordinances. A few gardens were planted, from which a partial snpport was derived, bnt this sort of existence wae as nnsatisfactory to an old miner as a diet of whale blubber wonld be to a Cocknsy. A few men of energy still continued to hope and nsed their meane in prospscting, which for some time produced no satiefactory resnlts.

The conrse of the channel worked had been nearly north and sonth, bnt the northern extension of it had failed to pay and it seemed as if everything was only going from bad to woree. Ahout this time

Mr. M. Redding,

To whose energy, perseverance and indnetry the town owee its present degree of prosperity, hecame thoroughly impressed with the idea that the channel, at a certain point, had come over a rim rock, forming a convergence from the northwest of what was snpposed to be the trne channel, bnt which was in reality the real ohannel. A looation of a large tract of land was made by him, a company incorporated and a tunnel etarted. A few hnndred feet were run and the work lsgged, one by one fell down and finally work wae snpended.

Another and Successful Effort.

After this no inducement conld persuade any one resident here of any valne attached to the new location. With a perseverance to overcome every obstaole, Mr. Redding repaired to Gibsonville, on the extreme northern limit of Sierra connty, and after a residence of six months' time enoceeded in forming a company of practical minere, when tbe work of prospecting the mine wae commenced, resnlting in the development of the

Celebrated Bald Mountain Mine.

The prospecting wae done by sinking a shaft from the snrface down to the bed-rock, 280 feet. Fair prospects were obtained, though nothing so good as the future of the mins verified. After this nothing remained but to run a graded tunnel 2,000 feet to tap the shaft; this was aocomplished in a year and ten months. The assessments for all purposes amounted to a little less than $20,000.

Exlent of the Mine.

By a piece of good fortune the location is as good as it could he msde if, with present knowledge, it was to do over again. The mine has a frontage of 3,600 feet end a length of one and three-fourth miles. The channel is located in the center, rnnning almost directly with its longest course.

Statislics of Workings.

Throngh the courtesy of the officers of the company, I am permitted to copy from tbe yearly reports of the secretary, snperintendent and foreman, for the past year, ending yesterday, Jnne 26th, as also all the former reports; and the secretary in addition, gave me access to books and maps, whereof I am able to speak nnderstandingly of the matter. I find that the mine has been in operation, extracting mors or less pay gravel, for three years from time of tapping shaft with tunnel. The total amount takon from the mine is $544,653.46. The superficial feet worked on the hed-rock are 539,354; paid per snperficial foot, $1; amount of dividends from mine, $284,000; amonnt of expenses, all purposes, $260,653.46; superficial feet of lesd yet to work, 6,500,000. After the assessments for running the tunnel, which were a little less than $20,000, the mine has been self-snstaining—no assessments having been levied. The first year, after paying for the opening of the works, stock, flumes, buildings, etc., a dividend of $54,000 was declared, the next year the dividends were $110,000, and the year just closed they were $120 000.

I copy from report ending Jnne 26th, 1875, the following, embracing only, however, 10⅔ months:

Amonnt taken from mine	$215,291 03
Dividends	$120,000 00
Expenses	$95,291 08
Car loads gravel of one cubic yard each	79,690
Paid per car load	$2,70
Per cent. of dividends on gross am't taken out	55 4-5
Cost per car load for every expense.	$1,19

Improvements.

The improvements to the mine sre very complete and extensive. The wasbing flume is one and a fourth miles long, and a lsrge portion laid with iron riffles. At the lower end of the flnme are the tailing claims of the company, which are 8,000 feet in length. Two large dnmp yards, donble planked, of a capsoity of 30,000 cnbio yards, reservoirs, ditches and flumes, timber houses, store room and shops, make the outside fittings as complete as oould he desired.

The openings to the mine are of the most approved modern plan and of large extent, showing snfficient pay gravel in sight for years of work. The nniformity and richness of psy is something remsrkable, and I think fully warrants the belief of this being one of the very best drifting mines on the coast.

Other Mines.

Several other mines loosted here are giving signs of promise and importance, the chief of whicb ars the Sonth Fork oompany, lying to the sonth, and the North Fork oompany, lying to the northwest of the Bald Monntain company. In the former the pay ohsnnel is reached by tunnel, bnt nnfortunately the tnnnel is too high to drain the ground. This will necessitate the running of a new tnnnel at a lsrge outlay, but as the gronnd is deemed rich final success is only a question of time. The location ie a large one, very favorably situated, and with tbe drawbaoks ennmerated is still held ot growing value.

The North Fork Company

Hss its mine opened also hy tunnel, which hss just tapped the pay channel on the outer rim; the tnnnel is in over 3,000 feet. Mr. Spaulding, enperintendent, and a large stook owner, is a mining engineer of long residence here, well posted in the workings of the adjoining locatione and the richness of the lead as worked to the boundry line of their mine, and deems the prospects already obtained enfficient to warrant the oomplete enccess of the mine in the near future. This opinion is generally concurred in by many old miners, long resident here, who took all the stock at home.

Wild Cal.

This place is not an exception to other towns where rich mines have been found; at every point of the compass at distances of one, two, or three milee are locations all claimed to he directly on the Bald Monntain lesd. Corporatione are formed, assesements levied, and money squandered, without a ghost of a show of finding anything. It is amusing as well as sad to see the frantio efforts of some to twist and contort the channel so as to make it pase directly through their locations.

The local press oan, it seems, always be had to talk these thinge np for a consideration. Not long since a correspondent, writing one of these "felines" up, stated that it wae just opposite the Bald Monntain mine and directly on its lead, while the facts were the location was nearly four milee away with high bed-rock ridgee intervening. Another case wae where a location was made to the esst of the Bald Mountain hnt not deemed by practical miners of any importance. It was desired that the ownere of the Bald Monntain company should give the thing a lift, and becanse they could not conscientiously do so, it was the cause of a small editorial supposed to be a orusher, the secret of which was the editorial ownership in the land and a speculative turn of mind, where no particular effort is requlred, which proposed to let soms poor bnt honest miner who had plenty of oredsnce and soms money, bscome the happy owner of a rioh mine—on paper.

This thing is all wrong, and does more to injure legitimate mining than all other canses combined. The day is well past for the reckless hap-hazsrd mining of former times. Every dollar invested in opening these wild cat mines is so mnch thrown away, while for legitimate mining enterprise based on practical common sense the field of operations is expanding.

PRACTICE.

Forest City, June 27th, 1875.

Mining at Bingham, Utah.

EDITORS PRESS:—After long delay, I again take my pen to inform yon of the oondition of mining matters in Bingham, Utah. Wishing to present a more cheering aspeot than has existed for a few months past I have waited, hoping to present a better showing. But several canses have combined to produce an unmistakable stagnation here at present, which, however, can only be temporary. Active measurss are now in operation by which the cost of fuel will he redueed to one-half its present price, and the purchase money retained in the Territory to stimulate our own enterprises. Our ores being mostly of the smelting character the cost of fuel is of vital importance. One canse of the depressed coudition of our mining prosperity is one that Californians learned many yesrs ago by dearly bought experience, viz., that kid gloved gentlemen having little or no knowledge of mines or mining, and who can hardly tell the difference on sight between a piece of ore and a lump of soap stone, oannot be trusted with the management of mines with reasonable hopes of success. An editorial remark in the PRESS a short time sinoe is here verified to the fullest extent, that the causes of failure are often not so mnch owing to the character of the mines as to their had management. Hnndreds of mines in the Golden State, which wrecked their owners years ago from that oause, and since proved to he rich, attest the truth of the observation. In all other ocoupations men are employed with a dne regard to their fituess for the work to be accomplished, but the rule is disregarded here, as formerly in Oalifornia, and the resnlt, already upon us, is the ssme. In one instance one of these gentlemen run a tunnel one hnndred snd fifty feet to strike a vein thirty or forty feet dèep, at considerahle expense, when with the same force he conld have made the ssme depth from the snrface in ten days! Another knew so little abont practical operations as to direot his men who were driving a drill to strike "winding licks" and when the hole was once started the drill wonld tnrn itself. In msny instances a vast amonnt of "dead work," snoh as tracing the lode, making roads, building ore houses, making chutes, etc., has been done before ascertsining the prodnctiveness of the mine. With the same consistency yon might send a landsman outside the Golden Gate to pilot a ship into port. Mines from which the owners might he receiving satisfactory dividends under efficient management are exhausted hy the continnal ory of the superintendent for more money. "Experience teaches a dear school, hut fools will learn in no other." Shrewd and practical men are taking advantage of the present lethargy by hnying np minee at a song's valne, greatly to their own gain and the future prosperity of the country.

But enongh of growling, yon will say, for one communication, so, *per contra*, I will mention a peonliarity not often observed, that will he interesting to copper miners. Two of our minee of most note which have attained the greatest depth are gradnally changing into copper ore. The "Neptune" which hae an ore body of thirty-five feet or thereahouts, strnck a body of the latter ore lying on one side of the argentiferous galena, which has constantly widened ont to ten feet or more in width, and assaying thirty-five or forty per cent.; from present appearances it will entirely supplant the other character of ore. The "West Jordan" is showing abont the same condition, other mines which have reached considerable depth give evidence of the same result, and it is not improbable that instesd of lead and eilver being our staple prodnote, our district will rank high ae a copper prodncing region. In oonclusion I will say that for readiness of development, amonnt of ore, and certsinty of remuneration to judioione investment coupled with economical and energetic management, no mining district offers greater inducements than thie.

WILLIAM TEAL.

Bingham, June 30th, 1875.

THE Cosmos of Humboldt tells of the trend of mountain chaine, configuration of coast ranges, river baeins, steppes and continuity of currente of air and oceans. The great physical geographer saw these grand features duplicated in the continents; yet a little reflection will tell ns that if law ie in the trend of a mountain range, it mnst also exist in the smallest ridge.

STEERING BALLOONS.—Some interesting experimente have been made at Woolwich, in steering balloons for military purposes. The halloone were gnided buokward and forward in any desired direction, by Mr. Menier, the inventor, in a still atmosphere. The valne of the invention will, however, depend greatly npon its snccess in currents of wind.

The Bonanza.

Last Saturday night a reporter of the *Evening Chronicle* saw a piece of "barren rock" fonnd in the Oonsolidated Virginia mine. It was taken from the second sill floor on the 1500-foot level, by Frank Osbiston, ths well-known expert, during a visit two or three days previously. It weighed just 8¾ ponnds, and according to the assays was worth $13.91. Two assays were made from this piece of barren rock, which resnlted as follows: Assay No. 1—$3,184.41 per ton; assay No. 2—$3,170.37 per ton. Abont one-third of the prodnct gold.

"Yon see this littls ribbon," said Mr. Osbiston, holding up a gleaming little band of silver, about fivs inches long, half an Inch wide, and ahont twice the thickness of letter paper; "this came from a quarter of an onnce of that ore."

The piece of rock was little more than half the size of a brick, but it was cloudy with black sulphnrets, and here and there bnnches of stephanite nestled snnggly in little cavities. Mr. Oshiston, it will be remsmhered, was one of those who six or seven months ago deolared the Consolidsted Virginia mine to be worth $1,000 per share at least. The reporter asksd if he thonght so yet.

"I am more firmly convinced of its value now than I ever was before," he replied. "The developments made within the last six months have simply demonstrated to svery one what mining men were already satisfied of—that the ore deposit is rich and extensive beyond anything dreamed of before. A winze sunk 205 feet below the 1500-foot level is in rioh ore all the way down, and there is no sign yet of the ors pinching ont."

"Then yon don't think there is any immsdiate prospect of working the mine out?" inquired the reporter.

The sxpert laughed dryly as he replied: "Well, no, I don't. Yon see that room there?" pointing to an apartment abont twenty-five feet square, "well, the space worked out in that bonanza bears about the same proportion to what is left as that room does to this whole block."

From tho report of Mr. Osbiston, which is corrohorated by all who have lately visited the mine, the absurdity of the bearing stories circulated in San Francisco will be apparent.—*Virginia City Chronicle.*

New Smelting Works in Colorado.

Golden, according to the *Transcript*, from which we condense as follows, is to have smelting works on a grand scale:

The Colorado ore dressing and smelting company was organized in Jannary last, under the laws of Colorado, with John Collom, Bradford H. Locke, Daniel Peters, William Hancock and Peter W. Crozer as incorporators, the capital stock being fixed at $250,000, divided into 2,500 shares of $100 each. The Eastern office has been established at Trenton, New Jersey, and the Western office at Golden, Colorado.

The object of this company is to nndertake the business heretofore pursned by the Idaho ore dressing company, at Idaho, and the Black Hawk ore dressing company, at Black Hawk, and to add thereto ore dressing works at Georgetown and smelting works in Golden, the whole to he merged into one organization and conducted nnder one general manager, whose headquarters have been established in Golden.

Collom's oncentration works, located at Iduho, and worth some $75,000, ie the oldest establishment owned hy this oompany. Its capaoity ie seventy-five tons per day, and ite success in the lins of ore dressing is already established.

Next in order of date comes the Keith or Mammoth mill, at Black Hawk, with a capacity of 125 tons per day, and worth in the neighborhood of $100,000.

The Georgetown works will oost, when completed, about $40,000. The capacity will he 100 tons per day.

The site for the company smelting works in Golden ie located on the Colorado Central, near the mouth of Olear Creek canon, and withln 400 feet of the Golden colliery. The huildings will be of brick, the main one to be 150 feet by 60, and to contain two reverberatory roasting furnaces, and two roasting cylinders. The building now erected, and whioh ie 50 by 30 feet, will be nsed for part of the process, and may, at eome fnture time, form the nuolens of separating works.

AMARYNTH.—The Amarynth mine, located on Cherry creek, near the Goodrich mine, owned by Messrs. Whaley, Traner, Parmlee and J. H. Johnson, ie represented as looking well. Four miners are employed on the mine, and a large pile of gold hearing quartz is already extracted. Two of the owners who were in after supplies on Snnday, were eo excited over the prospects that they conld not content themselves away from the camp yesterday, and celebrated the day taking ont ore.—*Silver State.*

A MILL FOR THE GOODRICH.—A. E. Goodrich, President of the Transportation company, Chicago, who owns one-half of the Goodrich mine, in Sierra district, writes Capt. Comins, his partner in the mine, that he has ordered a ten-stamp mill, and will ehip the eame ahont the 20th of thie month. The certainty of a mill heing erected on the Goodrich at an early day has stimnlated the owners of mines in that vioinity to inoreessd activity, and half a dozen oompanies are now at work within half a mile of the Goodrich.—*Silver State,*

Scientific Progress.

Solar Heat—A Popular Fallacy.

Science is sometimes unsecured by practice. Ericson spent a fortuoe in sxperiments with hot air as a motive power. His science was all right, but practically his system would not work to profit. Tho sams excellent mechanical scieati:t wasted time and money in trying to utilize the concentrated rays of the sun, in place of fuel, for geaerating steam power.

Having properly proved that in u small burning-glass tbe snn's rays set combustibles on fire, he took it for grauted tbat a larger glass would do greeter execution io proportion to its focal enlargement. It is proved in practice thet however large the lens, two inchee or two feet, only the same burniog power can be realized. He was so sure of his theory, thst he made, at greet expense, u four-foot lens so nconrarely conetructed as to secure a great concentration of the sun's rays. He calouloted on smeltiag irou and rebellious ores. But he found his science at fault. His pocket lens was qnite es effective. Whatever be the neturo of the sun'a heat, it differs materially from ordinery fire. Yonr highest monntain tops are aeurest to the sun, yet they are colder then the plains which are more remote, and oe we go yet farther in deop mines the tempereture increeses.

It would seem tbet the sun's hest reaches the plunts in a latent s'ate and becomes sensible by connection with our utmosphere. By such an arrangement, the remoteness of e planet does not determine the proportion of heut it receives. It may he equnlized by the constitution of its utmosphere. This essumption would remove maay embarrasements to scientific inquiry regurding life on the exterior planets, whioh else would appear to be too cold for nuy form of life, of which our bodiea afford any conception. They have atmospheres vieible to us, end this esteblishes analogy, thongh does not identify hetween the systems of life in all the worlds which derive their meens of life from the same central source.

The Missino Link—Perhaps.—If we are to believe a report from the Madrus Preeidency, one et leaet of the missing links hetween the enthropomorphous apee and *Homo sapiens* has at lust turned up, a Mr. Bond, un Indian surveyor, heviag, it is said, secured two specimens of u race possessiag some very simiun characteristios who inhebit the hill jnngles of the Western Ghats, living chiefly on roots and honey, and being without fixed dwelling places. They heve, however, civilized tendencies, for they exchange honey, wax and other prodnce of their forest haunts, for tobecco, as well us for cloth and rice. Tho diagnosis of this remarkable and primitive type of humanity is very interesting. The forehead is low and retreating, und the lower part of the face projecting like the muzzle of the monkey; the legs ere short and bandy, while the body and arme are comparetively long. The most striking oharacter is in the hands, whioh, with the fingers, are contracted so that they oannot be etretched out flat; the palms and fingers, more especially the tips of the latter, are covered with thick akio, the nails being emall aud imperfect, while the feet are hroad und covered on the upper as well ae the lower surface with thick skin. Thsse people are not without religion, practieing, apparently, a species of nature worship. The monntaine of India herbor severel very anoient reces, who have there found a refuge from the euccessive waves of invasion, which, as in the case of Italy, have swept over the peninsulu from prehistoric periods, and whoee strange and primitive customs and habits huve already thrown light upon important ethnological problems.

Straiohtenino Tall Chimneys—Our reedere will very generully remember the plan adopted for straightening a tall chimney near Edinburgh, Scotland, hy sewing away a portion of the mortar upon the leaning side. Following is another plan adopted for the ssme purpose at another loeality: A high factory ohimney in Havre, which dnring the process of hnildiug hed, owing to the sinking of one side of its fonndation, heen thrown out of perpendicular, wae recently streightened in the following manner: The earth on the eide opposite that townrd which the chimney inolined was dug away to the fonndation bed, and for a width of six feet. On the wide lower oourse pillars of masonry were ereoted, which snpported a heavy staging, on which some 30,000 paving stones were piled. The effect of thie immense load wes to cause a einking of the etructure heneath, which, in six weeks, resulted in the straightening of the chimney, the top having peseed through an ero of thirty-one inchee.

Scientific Preemium.—Urieh A. Boyden, of Boston, Mass., has deposited with the Franklin Institute the sum of one thoueand dollars, to be awarded as a premium to "any reeident of North America who shull determiue by experiment whether ull rays of light, end other physicel rays, are or are not transmitted with the seme velocity."

Preservation of Metallio Sodium.—According to Bottger, if eodium be placed in alcohol until its surfeoe becomes brilliant, and then in naphthalic ether chemicelly pure, end finelly in a oneentrated solution of nephthalic ether, the metal may be preeerved unalterable with its luster unimpaired, for a long time.

A New Use of the Sand Blast.—The prodocing, upon pleted ware or silver, of a lusterless, very finely grained surfece, termed by the trede satin fioish, has heretofore been eccomplished by the use of swiftly rotatiag broshes made of fine wire. Messrs. Simpson, Hull & Co., of Wallingford, Coun., have recently found that the sand blast performs tbis stippling work much more rapidly snd effectoelly, aud have introduced the necessary apparatos for its employment in their large silver-plate manufictnring establishment. From Mr. W. E. Hawkins a gentleman connected with the above concern, we learn, says tho *Scientific American*, that air is compressed by the driving eagine of the works into an ordinery reservoir, end theuce distrihuted through pipes which extend along the front of the workmen'e tebles: and ebovo the latter is e sand receptacle, V-shaped, from which a stream of eand fnlle und is met by a downward hlast from the pipe, whlch current drivee the muterial in a stream through u emell hole in the table, heneath which a reccptacle to receive the sund ie placed. The workman, whose fingers are covered with rubber to protect them, holds the article in the jet and under the table, watching it through u pane of glass let into the top of the latter. Tho operation is neceesarily very repid, ae the article has only to be turned so that the blaet strikes the reqnired portions, when the work is compleeted.

Tho exposure to the jet, even for an instant, would cut through the Britannis, upon which the plating is utterward deposited. By the interposition of rubber screens of suitable shape, against whioh the ssnd hes no abrading effect, any fancy petterae or letters are easily imprinted on the surface, the latter of course being satiu finished, while the epaces protected hy the screens are afterward burnished. The screene or patterns ere cut out by girls, of whom numbers are employed for tbut purpose.

Discovear of the Phylloxera Remedy.—M. Dumas recently anuounced to the French Acndemy of Sciencee that a mode of treating vines attacked hy the phylloxera has been discovered, which is certain in its resnlte in destroying the insect and in restoring the vine to health and fecuadity. The remedy is the comhined employment of sulpho-carbonate of potseh, which kille the ineect et any depth, to the soil, and of potassio, ammoniacal, and sulphuretted manures. *Les Mondes* states thut M. Damae himself is the fortnnate discoverer, though his annoncement to the Academy was not made until sfter his process had been tried hy exhaustive experimenting by the commiesion appointed to examine into the various plane eubmitted. Thie being the case M. Dnmas hecomes the possessor of the $60,000 reward, beside the numberless other prizes of smaller eums offered throughout France.

Maonets for Electro-Motors.—Magnets or armatures for electro-motors may he eoftened as follows: Heut the iron to an even dnll red heet all over; and if the eurface of the iron hes not been faced off in a muchine, lightly file it to remove the scale, and then immerse it in common soft soap, allowing it to remein therein until it is quite cold. Then reheat the magnet to an even red heat whose redness is harely perceptible, end hury it in pulverized lime, wherein it mnst also remain nntil quite cold, whcn the metal will be found ee soft as it is poseible to make it, and the blade of an ordinary penknife will cut it. At the second heating the iron will emit a light blue fleme, showing the effect of the immersion in the soft soap. The conductibility of the msgnet may be, hy this process, very much increased.

All the water in the mineral fields, rivers, lakes, springe and ponds, has direct reference to the filling of the vein syetem. The hed-rock of the creeke around the iroo mountains of Missouri is impervious, and radiatee the rnin water from the ore depo.its, so that when the excavations are carried deep the ore is found in comparatively "dry gronnd." The same law apphes to the three little pilot knohs that mark the center of the lead fields of Southeast Missouri, and the Plette mounde that mark the center of the great hasin of the Wisconsin or upper Mississippi lead field. Each drop of water that falls or circulates in the strate or on the surface, flows with direct reference to the hasin system and oro deposite of these mineral fields.

How does a Spider Make its Web?—Here ie e poser put by a writer in *Science Gossip*, which eome of our renders, who have watched the huhits of spidere, may he ahle to answer: How does a spider make ita weh, the lines of which, crossing at the center, ere carried, some of them, to the surrounding objects, while others are fustened to un outer circular line, made evidently hefore the outer circular lines of the woof are formed? Wher. doee tho spider place itself when it ejects the lines which form the spokes of the wheel?

Recordino Speech Automatically.—A machine for writing epoken worde hae heen inveuted by a Frenchman named M. H. Hupdinger. The *Revue Industrielle* describes the machine as being ahout the size of the hand. It is put in connection with the vocal organs—the inetrument recording their movements upon a moving band of peper in dots and daehes. The person to whom the instrument is attaohed eimply repeats the words of the speaker after him inaudibly. This lip langnage ie then faithfully written out.

Mechanical Progress.

Re-Carbonizing of Steel.

A series of novel experiments has recently been mede in the re-carbooiziog of steel, ths result boing in every detail highly setisfactory. The Cardiff eogine works was tbs sceoe of the experiments, eud tbe process of re-carbonizing the steel wes Introdoced hy Mr. D. Drummond, of Swansee. Tbe meterial used is e neerly liquid composition, and Mr. Drommond simply placed it in the hands of the foreman of Messrs. Elliott & Jeffrey, the proprietore of the works, with instructions how to use It. We will give one of the experiments. A oommon chisel, in use for chipping rivet heads, was placed in one of ths smithe' forges and heeted until it was burut. Thie wus repeated three times, until it wus rendered quite useless for any purpose whatever. It wee then placed in the composition, tempered in the ueual wny, und gronnd on the side of an old anvil, und violently strnck with u chipping hummer. A piece of cbilled iron was then cut, the edge of the chisel remaining intact, to the aetonishment of the onlookere. Mr. John Elliott, of the Cardiff engine works, expressed his opinion, as e practical engineer, that the experiment wus a thorough enccess. Mr. George D. Dalglish, mining engineer, Pencoed, and several of the officials of the Powell Doffryn colliery company, also expressed a similer opinion. The composition has the wonderful property of making bad eteel good, nnd good steel nearly impregnehle. An employer has only to get a tin of the compound, prepare the ontting portion of the chisel, or turniag tool, from inferior eteel, nnd it will stand as well us if the tool had been made from the best eteel; or if the best material is used, the tools will lsst for a surpiisingly long period. The composition, we have been informed, was tried at Brynacae colliery last week, in the presence of Messrs. Dunn end Francis, mining engineers. A steel set chisel was treated in the usual way. A sixteen ponnd sledge hammer then drove it through a two inch bar without turning the edge. Two chiesls were subsequently made by Mr. Dunn's order out of one har of eteel, one of the chisele being treated by Mr. Drummond's mixture, and the other being tempered in the usual wuy. The latter, after cuttiag a hole six inches in depth, was quite unfit for use, whereas the other cut five holes of varions depths, from six inches to three feet six inches, and wus then none the worse of the weer.—*Ironmonger*.

Hydraulic Riveting Machine.—An Englieh riveting mechine of recent construction shows some features of mechanical interest. It conaists of two iron girders, each twelve feet long, and hinged together in the center as they stand upright. One is fixed firmly, end the other moves slightly on a pivot. Bnilt into the base of the fixed girder are two hydraulic cylindere, and by short arme their pistons ure connected with the end of the other girder. The first turn of the starting wheel applies the power of the emaller of these cylinders. It hes snfficient force to move the lever into place against the rivet in the plete that is stending between the two girders at the top. The next turn brings in the power of the larger cylinder, and a squeezing pressure of sixty tons drives the rivet home. A reversal of the hsnd wheel allows both cylinders to empty themselves, end the pressure is removed. The same motion also gives the water to the smaller cylinder, and its reverse motion draws the girder back into place. By the use of sliding jaws, thie machine is also used in bending plates snd heams, end may be worked up to a power of 120 tons. The hydranlio works, being below the floor, are safe from dust and frost, aud conveniently out of the way.

Artificial Hardening of Sandstone.—Msnfred Lewin has tried with success in his quarries at Saxonia, and at Neundorf, near Pirnu, a process of impregnating sandstone. The stone there quarried ie poroue und readily absorbs water to a certein depth; it ie this fact which renders it possible to introduce a solution to harden the surface. Lewin impregnetes the stone with solntione of an alkuline silicate and of alumine; there is thns formed an elumininm silicete within its pores, whioh gives to the surface considerable reeistance. The eolutions employed are mede with solnhle glass and with alnminnm snlphate. After the impregnetion, the sandstone may he polished like marhle, which it then resembles closely. Heated to a high temperature, the exterior leyer vitrifies and thus may be colored at pleasure. The coloration may even he obtained simply by mixing the desired pigment with one of the two solutions used for the impregnation.

The weakest point in a hoiler is where it is riveted. If a boiler could he made entirely of welded iron, without rivets, it would he one-third stronger. Tbe smeller the boiler, the stronger it is. A boiler twenty-four inches in diameter will stend twice the pressnre that a boiler forty-eight inches in diameter can, of the same thioknese of iron, or three times the pressure that a hoiler seventy-two inches in diemeter can stand.

It is steted that the vessel in which is stored the power of the Keeley motor, is made without a riveted seem, the joints belng welded. How this hae been doue is as muoh a mystery as the pretended motor itself—and probably there is as little fect in ths ons as the other.

Lining Boilers With Copper.

M. F. Pupka, a Visnnese enginser, givss the following fects regarding experiments in linlng steem hoilers with sheets of oopper in order to hlndsr incrnststion: Of the thres pletes which formed the bottom of a locomotive boiler, the two et the ends were covered with e sheet of copper 0.04 inch in thickness, the middle one heing left bare. The machlne wss ussd steadily for two ysars in districts where the watsr is of excessively bed quality. On removing the tobes a layer of iacrustation fonr inches thick was found on the iron surface, while a deposlt varying from only 0.08 to 0.12 inch thick appeared on the copper. The iron also was corroded in meoy places to a depth of 0.02 inch, but the copper had remained perfectly clean und bright. The texture of the incrustations showed larger grains on the iron then on the copper.

Another engineer, who exsmined and reported on the arrangement, says that the duration of the boilere is doubled or triplsd by ths applicetion of the copper plutes. which afford extreordinsry secnrity ugainet explosion. The incrustation is much less ou copper than on iron or steel, whieh is porons end slightly oxidized, and coneequently the vsporizetion is more complete, and there is a correeponding saving of fuel. In the construction of a boiler to be lined with copper the iron plates may be of less thickness without riek; the weight of the boiler is thus considerably reduced, and, lastly, the expense for repairs is oonsiderably diminished. We have, howsver, to consider the galvunic effect of the contact of the two metals, und require reports on other waters less calcareous, but more acid, than the one alluded to ebove as of "very bad quelity."

A Novel Mechanioal Appliance.—Severel yeare ago the famous obelisk, known es Oleopatra'e Needle, was donated by the Egyptian to the Britieh Government, hut the lutter, although severel plane have heen proposed, has heretofore considered no scheme as overcoming the engineering difficulties of removing the monolith from its site to the shore and thence to England. We learn from the London *Times* thet an attempt is now ehortly to he made, aad the project which has been edopted is as follows: The obelisk is to be encased in wood, by attaching heavy besms, strongly connected together to each face, nntil the desired cylindrical form is obtained. It will not he difficult then to roll the monument over a wooden road, laid over the sand hills which cover the intervening mile hetween its present loeetion and the sea. The wooden envelope, while increasing the mass, will, et the same time, he ench as to diminish the specific gravity of the whole, so that the grest bundle will readily float. To this end, the diameter of the circle formed by a section of the cylinder will he twenty feet, or twelve feet larger than the bresdth of the sides of the obelisk. After the monnment is launched, it will he towed out of the Mediterraneen and into the Themes, to the nearest point to ite future site. This plan, it is helieved, can be oarried ont very easily und with little expense, while it will be free from the dangers found in treneportiog the Obelisk of Luxor to Paris, es during its voyage tbat mouument seriously demaged the vessel.

The First Planino Maohine.—It is en interesting queetion ns to where the first planing machine wss made; according to the London *Iron Trade Exchange* it was built in the Holland etreet works of John Rennie the elder. "In March, 1814, (and we copy from an original memorendum hook of the late George Rennie,) the following plan was adopted for chipping the osst-iron sides of a new lathe. The sides are placed close together, with their feces upward; two planks of elm, one on esoh side, are bolted with their edgee trnly placed end upward; upon the edges of the planke run four wheels on axles, which support a truck of oak. To the truck is fixed a slide-rest, to which is attaohed u cutting tool; the trnck is well loeded with weights, and pulled along ths surfece of the elm planks by mesns of a orab and ohain. Thus the tool planes the iron lethe hed straight," This was, in fact, the first plening machine, crude and rnde as it was, and from it Whitworth, to whom the original apparatus wes shown, subsequently mede a self-eoting machine. We all know how important a tool it has hecome in the manufecture of neerly every kind of mechinery.

Iron Wire, tinned by a galvanic process, end haviug the appearance of hright eilver, is being introduoed. The wire is first placed in a hath of hydrochloric acid, in which a piece of ziuc is euspended. It is then placed in oontact with a piece of zinc in u hath of 100 parts water, two perts tartario ecid, three parts tin salt, and three parts soda. In about two hours t may he taken out and made bright by drewing through a polishing iron.

Rifling a steem jet to give it a spirel motion is now performed hy inserting three small pipes into the oloeed head of a delivery pipe. These pipes are then given half a turn eech, and the ends hronght together. In cleening fines, this triple nozzle gives three jete, eaoh having a spiral or twisting motion that causes them to strike the walls of ths flue, and effectuelly sweep them olean.

Theee are nearly 400,000 cars running on the rullroads of the United Stetes, supportsd by neerly 4,000,000 cast iron whsels.

Mining Summary.

THE following is mostly condensed from journals published in the interior, in proximity to the mines mentioned

California.

ALAMEDA.

COAL.—Livermore *Enterprise*, July 10: Quite a large quantity of Livermore coal has been shipped the past week. We understand the committee on the purchase of machinery are meeting with good success in securing the same for the mine. The shaft has now reached the 400-ft level, and preparations are being made to commence stoping, east and west, immediately. During the last 30 feet the quality of coal has materially improved, and is now considered without fault.

AMADOR.

RICH STRIKE.—Foothill *Ensign*, July 10: We are told on trustworthy authority that about three weeks ago, as two men, whose names we have been unable to learn, were cleaning out a spring, some 3 or 4 miles above Volcano, they exposed a quartz lead. They at once set to work upon it, and in a few days took out 30 tons of rock, which was sent to the nearest mill to be crushed. The result realized the snug sum of $1,700. We understand that parties in Sacramento have endeavored to purchase the claim, but the owners refuse to sell. The party to whom we are indebted for this information visited the locality a week ago, and reports the ground on the line of the lead taken up for a considerable distance. We have not been able to obtain confirmatory testimony to the truth of the above, but have no reason to question its credibility.

ORIGINAL AMADOR MINE.—This mine, situated at Amador City, is now running 20 stamps; crushing between 20 and 30 tons a day. It employs about 70 men altogether.

KEYSTONE MINE.—We understand that a new shaft is being sunk on this mine, on the east side of the old works, for the purpose of facilitating the taking out of ore. New hoisting works are in course of erection, the lumber for which is being supplied by G. Allen, and the requisite castings are furnished by the Sutter Creek foundries.

VOLCANO.—Cor. Amador *Dispatch*, July 8: The Modoc company made a run of 23 tons of rock and cleaned up $1,384, with plenty of rock in sight. McQuade & Co. are still at work on the extension of the Modoc lead, with flattering prospects. Griesback & Co., on Pioneer creek, have had a lot of rock crushed with satisfactory results. Rodgers & Co., near Fort Ann, have completed their hoisting works and are engaged in sinking the shaft, being now down 150 ft, with a ledge 2½ ft wide, the rock paying $30 per ton. Mr. Poundstone will be at work in a short time on two leads near Fort Ann that prospect well. There are other companies prospecting; will let you know the result some other time. Robinson & Co. in their placer claim cleaned up last week about $1,500. McLaine & Co. are running their tunnel ahead. S. Bono & Co. are drifting out dirt that prospects well. Mr. Potter is tearing down the old Tulloch mill and machinery, to put in new machinery, and intends having it running by the 1st of September. Mr. Pine has gone below to purchase machinery to erect hoisting works at his mine on the Mokelumne river. Work is being rapidly pushed on the Rising Sun mine, which looks well; the lead is about 12 ft wide and is rich in paying sulphurets.

GWIN MINE.—Calaveras *Chronicle*, July 10: Sinking for the 1100-ft level has been commenced in the Gwin mine, and the work is being rapidly pushed ahead. But little rock has yet been taken from the 1000-ft levels, the 900-ft stopes having furnished the batteries with an abundance of ore up to the present time. The ledge shows remarkably well in the 1000-ft level—wide and rich—and it is thought that the stopes, which are now well opened, will supply quartz enough to keep the mills in constant operation for a year. The new sinking will be completed in a short time and the necessary levels run, the object being to keep at least a year's supply of rock uncovered ahead of the stamps. The prospects of the mine are as flattering as could be desired.

ALPINE.

LOCAL ITEMS.—Alpine *Chronicle*, July 10: The assessment roll of this county foots up $494,944, a decrease of $358,118 compared with last year's roll. This light roll is due to a stagnation in the wood business, and the throwing of several of our mines into litigation—drawbacks that will not be known hereafter. If the mining enterprises now getting into shape are fully inaugurated, the assessment roll of Alpine in '76 will foot up not less than $1,000,000, and the county be in a better position than it has been since the flush times of 1864 and 1865.

This week U. S. Deputy Surveyor Hawkins has been engaged in surveying the Imperial claim at Bullions, application for a U. S. patent having been made.

The Morning Star company have also applied for a patent for their mine at Mogul, and on Monday last U. S. Deputy Surveyor Craven, of San Francisco, arrived at Monitor and surveyed the mine. He also surveyed the Marton claim and mill site for the same purpose.

U. S. Surveyor General Stratton has appointed L. L. Hawkins U. S. Deputy Surveyor for Alpine county, An acceptable appointment.

CONTRA COSTA.

PREPARING TO GRIND IT.—Contra Costa *Gazette*, July 10: Mr. Warren Brown has by this time probably got his arrastra at Layfaette ready for operation, and will put it to grinding the several varieties of rock found in that vicinity which are known or supposed to contain gold and silver. The arrastra will be operated by the steam power of the flour mill, and by working a ton or two of the several varieties of rock will practically test their value.

LAKE.

FURNACE ALTERED.—Lake Co. *Bee*, July 8: The Mt. Jackson furnace stopped worked last week. It will be altered to a continuous furnace. While the alterations are in progress a bench of three retorts will probably be erected for reducing the high grade ore. Thirteen men are at work in the tunnels, taking out only the dirt that lies in the way. Enough good ore is now in sight to run the furnace a year.

NAPA.

PHŒNIX.—Napa *Register*, July 10: We had the pleasure of meeting J. H. Cowan, of the Phœnix mine, on Thursday last. He tells us that they commenced charging their furnaces on Sunday. The furnaces seem to be working exceedingly well, the recent improvements having been of great benefit. The ore coming out now is very fair, with an abundant supply on hand for this summer. They are making about 20 tons of adobes daily; half of which are being used with rock now. The Washington mine is also running, with a fair showing. The Oat Hill district, north of the Phœnix about two and a half miles, is prospecting well, and there is some talk of furnaces being erected.

NEVADA.

ENCOURAGING.—Nevada City *Transcript*, July 10: The mining prospect is looking very encouraging in this vicinity just now. Prospectors have great confidence in their ability to strike gravel in the ancient river channel, and the various quartz mines are looking unusually well. It is believed that we are surrounded by gold-bearing channels and leads on all sides, and that instead of the mines being exhausted, they will be better than now, even a hundred years hence. Such confidence argues well for the prosperity of the place, and we believe it is well founded. There will be more men wanting to invest capital in the county ere long. Everything looks encouraging now.

NEW YORK HILL.—*Foothill Tidings*, July 10: Everything about this mine moves along with the regularity of clock work, and quartz is fast accumulating on the dump, from which it is now being delivered to the mill. Among the noticeable improvements now being made at the mine is an arrangement of the chute from the ore dump so as to do away with the labor and trouble of shoveling; the quartz wagon is driven under a spout and by merely raising a gate the load is taken on in a few moments. The mine still continues to send out rich quartz from all parts, and all the levels are worked to the best advantage.

FEYER, the man whose new process for working ore is to revolutionize mining, should it prove as successful on a large scale as it has on a less, is tearing away the small works out near the race-track, and expects to have permanent ores of a capacity to reduce ten tons of quartz a day in operation within two or three months.

LARRIMER MILL.—The new steam works and additional batteries at this mill are about to run and when started will give more than double its present milling capacity. As the water is very low in Wolf creek at the present time it is with difficulty that they run all the stamps. They seem to have all the work they can do; the dumps at the mill are all full and a large amount of ore is accumulating at the New York Hill mine, and now being hauled to the mill.

OMAHA MINE.—Grass Valley *Union*, July 9: The Omaha mine's steam hoisting machinery has been put to work and everything works well. To-day hoisting by steam will begin; and when there is plenty of water in Wolf creek water power will be used.

PATENT SECURED.—After a long contest and much trouble, the Badger Hill gold mining company have at last secured a patent to their mining ground.

KENTUCKY.—An assessment of 20c per share will be found advertised in another column, and this week a contract has been let to sink the shaft 50 ft deeper, which will make the total depth on the ledge over 300 ft. The ground continues very favorable for sinking and the managers feel quite encouraged with the prospects met with as the work progresses. The walls are regular and the vein, though split up, shows excellent quartz in the stringers, and on the whole the outlook for the future of the mine is very bright.

PLUMAS.

GOPHER HILL.—Plumas *National*, July 10: We were shown some specimens on Monday, by Mr. N. Cadwallader, Supt. of the Plumas Ditch Co's mines, picked up on the bed-rock on Gopher hill. These were six pieces in all, ranging from half an ounce to three ounces,—regular old-fashioned lead nuggets—and worth in the aggregate about $150. Mr. C. informed us that the water season is about over with them, and that they will make their clean-up on Gopher hill during the next two weeks. This company keep the result of their work secret, but from the indications spoken of above, and other "symptoms," we conclude that Gopher hill will turn out a good big showing for the short run of water, and that the owners are well satisfied with their purchase of that mine.

ITEMS.—Another rich spot was struck recently in the Light ledge, and the workmen picked out over $400 in a short time. We saw a splendid specimen from the strike a day or two ago. A prospecting company are taking out ore from the old Kits' mine, and will send twenty tons to S. F. to be worked, as an experiment.

SAN DIEGO.

HELVETIA MINE.—San Diego *Union*, July 8: The Helvetia mining company, at Julian, received per steamer *Ancon* yesterday their new Cornish pump, which will be sent up immediately. The woodwork and everything is ready to set the pump in, and it will be put in operation without delay. It is a six-inch pump, with six-feet stroke, and has 350 feet of pipe.

SONOMA.

LOCAL ITEMS.—Russian River *Flag*, July 8: The Live Oak, near Cloverdale, has been bonded to John Batchley for 6 months. Six men are at work. The New Almaden is running the furnaces on old ore that is being picked over. Work is suspended in the tunnels. The Sulphur Banks mine turns out about 500 flasks a month.

TUOLUMNE.

ALPHA.—Tuolumne *Independent*, July 10: Superintendent Collins, at the Alpha T. M. gravel mine, is just coming into gravel. They have 2 ft of gravel in the top of tunnel and ledge pitching. The shore gravel is the same as that of the Humbug company.

ACTIVE operations are going on in the Evans mine. The new hoisting works and pump work splendidly, and water will be raised out of the shaft in about 6 days, after which they propose sinking 100 ft.

SUMMIT PASS.—There is considerable stir in this neighborhood about quartz. Cummins & Clark have a lead which shows free gold in every piece, with rich sulphurets. They have contracted to put up a steam 5-stamp mill; already a portion of the machinery, including the boiler, is on the ground and will be completed in about a month.

VENTURA.

ASBESTOS.—Ventura *Signal*, July 10: Specimens of extensive asbestos deposits, pronounced to be of superior quality, have been found on the south side of the San Emidio mountains, in this county, by Mr. Gibson. He also discovered galena, silver and gold.

Nevada.

WASHOE DISTRICT.

CONSOLIDATED VIRGINIA.—Gold Hill *News*, July 8: Daily yield, 550 to 600 tons of ore. The ore breasts on the 1500, 1400 and 1300-ft levels continue their regular yield of rich ore, with no material change in either the general appearance or yield. But little prospecting is being done in the mine, so that but few developments need be expected for several months to come.

CALIFORNIA.—Sinking the C. & C. shaft is making rapid progress, the work being pressed steadily ahead with the usual vigor. Crosscuts Nos. 4, 5 and 6 are still pressed energetically ahead, the face of all still in fine ore. The lateral drift running northward in the ore vein to connect cross-cuts Nos. 4 and 5 is also in rich ore. On the 1400-ft level the drift from cross-cut No. 3 is being extended toward the north line with the intention of continuing the cross-cut and blocking up of that portion of the ledge.

AMAZON.—The donkey engine for hoisting is being placed in position ready for future operations. It is confidently expected that everything will be in readiness to steam up by the 10th inst. A drift north has been extended into the ore body in the Glasgow ground, a distance of 15 ft, the ore continuing the entire distance of a fine character. A drift has also been run to the southward into the Amazon ground 18 ft, all the way in good ore At that point a winze has been started downward on the ore body.

CHOLLAR-POTOSI.—Daily yield, 60 tons of ore, the assay value of which is $31 per ton. This ore is extracted entirely from the old upper workings, which afford no new features whatever. The main incline has reached the 1300-ft level, at which point a new station is being opened with the intention of opening up and prospecting a new level.

NIAGARA.—The new hoisting machinery is in full operation, everything working with the utmost satisfaction. A fine substantial building, 30x60 feet in size, with a blacksmith and machine shop 20x30 feet adjoining, is being erected over the shaft.

NEVADA.—The west wall of the vein is reached, and the full width of the vein demonstrated to be 120 feet. It is a fine body of quartz, showing some streaks of very good ore. The west wall is very regular, smooth, and well defined.

SUTRO.—The main west tunnel is still advancing toward the ledge, the face in much softer rock than has been encountered for some time past.

OPHIR.—Daily yield of ore 300 tons. The ore stopes on the 1465-ft level, are looking and yielding well. The east drift on the 1500-ft level has been connected with the ore vein ready to commence the stoping of ore. On the 1600-ft level the stoping of ore has already been commenced, and the breasts are opening up splendidly, promising an excellent yield of fine ore. A drift north has been run from the bottom of the northeast winze a distance of 120 ft, the entire length in good ore, and the last portion showing a decided improvement in the character of the ore and vein.

BELCHER.—Daily yield, 450 to 500 tons of ore, keeping the mills all steadily running. The ore brests on the different ore-producing levels all show well and keep up their usual yield, while the character of the ore is gradually on the increase, the yield for the past month being considerably greater than for some time past. On the 1500-ft level cross drifts are being run and preparations are being made to soon commence the extraction of ore.

CALEDONIA.—Sinking the new shaft is making splendid progress, the workmen putting in a new set of timbers and adding 5 ft to the depth every day. The flow of water is still strong, but is easily handled by pumps.

IMPERIAL-EMPIRE.—The connection was completed between the up raise from the 2000-ft level and the winze from the level above last Friday morning. This air connection has been of vast benefit to the mine, and is rapidly cooling the drifts and preparing the way for a more expeditious cross-cutting and prospecting of the lower levels.

GOULD & CURRY.—The week has been mostly spent in enlarging the north drift on the 1700-ft level, relieving the timbers in a portion of the shaft, and getting a good ready generally for cross-cutting and prospecting operations.

BEST & BELCHER.—The connection of the south drift on the 1700-ft level is gradually cooling the mine and putting it in condition for future energetic cross-cuttings and prospecting operations.

BALTIMORE AND AMERICAN FLAT.—Sinking the main incline below the 900-ft station has been fairly commenced, and is making good progress. Sinking the winze below the 450-ft level is making fair progress, still following the rich seams of ore found on the level above.

LEO.—The winze is down 153 ft below the main tunnel level to-day. The vein is large and well defined, and the hanging wall continues smooth and unbroken; no foot wall in sight. The ledge matter has improved considerably since last report both in character and quality; the ore veins have become stronger and more concentrated, and will undoubtedly soon make into one solid body of ore.

UTAH.—The new pumping machinery is working with the utmost perfection, and the water is drained from the bottom of the shaft ready to resume the sinking.

SOUTH COMSTOCK.—To-day the shaft has attained the depth of 282 ft, with quartz, clay and other ledge matter at the bottom. Streaks of this quartz give very good assays.

ORIGINAL GOLD HILL.—Quite an improvement has been met with during the week in the ore of the south cross-cut from the main south drift, it assaying higher than heretofore, and evidently developing into a body of ore of more than average richness.

CROWN POINT.—There is little or no change in the production of the mine. Daily yield, 500 tons of ore. No change in any of the ore-producing sections worthy of note.

COSMOPOLITAN.—During the week the main drift north has been extended 15 ft, following the vein and extracting ore, assays of which run as high as $60 to the ton, four-fifths of which is gold.

JACOB LITTLE CONSOLIDATED.—During the week the main drift west has been in a considerably improved character of ore, giving high assays, and a valuable ore body is evidently being developed.

EUREKA DISTRICT.

BULLION.—Eureka *Sentinel*, July 11: During the week ending last night, eight furnaces have been in operation at the various smelting works, one less than the usual number, owing to the shutting down of one at the Eureka Consolidated works for the purpose of repairing. It will be at work again this week. During the time the following amounts of bullion have been shipped:

Furnaces.	Product.	Shipment.
Eureka Consolidated	302,910	414,335
Richmond	270,000	.....
Atlas	115,640	120,225
E. K. Con	80,000	70,000
Total Pounds	768,550	604,610

The Richmond refinery shipped, during the time, 92,000 pounds of refined lead, and 11 bars of bullion valued at $25,695.07.

CENTRAL DISTRICT.

GOOD RETURNS.—*Silver State*, July 10: Charles Clark, of Central district, had a lot of ore sampled at the Humboldt reduction works on Saturday. Two lots from the Emerald mine yielded as follows: First class, $406.80; second class, $133.49 per ton, and some from the Silver Monarch which went $952.38. Mr. Clark realizes a handsome sum from this ore, and returns to Central well heeled for a prospector. The Emerald is from twelve to eighteen inches wide, and the Silver Monarch about three feet.

ELY DISTRICT.

OUR MINES.—Pioche *Record*, July 11: An unusual degree of activity is manifested in the matter of new mining claims, a large number of deeds having been made during the week. A large amount of hoisting machinery of the latest and most approved pattern will shortly be placed in operation by the Meadow Valley company. The plans and specifications are now being prepared by George Adams, and as soon as completed will be at once put in practical construction.

NEWARK.—Work is steadily going ahead on the west ground, 700-ft level. The ore seam still continues about the same width; rock still hard and progress consequently slow.

PIOCHE.—Works closed down in order to put in place heavier machinery. Guides in ready to receive cage. This company has now ample power to reach a total depth of 1400 ft. We no-

ticed 1700 ft of improved flat steel wire cable on reel. The engine frame having been originally intended for a larger cylinder, there will be a few days required to adjust the present one.

Silver Peak.—Grading drifts, laying track and repairing stations completed. Mine now being in perfect working order, a larger force will be employed and the ledge more thoroughly and generally prospected. The lowest, 600-ft. level gives every prospect of a speedy acquisition of paying ore in paying quantities.

Chief of the Hill.—The usual amount of work was continued during the past week and ore of as fair grade as heretofore extracted. The accumulated pile of ore has been all shipped to the Newark mill and worked up, but no return as yet indicating the result.

Alps.—This mine is being worked with the usual degree of success, ore being daily raised and shipped to the Newark mill for reduction. The mill has not worked any of this ore during the past week, but will commence on it as soon as a sufficient supply is on hand. All that has been worked has averaged about $200 per ton.

Huhn & Hunt.—A reduced force of men are at work in this mine, engaged almost entirely in extracting ore. A considerable amount is daily raised and hauled to Bullionville. The general appearance of the ledge is good, and the ore of a higher grade than heretofore.

Meadow Valley.—Work is still continued on the east drift from No. 3, on the 1200-ft level; also, on the drift running west from the summit shaft on the same level 130 feet apart to connect both drifts. The usual amount of high grade ore is being hoisted daily from No. 3 shaft. The water problem will be solved shortly, as Captain Tyrrell is making preparations for the erection of machinery sufficient to overcome this difficulty.

Pioche West Ex.—The usual force of men are employed running west. The ledge continues about the same width, etc. Ore of low grade. The air connections not yet made on the eastern ground, when done, stoping of ore will be resumed.

Raymond and Ely.—The usual industrial state of affairs exist in and around the mine and various departments connected with it. Drifting is still continued on the western ground, but little change being observable in this portion of the work. Work is steadily continued on the 8th and 9th levels. The regular quota of ore is daily raised—no diminution as to quantity or quality existing. Sinking in the main shaft is continued, though necessarily slow. The pump is doing all that could be desired, and though not running to the limit of its capacity, keeps the water under subjection.

American Flag.—The main shaft is now 96 feet below the tenth station. They have lately encountered harder rock than they have had to contend with for some time, nevertheless, they are making satisfactory headway. The third level stopes continue to yield ore daily, adding to that already on the dump, which now begins to assume a pile of quite respectable proportions.

WHITE PINE DISTRICT.

Leased.—White Pine *News*, July 10: Henry Stede, of this place, has leased to Hermann Minder, for nine months, the Big Bonanza mine, on the west side of Treasure hill. It is said to be a fine mine, and preparation has been made for taking out a large amount of ore. Now that we are to have two furnaces in operation in a short time, a large amount of smelting ore will be needed, and we are glad to see work commenced on the mines.

Hamilton Smelting Company.—The stockholders of the above mentioned company held a meeting on the 2d inst. and adopted a code of by-laws. On the 6th inst. another meeting was held and the by-laws were amended, by adding two more trustees to the five that had previously been elected. The newly elected trustees are Marco Medin and Caspar Schmidt. A considerable amount of stock was subscribed at this meeting. The first instalment of twenty-five per cent. on the amount of stock subscribed, which was made payable on or before the 10th inst., has all been paid up. The following officers were elected for the first six months: President, Samuel Liddle; Treasurer, J. F. Lookwood; Secretary, Wm. Timson; Superintendent, W. H. Ford. Active operations have been commenced by the officers of the company, and they are now prepared to make contracts for ores, charcoal and wood.

CORNUCOPIA DISTRICT.

The Camp.—*Silver State*, July 10: A practical miner, who recently left this place for Cornucopia, writes as follows concerning that camp: "I find things much better here than I expected; everybody seems to be busy, and there are eight new buildings going up. The Leopard company gives employment to 50 men and will shortly double this number, as teams have been started to bring in another mill. The foreman of the Leopard informs me that at a depth of 150 ft they had drifted 14 ft across the vein, and had not yet got through it. The ore is of as fine a quality as I ever saw. There are but few idle men here, and I feel contented and have made up my mind to stay with this place."

Arizona.

Rich Discovery.—Arizona *Miner*, July 2: Some years ago, while Ed. Peck was acting as guide for the military, he discovered a monster quartz ledge about 2½ miles east of the head waters of War Eagle creek, in the direction of Bradshaw mountain, but finding but little gold in the rock, and being unacquainted with the characteristics of silver-bearing ores, he paid but little attention to it until recently, when he became convinced that the ore resembled that of some of the recent discoveries in silver, and determined to investigate it more thoroughly. He accordingly took with him C. C. Bean, Wm. Cole and T. M. Alexander and revisited it last week and ascertained the vein to be from 50 to 125 feet in width, and by assay from some 50 samples taken from various parts of the lode to contain an actual working value of from $40 to $50 in silver, besides a fair percentage in gold. Satisfied that they had a good thing in the mine, they began to prospect for water, timber, etc., and, becoming thirsty, Peck went to a spring or brook to drink, and after satisfying his thirst sat down to rest and refresh himself, when his eye rested on a large piece of rich silver float near the bed of the stream; this he examined and becoming satisfied of its extraordinary richness, directed his vision up the stream with a view of ascertaining the source from whence it came, and to his astonishment, there in plain view, cropping out in bold relief on the side of the mountain stood the ledge, not so wide as the Wallace, but richer by thousands of dollars to the ton. They had not time to ascertain the exact width of this new find, but we are assured by Mr. Cole that it is no mean rival of either the Tiger or the McCrackin in size, and will discount either in richness. They brought in 100 pounds or more of the ore, which assays away up into the thousands. In fact, it is not necessary to assay it at all. Even the unpracticed eye of the novice in silver mining must be dull indeed not to recognize in this ore the genuine horn silver permeating the whole mass, besides chlorides all over and through it in every direction. Some of the specimens that have been exposed to the atmosphere for ages are oxydized to such a degree that the silver is nearly all in that state, leaving the residue of rock full of cells like honeycomb, thus giving a very good idea of the proportion of metal to that of rock according to bulk.

Idaho.

SOUTH MOUNTAIN DISTRICT.

Cor. Owyhee *Avalanche*, July 9: Having been here but a few hours, and these made up of drizzly weather, I am incompetent to the formation of a correct opinion as to the prospects of business, condition of the camp and other topics requiring extended time for investigation. While matters are not seemingly as lively here as they were a month ago, there is a hopeful feeling that the summer will not pass away without witnessing the inauguration of an additional movement on the part of capitalists from abroad looking to the more extended development of the South Mountain mines. The mines that are now being worked are turning out well, and are steadily improving in developments, furnishing a groundwork for future operations, not at all calculated to disparage. Some of the bullion recently turned out at the furnace here has assayed as high as $670.

As the mines are worked downward the percentage of lead decreases and the gold and silver development improves. Many of the ledges are opening up splendidly in rich rock, and perhaps the only discouraging feature is the appearance in some quarters of considerable quantities of zinc, or, as it is termed by the miners "black jack," which is a disturbing element in connection with smelting operations.

Mr. Hastings, a gentleman quite familiar with mining matters here, informs me that the prospects are quite flattering. He has a force of men at work at the Golden Monarch, where the shaft is in over 200 ft, and nearing a ledge 60 ft in width, which is known to be rich in splendid carbonate ore and galena from one side to the other.

Montana.

Mining Items.—Helena *Independent*, July 1: Our reporter interviewed a gentleman yesterday who had just arrived from the southern portion of Deer Lodge county, and from him gathered the following facts:

There are a dozen men working in and about Highland gulch this season. They are working over old ground, with rather favorable results.

The Moose Creek mines, a couple of miles west of Highland, are paying very well. Some colored men who are working on a bar on Moose creek, or rather a tributary of that stream near its confluence, are said to be making from $12 to $15 per day to the hand.

The old diggings in the marsh, worked for many years by Pony Falconer, are paying better than ever, and all the claims in that vicinity are paying fair wages.

Messrs. Tranor & Co., are putting in a bed-rock flume near the saw mill, and have most excellent prospects, with a good bed of gravel, but the small supply of water afforded by Moose creek, together with the fact that the bed of the stream has but little fall, renders mining slow and somewhat expensive. It is believed that the Moose Creek mines will furnish steady employment to quite a number of men for several years. The mines are not what is termed rich, but pay good wages.

The arastras belonging to J. E Dickey and Lepine, Marceau & Co., have been idle all the season, the owners thinking they could make more money out of their placer mines.

One of the owners of the Canadian lode, which has been worked with profit for a number of years, until within the past few months, says that work will be prosecuted upon it the coming fall and winter.

The Dixie lode is now the sole property of Mr. J. E. Dickey. He became discouraged a few days ago and shut down work upon it, but it is reported that he will shortly resume operations upon a scale more extensive than before.

There has been no work done this spring on the Day & Harvey lode, but it is valuable property, and will be worked as soon as the placer mining season closes.

The last mentioned mine is silver bearing rock, and very rich. The two former carry free gold, but the ore is of low grade, though very abundant and easily reduced.

Oregon.

Cinnabar.—Oregon *Sentinel*, July 10: Mr. M. Caton yesterday showed us a small phial containing about a pound of quicksilver, which he informed us had been taken from 15 pounds of cinnabar from the Hodges claim in the Meadows' district. The ledge is now at the depth of 23 ft, 3 inches wide; if it shall increase in width in the same proportion as it has so far, and continue as rich as the above, we have no doubt but that it will prove a source of profit to its owners.

Utah.

Boulder Springs.—Correspondence Salt Lake *Tribune*, July 8: Having heard glowing accounts from the new mining district at Boulder Springs, situated about 25 miles from this settlement, I concluded to pay a visit to the new discoveries, and by personal observation satisfy myself as to the correctness of the statements made in regard to them. I have just returned from a week's trip, during which period I visited nearly every mine and prospect in the district, and I will, with your permission, lay before your readers the result of my observations. Boulder Springs is one of the principal localities from whence is derived the supply of charcoal used by the smelting furnaces at Stockton, Sandy and other places. The vicinity is thickly timbered with pinyon pine, cedar, maple and mountain mahogany, and on this account, in connection with the abundant supply of grass for their cattle, the coal burners have made it their headquarters. Early in the spring of the present year, Mr. Charles Neilson, while engaged in cutting timber on what is now called Mountain Chief hill, picked up a piece of rock which upon examination proved to be rich with galena. Mr. Neilson located this ledge under the title of Rambling Boy in the names of himself and associates, and work was at once commenced upon it and continued until the party ran out of provisions. The shaft is now about 6 ft deep and shows as pretty a prospect as was ever struck in the Territory. The ore is galena and carbonate, and at present assays from 15 to 20 ounces of silver and 60 to 75 per cent. lead. Since the location of the Rambling Boy, the discoverer, Mr. Neilson, has located another claim, known as the Boulder Springs, where, with about 2 days' work, with pick and shovel only (no powder having been used), a breast of rich galena, about 5 ft in width, has been exposed, which is precisely of the same character as that in the Rambling Boy, and the mine is undoubtedly on the same ledge, which can be traced for about a quarter of a mile.

Mining Patents.

During the past month patents have been issued for the following mining claims in California: Amador county—E. H. McClure and others, Hercules quartz mine. Nevada county—George C. Turner, Homestake quartz mine. Placer county—Michael McBride, Secret Canon quartz mine; Charles Brown, placer mine; S. N. Hosmer and G. C. Lewis, quartz and placer mine.

Colorado—Park county, Assgrea Hall and George W. Bunk, tunnel lodes Nos. 1 and 2; James A. Thatcher, Compromise mine; J. Thatcher, Alps, Hoosier, Juniata and Silver Star lodes; George E. Pease, placer mine; Edward H. Henderson and S. B. Morgan, Pulaski lode; J. W. Hall, Comet and Adriatic lodes; John Q. Hart, Phillips lode; Boulder county, David Evans, Evans' lode; C. L. Seaton, Seaton Extension lode; E. W. Rogers, Junction lode. Montgomery and Madison counties, P. P. James and others, placer mine.

Nevada—Story and Lyon counties, Green gold and silver manufacturing company; Green lode, Esmeralda county, Jacob Groth; East Garibaldi lode, Albert Mack; Sonora lode, Wm. H. Hall; Lady Jane lode, Roop county, L. Goodwin and J. B. Winters; Ida Nos. 1 and 2 claims.

Oregon—Baker county, James Tallman and others, placer; Wm. L. Sutton and others, placer; James Lynn and Thos. C. Looner, placer; Robt. Ketchen, placer. Union county, Wm. H. Thompson, placer. Grant county, J. P. Cleaver and others, Kraft & Co.'s placer.

Utah—Salt Lake county, James W. Cummings and others, Beemis & Hyatt lode; Tooele county, Marcus Daly, Red Pine mine; A. Wall and others, Mahogany No. 2 mine.

During the first six months of 1875 the recorded sales in the San Francisco Stock and Exchange Board, the Pacific Stock Exchange Board and the California Board aggregated $175,000,000. The sales in the San Francisco during this period aggregated $124,985,255. During a corresponding period in 1874 the sales in the San Francisco aggregated $105,583,560.

General News Items.

A desperate attempt was made to rob an Adams express messenger at Long Point, Illinois, on the Vandalia railway, on Thursday night of last week. The engine and car was cut loose and the engineer killed. The messenger barricaded the doors and kept the robbers at bay until help arrived.

Advices from Klamath county report the Hoopa tribe of Indians in revolt. They have already murdered a carpenter employed at the Florence mine and demand that the miners shall leave. Gen. Schofield has ordered a detachment of soldiers to the scene.

The Centennial Exhibition will continue six months, commencing April 19, 1876, and closing October 19. It is thought the average daily attendance will be 50,000. At this rate the aggregate attendance during the six months will be about 8,000,000.

The Atlantic cotton mills, at Lawrence, Mass., which gave employment to 1,250 operators, shut down last week for eight weeks' suspension, and may be a longer time, if the present stock of manufactured goods is not marketed.

An attempt was made the night of the 4th inst., to blow up the store of Willard & Falk, in Plymouth, Amador county, with giant powder, but the villain who made the attempt failed, by not using quite enough powder.

Specials from Paris report that the country between Villefranche and Macon has been laid waste by floods to the extent of forty kilometres. The wheat and vine crops in many places have been utterly destroyed.

Malietoa has been chosen as king of the Navigator islands, and Col. Steinberger who visited the islands as special commissioner of the United States, has been appointed Premier.

The Cunard steamer *Scythia*, which sailed from Liverpool on the 10th inst. for New York, came in contact with a whale off Roche's point, and lost a blade of her propellor.

During the recent storm in the harbor of Valparaiso, Chile, 40 boys belonging to the training ship, between 20 and 30 sailors, and from 12 to 15 boatmen were drowned.

An official telegram in the Paris *Moniteur* corrects exaggerations as to the number of people drowned in Toulouse, and states that so far only 216 bodies have been found.

The Vallejo *Independent* has changed hands. It will be independent in politics no longer, but will henceforth advocate Democratic principles.

Orangemen celebrated the anniversary of the battle of the Boyne, the 12th inst., in various sections of the Union and the Canadas.

By the recent earthquake in Colombia, 5,000 lives were lost in Cucuta alone, and a number of small cities in the vicinity are in ruins.

Mr. Hawley, local editor of the Los Angeles *Star*, who was stabbed by a young hoodlum in that city on the 6th inst., is recovering.

The English radicals protest against allowing the Prince of Wales cash to pay the expense of his proposed trip to India.

A new steamer line to Vancouver island will be inaugurated by the P. M. S. S. Co., on the 1st of August next.

The Western Union Co. intend replacing the telegraph cable which connects Martinez with Benicia by a new one.

It is reported that a whale one hundred feet in length, was killed between Monterey and Santa Cruz recently.

The mutineers of the schooner *Jefferson Borden* have arrived in Boston and will be tried immediately.

The jury have found young Granice guilty of murder in the first degree—penalty, imprisonment for life.

A fire destroyed the hotel at White Sulphur Springs, Napa county, on the morning of the 7th inst.

A grand farewell meeting to Moody and Sankey took place in London last Monday evening.

The forces of Alfonso have lately been gaining some very decided advantages over the Carlists.

President Grant is a grandfather. Mrs. Sartoris gave birth to a fine boy on Sunday last.

The Cotton States Congress assembled in Raleigh, (N. C.,) on Tuesday last.

The American team will shoot no more matches on the other side of the water.

The weavers of Brunn, Anstria, are on a strike.

The Santa Monica land sale began on the 15th inst.

Henry Ward Beecher has had his salary increased to $100,000 per annum.

An insurrection against the Turkish tax-gatherers has occurred in Dalmatia.

Several failures are reported of business houses in New Haven, Conn.

The American rifle team are visiting points of interest in Scotland.

Crop prospects are reported excellent in Arkansas.

Better hotel accommodations are needed at Santa Cruz.

Gen. Frank Blair died on Friday, the 9th inst.

Senator Logan, of Illinois, is in this State.

Idaho Mines.

A correspondent of the *Alta*, writing from Silver City, Idaho, gives the following account of the mines and mills in that vicinity:

The principal mines are located upon two belts of miners, which are nearly parallel and about 2,000 feet apart. One is known as the Oro Fino belt, the other as the Poorman belt. The former has been opened at different places for a horizontal distance of about 4,000 feet, and the latter for a distance of about 3,500 feet. Between these belts, so called, are several parallel veins, on which are located the War Eagle, Illinois, Central, Empire, Panper and other mines of note.

Commencing at the north end of the Oro Fino belt, the first mine met with is the Oro Fino mine. This mine is prominent as being the first location made, and is the discovery claim of the camp. It embraces 700 feet in length along the vein, and is worked to a depth of 350 feet, on an ore vein from two and a half to four feet in thickness.

The next mine south on this belt is the Ida Ellmore, which contains also 700 feet in length. This mine has a main shaft 1,250 feet deep, which is supplied with fine hoisting works, with a fifty horse-power engine. The ore has been stoped out down to the 550-foot level. Below this point, to the bottom of the shaft, the vein has been opened up by drift and put in condition for yielding ore in larger quantities—the vein having widened gradually, until it is five to eight feet wide in the bottom.

The next mine south is the Golden Chariot. This mine is 760 feet in length, and is opened by two shafts, the most northerly one, or "Golden Chariot shaft," being 1,050 feet deep, and the other, or "Minnesota shaft," 900 feet deep. At this part of the ledge the vein is from two to four feet wide. At the 8th, 9th and 10th levels they have a good body of ore exposed, which, with the hoisting facilities of two shafts, will soon yield largely.

The next mine south is the South Chariot, which is 600 feet in length. This mine is opened by a shaft 1,000 feet deep, sunk near the southern boundary of the claim. They have good ore in the 7th, 8th, 9th and 10th levels. The mine is well opened, and is in shape to continue to produce its thirty to fifty tons per day. The vein is from three to four feet in width.

The next mine on this belt is the Mahogany, which covers 900 feet on the vein. It is opened by a shaft about 1,000 feet deep, sunk near the north boundary of the claim. The ore has been stoped out down to the 7th level. The 8th, 9th and 10th levels have been opened up from the shaft for a distance of 500 feet in good ore, and winzes have been sunk from the 9th to the 10th levels, which show good ore the entire distance, and giving to the mine excellent ventilation. The reserves of ore exposed in this mine contain some 15,000 tons that will work from $40 to $70 per ton. The vein is strong and full four feet wide in the bottom.

In all the mines on the Oro Fino belt the vein becomes stronger as depth is attained, while the quality of the ore seems to improve. We have here, as your readers will observe, a single vein of ore, opened up for a distance of three-fourths of a mile, and of a character that ensures its permanence and continued richness in depth. It seems to be a true fissure vein, the bottom of which can never be reached.

Leaving the Oro Fino belt, and passing westerly toward the Poorman belt, the first mine encountered is the War Eagle, which is located upon one of the several parallel veins lying between the two prominent belts, of which we made mention above. The War Eagle comprises 1,000 feet in length on this vein and is opened by a shaft 700 feet deep. The ground is worked out down to the fourth level, and a portion has been removed also from the sixth level. On the seventh level the vein is opened by a drift to the north 430 feet in length and one to the south 200 feet long; the eighth level being opened by drifts to a somewhat less extent. The reserves of ore exposed contain about 6,000 tons that will work about $30 per ton. The vein is from two to four feet in width and shows strength and permanency in the bottom.

Passing on northwesterly we come to the Illinois Central, located upon another vein. This mine embraces 1,000 feet of the vein and is opened by a shaft 400 feet deep. The ground is stoped out down to the 100-foot level. Below this point the ore body is shown by drifts to be 250 feet in length and consists of ore that will mill from $50 to $60 per ton. The vein is from two and a half to four feet in width and is strong and of the best quality in the bottom. Passing thence southwesterly we come to the Empire mine, located upon still another vein, and occupying 600 feet of its length. The vein is here opened by a shaft 600 feet in depth, at a depth of about 400 feet. A drift run west 60 feet cuts a blind ledge from two and a half to three and a half feet wide, the ore of which is good milling ore, and, unlike most ore in this district, is chiefly valuable for its gold. The main vein of the mine is from two to four feet wide and is very rich in placos, but is not uniformly as favorable ground to work as the west or blind vein. Going thence westerly we reach the Poorman vein or "belt" as it is here called. This vein has been opened in many places for a distance of from one-half to three-fourths of a mile. Beginning at the north end, as in the case of the Oro Fino belt, the first mine is the Poorman, a rather full account of the early history of which I gave in my letter of June 1st. This mine is at present the centre of attention here, as they have made some new developments which cause great importance to be attached to the results of the next few weeks' work. When the management once grasped the idea that the dyke which divides the vein did not cut off the ore to the south, as was first supposed, they made preparations to open up the mine on a vast scale. A shaft has been sunk in the east wall a distance of about 700 feet, and while work has been progressing on the shaft a drift has been run on the vein from the outside, a distance of 350 feet to a point opposite the shaft, where it is 380 feet below the surface. The last 300 feet of this drift is in very fine ore the whole width of the drift and of unknown extent above and below its level. The shaft extends some 300 feet still below the level of this drift, but as it is in the wall rock, it has not been explored. The vein cross-cuts are now being run from the shaft to the vein at four different points, one opposite the drift and three below it. These cross-cuts will very soon solve the problem as to the extent and value of the bonanza which the drift has exposed. Hence, the excitement here among those who are familiar with the great richness of this mine in former days, and who think that the time is not far distant when a still greater excitement will occur than that which took place in '65 and '66. There are 1,000 tons of ore on the dump that have been taken out of this drift. A few days' more work will connect the shaft and drift, when ventilation will be secured, and the mine be in a shape to produce 50 to 75 tons per day of ore that will average at least $100 per ton. The ore from this mine is now being hauled to the Leonard mill, which is nearly finished, and which will have a capacity of 15 tons per day. I am informed that they have arrangements made to lease another mill of a capacity of 30 tons per day.

The first mine south of the Poorman is the South Poorman, comprising 1,600 feet in length. They have commenced development by sinking two shafts on the vein; they are about fifty feet deep each. The most northerly of these shafts is near the south boundary of the Poorman, and has already struck the rich ore which is exposed by the drift in the Poorman, showing that the bonanza, that is opened for 300 feet in this drift, extends at least 500 feet southwesterly at a somewhat lower level, making the present known length of the bonanza 800 feet. The ground in the South Poorman is favorably situated for working the mine.

Next south of the last mine named is the Silver Cord mine. This mine comprises 800 feet of the vein, and is opened by a shaft 380 feet deep, from which three levels have been opened up for distances of 90 feet, 335 feet and 585 feet respectively. Above the third level there is about 800 tons of ore exposed that will mill about $50 per ton. Below the third level a winze has been sunk 110 feet in good ore, that will mill $75 per ton, the vein averaging two and a half feet in width.

Mills.

There are five mills in the camp containing sixty-five stamps and ample pan capacity; also three arrastras with amalgamating pans, presenting altogether ample facilities for treating 150 tons per day. These mills are all running night and day on the ore from the different mines, and are shipping a large quantity of bullion.

This camp offers superior advantages to many mining districts for working the mines and treating the ores, notwithstanding its distance from the base of mining machinery supplies, as it has a lasting abundance of that great boon of the miner—good and cheap timber for the mines and inexhaustible quantities of the best of steam fuel.

Have We Diamond Mines?

As a matter of local interest, the Idaho *Avalanche* gives the following extracts from a letter of recent date written by Wm. W. Habersham, formerly of Silver City, Idaho, and published in the New York *South:*

"In 1864-5 I resided in the Territory of Idaho, being engaged in quartz mining. In 1868 I discovered and located a quartz ledge, which was supposed to be an extension to the celebrated 'Poorman gold and silver quartz ledge,' and secured by purchase and otherwise eighteen hundred feet of ground. In sinking a shaft on this ledge, I discovered near the surface of the mountain, imbedded in ferruginous sand, overlapped and underlayed by dark blue clay or mud, nodules of various sizes, ranging from that of a small pea to the size and shape of a pigeon's egg, which when broken open were found to contain a remarkably hard and brilliant substance, more brilliant and harder than crystallized quartz. These nodules were incrusted by clay of the color of crude gutta percha, (light drab) and could only be broken by using an 8½ lb. sledge hammer, driven with great force.

"I have been informed by a Norwegian miner that my description of the strata in which the nodules were found, answers exactly to that in which most of the finest diamonds are found in Brazil—with the one exception that in Brazil they are found in the same strata in the beds of rivers, whereas in Idaho I found them on the side of a hill, the top of which contained marine shells—and which must have been at some remote time the bottom of an inland sea."

Mr. Habersham is now a resident of Brunswick, Georgia, where his brother, Hon. John B. Habersham, resides. He says that he does not wish to create a diamond excitement, but only desires to call attention to the matter, in order, if possible, to ascertain the character of the nodules, which he believes to be diamonds.

The Second Arctic Expedition.

The "second Arctic expedition," which has been announced as "going out in search of the remains of Sir John Franklin," is in reality, says the London *Standard* of June 10th, a private cruise of Mr. Allen Young, who will shortly leave England in the exploring yacht *Pandora*. This vessel, which is fast preparing for sea, will probably sail on the 23d instant. She is 480 tons burden, and 80 horse-power, and was late a despatch gun vessel. She was examined by Sir Leopold McClintock for the Polar expedition, and, being considered too small, was rejected for that service, and was afterward purchased by Mr. Allen Young for an exploring scientific cruise to Davis' strait. The Pandora will probably visit the ports in Western Greenland; thence she will proceed to Melville bay, and pass Smith sound. Thence she will continue her cruise on to Lancaster sound, in order to examine any opening northward or westward, until the season becomes too advanced to remain out longer, as it is not Mr. Young's intention to winter away unless compelled to do so. In anticipation, however, of such a contingency, the ship will be provisioned for eighteen months, and supplied with traveling tents, sledges, and all other necessary equipment, and the officers and crew will also be prepared for a winter's sojourn. The *Pandora* has been thoroughly overhauled by Messrs. Day and Summers, of Northam, and fortified both internally and externally. She has been doubled with four-inch planks, and her bows have been cased with iron. She has also been divided into three water tight compartments, and beams have been inserted below. Her rudder post and stern have, as well, been strengthened with all possible care. On Wednesday last she made a very satisfactory trial trip. The speed she gained was 8½ knots per hour when going under "easy steam." The boilers, engines, propeller—indeed all her machinery—have been thoroughly put into working order. Mr. Allen Young will be in command of the ship, and Lieutenant Lillingston second in command. There will also be on board a staff of scientific officers.

Natural Gas for Fuel.—We find the following item in the *American Manufacturer*, but do not know whether to credit it as original or not, as several items from our own journal appear in the same issue without credit: It is well known by our readers that Messrs. Rogers & Burchfield have been using natural gas exclusively at their works at Leechburg in iron making and under their boilers, but is not so generally known what they are doing in that direction at their works at Apollo. Some time ago they bored for gas just below these latter works, and succeeded in getting a sufficient quantity, at a depth of 1,200 to 1,300 feet, but the contractor drilled a little deeper and struck salt water, which shut off the gas. They then commenced to drill another well, just above their works, which is now down about 700 feet, and will be sunk 1,300 feet if necessary. Meanwhile, they have adopted a plan of pumping the salt water out of the other well in such a way as to utilize both the gas and the water. We will try to describe the apparatus: Two pipes of different size have been put in the well, one inside the other. The small pipe is closed at the lower end, but has a number of half-inch holes in its circumference, near the bottom; a gas cap fits on the top of both pipes, the large pipe having vent through two holes in the circumference of the cap and the small one through a hole in the top; through which hole a sucker rod also works. When the sucker rod is operated the water flows out through this hole, that surrounding the pipe flowing into it through the half-inch holes near its lower end, filling the vacuum created by the pumps. Pumping has been commenced, and the theory is that when the water surrounding this pipe becomes exhausted, the gas will take its place and rush out of the holes in the side of the cap, at the top. Salt will be manufactured from the water that will be continually pumped through this pipe. Thus we will have the spectacle of a gas well and salt well in one.

Belting and Gearing.—As regards the transmission of power, the Americans, says a French writer, aim at achieving two things which are correlative—the lightest possible weight and the highest possible speed. Hence the universal substitution of belting for gearing, and the general adoption of light shafting and small pulleys, which are conspicuous features of their system of transmitting power. The first mover is usually a gear, but after that all transmission is obtained by belting. The belting is a little study in itself, but it will suffice to say here that belts of the latest improved pattern run for wonderful lengths of time without piecing. The ease and durability of the system would astonish the advocates of gearing. The light shafting and small pulleys in general use are said to save twenty-five per cent. of the power. The shafting is run twice as fast, and hence the pulleys can be smaller, yet the fly-wheel of a powerful engine may be large. The pulleys are cast, but it is expected that wrought pulleys much lighter will soon come into general use. Hollow shafting is finding much favor. The reduced price at which steel is now being produced will no doubt soon lead to the introduction of that metal for pulleys. The less amount of metal required for their construction would result in an important saving of power in a large establishment.

The Sumner Mine.

The big mill connected with this mine has now been running several weeks and no difficulty is experienced in supplying it with ore of a comparative high grade. Although there have been few misgivings, the successful inauguration of this great reviving enterprise is felt both as a relief and satisfaction. Every day now adds to the certainty of great mining industries springing up at Kernville and vicinity to stimulate, in no slight degree, the settlement and agricultural development of the great Tulare valley.

The Sumner mine is on the west side of the north fork of Kern river, a few miles below the point where it breaks forth from an almost inaccessible canon of the Sierra Nevada. Kernville lies between it and the river. The position of the land claimed by the Sumner mining company—in length about two miles—is in the immediate vicinity, running parallel with the river, and the croppings are three or four hundred feet above it.

So little, comparatively, has yet been done in the exploration of this mine, that it is impossible to say with certainty what is the width of the fissure, but it will probably average about one hundred feet. This is not entirely filled with gold bearing vein matter. On the east or foot wall there is a seam or selvage of clay such as is seen probably in no other mine on the Pacific coast except the Comstock. In places it is fourteen feet in thickness and sends off branches that find their way through the quartz above it. There is clay on the west wall also, but in no unusual quantity. The west wall is granite and the eastern slate, a formation that is believed to be eminently favorable.

The mine is being opened in four places. Near the north end of the company's claim are two shafts and adit levels with complete pumping and hoisting works, from which the mill is supplied. About half a mile or a little more to the south, at a favorable point for the purpose, a large tunnel is being run that will strike the lead at right angles in a distance of about six hundred feet. South of this nearly a mile a large and well timbered shaft has been put down to the depth of one hundred feet. It is on the eastern or foot wall, following which to the north a drift has been extended six hundred feet to an air shaft. In several places along this drift transverse cuts have been made to the west wall, and a body of quartz averaging forty feet in width disclosed of about the same value for milling purposes as the one that has hitherto been worked from the northern part of the mine.

The greatest depth that has yet been reached is at the main shaft where the principal hoisting and pumping works are, and whence the mill is chiefly supplied. But this is insignificant—not more than one hundred and seventy-five feet. This shaft descends under the incline of the west wall, and is quite as substantial and thorough a work, together with all its appliances, as any of a similar kind on the Comstock. From the bottom drifts are being extended north and south, and above ore is taken out in the usual manner. The best ore is found in the vicinity of the west wall, and this part of the lead, of a width varying from three to thirty feet, may be styled rich. It is on ore from this part of the vein that the mill is being run. The body of ore left standing on the east side is low grade, but not so low but that it may be profitably worked. It is held in reserve for some future occasion. There is an immense quantity of it. It may be taken out and milled at a trifling expense and is a kind of reserve fund of immense value.

It is difficult to understand the peculiarities of so large a vein as this. The galleries and other works with which it has been penetrated and intersected already form quite a labyrinthian and perplexing system to the stranger. The design apparently is to find and follow all the rich ore channels, leaving for the present the low grade ores as a support to the mine.

But the visitor is surprised at the quantity of good ore the mine, even in its present state of development, is capable of producing. It is worked on the most approved and perfect system. Every labor-saving appliance that ingenuity can devise is made use of. In especial the timber is substantial and thorough.

At the insignificant depth that has been reached on this mine, nothing can be positively said about it more than that the indications are of the most favorable kind. The shaft must go down at least four hundred feet further before its true character and value can be determined. That it will be extensive and productive may be considered certain, and that it may develop into the best gold mine in the world is not improbable.—*Visalia Delta.*

The Holleran Coal Mine.—We have mentioned several times the prospecting operations of E. Holleran, who for some time has been engaged in digging for coal on his ranch, eight miles northeast of this city. Mr. Holleran discovered a coal bed in a gulch which was laid bare by the floods of last winter, and in the spring commenced sinking a shaft a short distance therefrom, which is now down fifty-two feet. A ledge eleven feet in thickness, with fire clay walls above and below, and closely resembling the formation in the Monte Diablo mines has been penetrated. Several experts and experienced miners who have visited the shaft have expressed the belief that a valuable mine will be developed. A company has been formed for the purpose of carrying on further prospecting operations, and it is the intention to commence work next week and prosecute it vigorously.—*Petaluma Argus.*

Good Health.

Typhoid Fever—Its Cause and How to Avoid It.

It being conceded by every sensible person that good health is paramount to all other human blessings, we take frequent occasion to tranefer to our colnmns practical information tending to promote and preserve the blessing so essential to all. From the *Herald of Health*, for April, we condense the following:

The range of what are called preventable diseases ie now known to be very wide, and all such diaeaeea it ahonld be the first dnty of man to prevent. Much of thie is not only preventable disease, but ia diseaee that is called into existence only by the act or by the neglect of men; and it ie not too mooh too esy thet there hea never been a case of typhoid fever that waa not almost directly caneed by the ignorance or by the criminal neglect of some person whoee doty it should have been to prevont it. Snch disease never comea without cauee; and its cause ie never anything else than organic poiaoning, arieing from organic decaying matter or from the spread of the infection directly from a patient soffering from the disease.

Typhoid fever hae many names, all of which are enggeetive of ite origin. It is celled "drain fever," "sewer fever," "cesspoul fever," "foul well fever," "nightsoil fever," etc.; and it is never caused except hy the introdnction into the system of the germ of the diseese—which can originate only through the operation of neglected wastee, or by commnnication throngh the lunge ur stomach by meane of foul air or water, or from germs arieing from the excreta of typhoid patients. So far as ite contagion ie ooncerned, ample ventilation of the eick room and the immediate removal or disinfection of the fecea are ample preventivee. It is not contagiuos, as emallpox is, but is spread by the action of germe which infect the locality of the patient, and extend more or less widely according to the precantione used to confine it. There is not neceesarily the least danger that the disease will ottack even the constant attendant of the patient, if proper care ie taken. With the hooeeholder himeelf reets the entire responsibility of the origin of every case breaking ont in the houeehold. Thie ie a responsibility for which the community should hold him strictly accountable.

It may be assumed, without hesitation, that, whenever a pronounced case of typhoid breake ont in an ieolated country houee, or when any form of low fever occnrs, though it may fail to assnme a distinct typhoid character, there ie in that house, or about it, or in connection with its eupply of drinking water, eome accumnlation of neglected filth, some pile of rotten vegetables in the cellar, eome overflow from a barnyard, some spot of earth satnrated with the alops of the kitchen or some other form of impurity, to which the origin of the diseaee may be distinctly traced.

The *spread* of typhoid is very generally occaaioned by germs contained in the bowel discharge of fever patients; but the disease is conatantly originating iteelf where no snch cause exists, and every first attack is a plain indication that either at home or in eome house at which the patient has visited, one or two things has occnrred: (1) There has been an exhalation of poieonous organic gasee from a kitohen yard or from a neglected cellar, or from some other eonrce of bad air, which hse entered the lungs and planted there the germa of the diseaee; or (2) either in the food or in the drink of the patient, these germs, originating in the eame organic pntresoence, have found their way to the stomach.

In either case the *blood* ia attacked; the subject may have been efficiently robust and vigorone, or efficiently unsusceptible to infection, to have avoided a eerious or fatal illness; but in every inetance the danger haa heen incurred, and, when incurred, the danger muet be the same as in taking any other form of slow poison. This is not theory, but eimply a well established fact, demonetrated by long, careful and frequently repeated investigatiou.

This being the case, it lies directly within the province of every farmer to remove, while it is yet time, any source of infection to whioh hie house may be liable. Vegetables in any considerable amount should not he kept in the houee cellar, and at least once a week the floor of the cellar ehould he ewept and every shred of waste vegetables removed. Even when thie ie done, the cellar ehould be ventilated by a window or other small opening toward the quarter least expoeed to cold winde (and in aummer on every eide); the privy, if a privy ie need, ehonld he well away from the house, and especially far from the well, unless its contente are received in a tight box and entirely absorbed by dry earth or ashes, and even then freqnently removed; the chamber elope of the house aho ld never, under any circumstance, be thrown int the privy vault, nor into a porous cesepool, from which they can leach into the ground and through the ground for a long distance into the well, or into and around the fonndation of the house. The same diepoeal of the lignid wastes of the kitchen is desirable, but not eo absolutely important. It ie, however, important that thie ehould be led by an impermeable drain to a point well away from the houee and from the well; ewill and all manner of nondescript refuse material, snoh as ie sloughed off hy every houeehold in the ordinary course of ite living, should be removed at least daily from the near vicinity of the dwelling, and the vessels in which it accumulates shoold be frequently cleanaed and aired; manure heape should not be left to ferment and send off their exhalations at a point whence frequent winds waft them toward and into the dwelling, nor should the barnyard he allowed to drain (either over the surface or through a porous soil) toward the house or well.

If all these points are well attended to, and if the ordinary rulee of cleanlinees be observed in the houeehold, the membere of the family may be considered aa safe against attacks of typhoid fever.

Anæsthetizing During Sleep.—Prof. Dolbean describea at much length in the *Annals de Hygiene* hie varions experimente to ascertain whether a peraon can he anæsthetized during aleep. He mentions the case of three patients, who, while sleeping, were readily aroused by applying emall quantities of chloroform at no great distance from the nostrile. In another series of experiments, made on eeven patiente, ten drops of chloroform were poured on a napkin folded in four, which was gradually brought into the vicinity of the air passeges, so that all air inspired had traversed it. In all these cases the patients were aoddenly aroused from their sleep, some immediately and only one after the eleventh inspiration. A third group of cases coneisted of twenty-nine patiente. It was fonnd thet in ten out of thie number, that is in more than a third, complete anæsthesia could be induced without awakening them. Dexterity in the mode of procedure seemed to have eomething to do with the proportion thue obtained, for this increaeed progressively with the number of cases experimented upon.

Poisoned by a Hat.—A etrange caee of poisoning is reported from Stettin. A gentleman had bonght a hat in a shop there, and after having worn it one or two daye, was tronhled with unbearable headache. At the same time little ulcere formed upon hie forehead, hie eyee were inflamed, and the whole upper part of hie hesd was much ewollen. It wae evident that these symptoms were caused by the hat, and upon examination by a chemist, it wae found that the brown leather in the inside of the hat was colored with a poisonoue aniline dye. It appears that inflammation is nnavoidable when thie dye ie in contact with any part uf the ekin. Since the noxions qualities of so many of theee dyes are eo generally known it ie very careless, to eay the least, in manufacturers to make or use them before aecertaining that they may be applied without riek to health.

Crazed by a Blow.—A few days since a young mau named Michael Cavarley, about eighteen yeare of age, was struck on the neck by a friend while ekylarking in a saloon on Broadway. The blow occasioned considerable pain at the time, but no serioue reenlts were apprehended. The yonng man resumed work the next day, but toward evening wae compelled tu quit, hie miud becoming suddenly affected in a strange manner. He hae since become a raving maniac, and it is feared that he will have to be committed to the Insane Asylnm. What makes the matter more sad ie that an aged mother is dependent on the young man for her support.

Useful Information.

Steel Pens—How Made.—Steel pene, which are chiefly mannfactured at Birmingham, England, made from the best steel, which is firet rolled into narrow strips of the required width and thickness. These are then cleaned by the actiou of some dilute acid, and cnt by means of a pnnch worked by a screw press into flat blank pieces of the reqnired size. The name of the maker ia then stamped on eaoh pen, after which the blank is ourved into a nib, or a cylinder if a barrel pen ie required. Up to thie stage the ateel is worked in a eoft etate; the pene are now hardened hy being heated and cooled suddenly by immereion in oil, after which they are tempered to the required degree of elasticity, polished by heing placed with fine sand or some other polieh material in a revolving cask, and the nib ground to a fine point on a grindstone, or emery wheel. After thie the slit ie out by a chisel worked by a ecrew press, and the pens made ready for eale hy being colored and varnished. The manufacture ie chiefly carried on hy women, men being employed only to repair the toole. It is eetimated that 100,000,000 pens are manufactured annually at Birmingham. The principal demand for steel peua in the United Statee, and many countriee of Europe, ie enpplied from this source.

England Looking to America for Her Iron.—The profitable exportation of iron to England from one of the South-rn States has already been announced. Aud now American iron ore advices from New York make the intereeting announcement that an Englieh company has recently secured lands in the Kanawha valley, in West Virginia, with a view to the utilization of the loosl iron oree.

Wire Fencing.—A wire feuciug consietiug of two wiree twisted together, and armed at intervals with eharp barbs or points, is attracting some attention. The barns keep away cattle, and the twisting of the wires aots as a spring that compensatee for the contraction and expansion that sometimes proves so disastrous to the life of suoh fences.

Rosewoun.—It has puzzled many people to decide why the dark wood so highly valued for furniture ehould be called rosewood. Its color certainly doee not look like a rose, eo we must look for some other reason. Upon asking, we are told that when the tree is firet cut the freeh wood possessee a very strong, rose-like fragrance; hence the name. There are half a dozen or more kinds of rosewood treee. The varietiee are found in South America and the East Indiee and neighboring ielande. Sometimee the trees grow so large that planks four feet broad and ten in length can be cut from one of them. These broad planks are principally used to make tops of pienofortes. When growing in the forest, the rosewood tree is remarkable for its heauty, but anch is ita value in manufacturee ae an ornamental wood, that some of the foreets where it once grew abundantly now have scarcely a single specimen. In Madras, the government haa prudently had great plantations of this tree eet out, in order to keep up the sopply.—*British Trade Journal.*

A Mineral Paste.—A French chemist preparee a mineral compound of paste, which is said to be superior to hydraulic lime for uniting etune and receiving the aotion of water. It becomee ae hard as stone, ie unchangeable by the air, and is proof against the action of acide. It ie made by mixing together nineteen pounde of eulphur and forty-two poonde of pulverized etoneware and glaee; this mixture is exposed to a gentle heat, which melte the eulphur, and then the maee is etirred until it beoomes thoroughly homogeneous, when it ie run into molds and allowed to oool. It melte at abont 120° Cent., and may he re-employed without loes of any of ite qualities whenever it is desirable to change the form of an apparatue, hy melting at a gentle heat and operating ae with asphalt.

A Use For Bedbugs.—A oorrespondent uf the *Scientific American* eays: "If nice fat bedbugs are placed in a saturated solution of nitrate of potaeh in water, and exposed to the air for several days in an open veeeel, there will be no apparent ohange in the bngs; but there will be in the odor, for now it is ae delicate and delicious as before it wae rank and disgueting. No doubt the odoroue principle conld be easily eeparated, perhaps by digesting with alcohol or ether; and if neatly hottled and labeled, it would yield a large profit to practical perfumers. The odor is unlike that of any other perfume I have ever smelt, and no one would euspect ite low origin. Thie is one use for the *cimex*; there may he others."

Copper Alloy that will Adhere to Glass.—The following alloy of copper will attach itself firmly to surfaces of metal, glaee or porcelain: Tweuty to thirty parte uf finely blended copper (made hy reduction of oxide of copper with hydrogen or precipitation from solution of its sulphate with zinc) are made into a paste with oil of vitriol. To this seventy parts of mercury are added and well triturated. The acid is then waehed ont with boiling water and the compound allowed to cool. In ten or twelve houre, it becomee anfficiently hard to receive a brilliant polieh and to ecratch the surface of tin or gold. When heated it is plastic, but does not contract on cooling.

Curious Fact.—Friction impedes the progrese of the railway train, and yet it is only through friction that it makes any progress. Thia apparent paradox ie explained when we remember that hy reason of the frictional bite of the drivers upon the track, they draw the train. The bearinge of the wheel upon the raile are a mere line where they oome in contact, iron and iron, yet thie elight and almoet imperceptible hold is sufficient to move hundrede of tons of dead weight with the speed of the wind.

A Living Raft.—The leaves of the gigantic water lily known ae the *Victoria Regia*, in the Botanic Garden at Ghent, having attained a remarkably large eize, Mr. Van Hulle, the chief gardener, recently undertook to determine their buoyant power. One leaf easily supported a child, and did not sink under a man. Mr. Van Hulle then heaped bricke over its entire area and found that, before the leaf became aubmerged a weight of 761 lhs wae floated.

Chiming Clock.—A large olock, striking the hnurs, aud playing the Cambridge ohimes, hae jnst heen placed in the parish church at Syston, Leicestershire. The movement is a good epecimen of mechanical skill, having all the latest improvements, inclnding Denison'e double three-legged gravity escapement. Mr. Smith of Derby, hae carried out the work.

A Profitless Speculation.—It is said that the great and costly St. Lonis bridge, dedicated with such a flourish of trumpete a year ago, ae a speculation, is proving a failure. It don't earn enough to begin to pay the interest on the bonde, the first and second issues of which the amount of $9,000,000,000 were negotiated in London, aud there ie talk of a foreclosure.

Shoeing Vicious Horses.—In Guernsey it appeare that etherized vapor is used to tame vicious horees during the operation of shoeing, and with favorable results.

To cut glaes to any ehape without a diamond, hold it qnite level under water, and, with a pair of strong sciseors, clip it away by small hits from the edges.

A putty of etarch and chloride of zino hardens quickly, and laats, ae a stopper of holes in metals, for months.

Domestic Economy.

The Value of Eggs for Daily Food.

Wonld it not be wise to aubetitute more eggs for meat in our daily diet? About one-third of the weight of an egg is solid nutriment. This is more then can he said of meat. There are no bones or tough piecee that have to be laid aside. A good egg is made np of ten parts shell, sixty parts white and thirty parts yolk. The white of en egg conteine eighty-six per cent. water, the yolk fifty-two per cent. The average of an egg is about two ouncee. Practicelly an egg is animal food, aud yet there is none of the disagreeable work of the hntcher neceeeary to obtain it. The vegeturians uf England nee eggs freely, and many of theee men are eighty and ninety years old, and have been remarkably free from illnese. Eggs are best when cooked four minntes. This takes away the animal taste that is offeneive to some, hnt does not eo harden the white or yelk ae to make them hard to digeet. An egg if cooked very hard is difficult of digestion, exoept by those with stout stomache; snoh eggs ehould be eaten with bread and maetioated very finely. An egg epread ou toest is fit for a king, if kinge deeerve any better food than anyhody else, whioh is douhtful. Fried eggs are leee wholesome than boiled onee. An egg dropped into hot water is not only a clean and wholeeome but a delicious moreel. Moet people epoil the taste of their eggs by adding pepper and salt. A little aweet butter ie the best dreesing. Eggs contain much phoephorone, which is supposed to he usefnl to those who use their hrains much.—*Poultry Review.*

Arranging Furniture.—In arranging furniture about a room, hear in mind that it is not neceeeary to push every article primly out to the sidee, so that sofas and chaire look ae if they were glued to the wall. Pull them out; put a eofa across one corner; stand the big easy chair in the light, with a little table close by, handy for sewing or books; leave a chair or two in front of the sofa; and in general so dispose the articles that the room shall not appear ae if its ownere never entered it save on oeremonial occasions. Whether a room is pleasing and cozy or not doee not depend npon the elegance or costlinees of ita fittings. The simpleet furniture, if tastefully orranged as regarde color and poeition, often looks hetter than the handsomest prodocts of the oabinet maker's skill.

Carving.—Fifty years ago the art of oarving wsa regarded by the most polished society in England and in this country as the indispensable accomplishment of every lady who had to preside at the head of her table. It waa a reflection upon her fitneee for that poet to eay that she managed the oarving knife with little skill, or was ignorant of the ohoice parts of each dish. Fsshion has ohanged all that, and the office of carving is now assigned chiefly to gentlemeu; but there is no reasou why ladies shonld not know all the niceties of the art, and be able, when oiroumetances require to preside with eaee and skill at the head of the table. A good carving knife, fork and steel reuders thie office a pleasure to the accomplished carver.

How to Take Care of Furs.—Ladies, it has been remarked, as a general rule, imagine the care of putting away fura is all that is required; they think they can wear them when and where they pleaee, provided they expend a few pence for camphor when they lay them aside. This idea ehoold be correoted. More harm is done to furs by wearing them a week after the weather has become warm, than during a whole oold eeason. When they are put aeide they ehould he brushed the right way with a eoft brueh, an old linen handkerchief folded emoothly over them, and a piece of gum camphor kept in the hox all the time, to scare Intruders in the shape of moths.

Celery Salad.—Chop one medium sized head of cabbage and three bunches of celery very fine. Take one teacup of vinegar, a lnmp of butter the eize of an egg, one teaspoonful of mustard, one of cayenne pepper and two of sugar, and the yolke of two eggs. Mix well and beat, stirring constantly until it thickens. When oold, add two tablespoonfnls of nich eweet cream and pour over your ealad.

Tapioca Tarts.—Soak four tablespoonfnls of tapioca over night in water sufficient to cover. Add one pint of oold water and simmer gently until clear and thick, stirring in two tablespoonfnls of white sugar mixed with one tablespoonful uf lemon juice. If not eweet enough add more sugar. Lemon extract can be used instead of juice. Fill paste orusts, sprinkle crimson sugar over and bake.

Orange Pie.—Grate the peel of one fresh orange; take the pulp and juice of two large oranges; add to them one cup of sugar and the beaten yolk of three eggs; mix one cnp of milk with the whitee of the eggs beaten to a stiff froth. Bake in pnff paste.

To Cleanse a Crape Shawl.—Wash it in warm ends made of white soap dissolved, rub the spots gently eo ae not to injure the texture, riuse in blue water and twice in lukewarm water, aud pin to dry.

German Batter Cake.—A Tomales oorrespondent enquiree for a good receipt for German batter cake. Who can furnish it?

MINING AND SCIENTIFIC PRESS.

W. B. EWER.....SENIOR EDITOR.

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San Francisco:

Saturday Morning, July 17. 1875

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MR. W. C. QUINBY, business manager of the American Commercial Agency, left on the steamer *Montana*, on Thursday, for the International Exposition of Chile. Mr. Quinby represents some 150 leading firms at the Exposition, and has taken with him a large assortment of merchandise and machinery from California merchants and manufactrers. He will represent these firms at the Exposition and remain in Chile sometime afterwards, establishing agencies for the sale of California and Eastern goods. He hopes to build up a trade between the two countries, which will be of benefit to both. He is special agent and correspondent of the San Francisco *Journal of Commerce*, which paper will issue a Spanish edition, filled with California advertisements, during the continuance of the Exposition. Mr. Quinby, as an active and energetic man, seems especially well qualified to carry out the business he has undertaken. We anticipate that his visit to Chile will be of benefit to California trades and manufactures. The Exposition opens September 16th, 1875.

INDUSTRIAL FAIR AWARDS.—The Board of Managers of the tenth Industrial Fair of the Mechanics' Institute of S. F., held their first meeting at the pavilion last evening. They let the carpenter work contract to J. R. Wilcox for $3,500, and the gas-fitting contract to S. N. Gruhb, for $220. The Committee on Power and Machinery was instructed to have 120 feet additional main shafting put in place. The following privileges were awarded: Candy stand No. 1, Vogley & Bro., for $625; stand No. 2, to Geo. Haas & Co., $200; cider stande, Noe. 1 and 2, to Preble & Co., $299; newspaper and job printing, card frames and all other special advertising privileges to Dewey & Co., $1,900; restaurant privilege, to A. M. Hedburn, $1,050.

A SCHOONER built for Haywood and Harmon, of this city, was launched at Port Ludlow, W. T., last week. She is named the *Ida Schanner*, and is 225 tons measurement.

Blasting by Electricity.

One of the most useful purposes to which electricity is applied is that for blasting in mines and quarries and for submarine operations of a similar character. This novel use of the electric spark was first introduced in mines by Martyn Roberts. The first to apply it to submarine operations was Major General Pasly, who employed it in blowing up some sunken vessels on the Thames.

The advantages of blasting by this agent are numerous and important; one of the chief of which is the increased effects derivable from a given amount of powder from the fact that no pressure is removed by the vent formed through the tamping by the burning of the safety fuse. Careful estimates have shown that at the instant of discharge there is a pressure of two hundred atmospheres. In a hundredth part of a second thereafter, and before the impact can be communicated to the rocks to be ruptured, there is a decrease in the pressure of fully twenty-four per cent. by the escape of gas through the hole left by the fuse. The excess of powder thus required also calls for the drilling of holes proportionately larger, at increased expense.

Another advantage of electric blasting is dependent on the fact that the heat is not applied until the instant it is wanted, and then the explosion is instantaneous; whereas in the employment of the fuse, it frequently takes place before or after it is expected, and very often when the miner is approaching to learn the cause of delay. Every miner will remember instances of this kind. A series of blasts can be instantaneously fired by electricity, producing a much greater effect than a series of blasts with fuse, the explosions of which cannot possibly be made to act simultaneously.

As to the economy, safety and efficiency of blasting by electricity, there can be no possible doubt, when any considerable amount is to be done. Its employment in all large mines has become almost universal. The process and manipulation for this mode of blasting is easily acquired by any person of ordinary intelligence. The method of charging the hole and connecting it with the battery, is the most delicate and intricate part of the work, yet when once understood it is extremely simple, and requires nothing but care and attention.

There is absolute immunity from danger except in the case of gross carelessness, for so long as the two battery ends of the wire are disconnected from the battery it is impossible for the electric spark to start on its mission. The usual danger from tamping is of course always present, but it is in no way increased by inserting the electrical wire in the charge, which is made of copper except the half inch or so for making the connection, for which a fine platinum wire is usually employed.

Tempering Mining Picks.

There is probably no service to which steel can be put, which so effectually tests its value, as in mining picks. The tempering of a pick is a very nice piece of work and should be done with great care. In the first place a good charcoal fire is necessary; next, good steel, and then a good light hammer with a smooth-faced anvil; and lastly, a man is needed with a good keen eye, considerable experience and excellent judgment. No good pick can be turned out if any of the above essentials are wanting in the process.

A pick should never be "upset," or hammered endwise, nor raised above a full red heat. The steel should be, moreover, heated as quickly as possible, as long exposure to heat—even if that heat is not in excess—injures its texture. Many blacksmiths find great difficulty in tempering picks, because they do not choose good steel. After being heated the pick must be worked with care, special pains being taken in drawing it out, to hammer on a l sides alike, in one place as much as another, and on one side as much as another.

When ready for hardening, it should be heated in the blaze of a charcoal fire until red hot, and then plunged into cold rain water, and kept there until it is nearly cold; but if kept too long in the water or until it is quite cold, the corners are liable to fall off. Some blacksmiths use salt water; no salts of any kind should exist in the water, but the water should be cold; if the water is warm, and a little ice should be thrown in to chill it, the tempering will be all the better. Pure soft water for hardening will make a tougher pick, and one less liable to crack at the edges than where salt water is used.

An old mining partner of the writer's, who always sharpened the picks at the claim, and was quite expert at it, used to hold the pick end in the water for just exactly a certain length of time until a certain shade of color appeared. Then he did not consider it properly tempered until the point was inserted in the ground and allowed to gradually cool. The last hammering of a pick should always be given on the flat sides, across edges to the edge and then upon each side about an inch. By so doing the corners will be less liable to crack off. The same process will work well with all edge tools. Good, well proportioned and well tempered picks in mining operations, are very important, and sharpening should never be intrusted to unskillful hands. Should the careful experience of any of our readers disprove anything of the above, or suggest anything new, we should be happy to report the same.

Prospect-holes and Shafts.

Although capital is one of the principal necessities in new mining districts and in opening up new mines, it is by no means the only necessity required. People must have a pretty clear understanding that the mines to be worked are apparently worth the expected outlay, and considerable more, or they will have nothing to do with them. A good many prospectors have not rid themselves of the idea that as long as they have a few croppings of pretty good ore and a fifteen-foot "shaft" on their claim, they ought to be paid well for the property.

The mining men, or mining capitalists, are not as green by any means as the investors of fifteen years ago. They know as well, and perhaps better, what is worth developing, than the persons owning the claims. Their experts of course look out for the interests of their employers and very naturally discourage investments in entirely undeveloped property. No expert can pass judgment, favorable or otherwise, on a ledge upon which there has been no work done except to sink a shaft fifteen or twenty feet deep. He will not risk his reputation in making any assertions on the matter one way or another. Nor is he to be blamed, either, since no man, ignorant or educated, can promise to foretell anything about a mine unless he has something upon which to base calculations. If there are several shafts, drifts or tunnels, and he can examine the vein in several places, he may be able to compute the probable amount of ore, or its approximate value, but with nothing but a small hole in the ground he can form no reliable opinion.

It behooves miners, therefore, before they ask the assistance of capitalists, to develop their claims sufficiently for the capitalist or his expert to form some idea of what is for sale. No one wants to buy a pig in a bag; they want to see the pig's head at least, so as to make some kind of a guess at his weight and size. In many cases miners have waxed wroth at the apparent stupidity or neglect of capitalists, when in reality it was their own fault. If a man comes and says he has a "mine" with a shaft fifteen feet deep with ore of such and such a class, etc., the capitalist does not want to listen to him, for he knows if he went to the mine he could form no opinion of its value. But if a man says his shaft is seventy-five or one hundred feet deep, his tunnel one hundred or two hundred feet long, his drifts and winzes of respectable size and his claim in order, the intending purchaser will listen to him and examine his property.

During the quicksilver excitement within the past year many cases of this kind have occurred, and many a prospector was disappointed at the rebuffs he met in trying to dispose of his claim. While the capitalists have perhaps much to answer for, they ought not to be blamed for turning up their noses at mere prospect holes, especially when cinnabar was supposed to be at the bottom of them.

The remedy for this lies in the miner's own hands. They must either take prospect holes prices for prospect holes, or develop them into mines to get mine values. It will be said they are unable to do this but they must not then blame the men of money for not paying as much for a piece of ground with a hole in it from which dirt can be shoveled to the surface with a long handled shovel, as they would for a mine with a deep shaft and some chance to determine its value. Don't wait for capital. If your mine is good, work at it, put it in order, and the capital will come in time.

Progress at the Sutro Tunnel.

The following is the report of progress in the Sutro tunnel, for week ending July 8, 1875:

Number of feet in tunnel, July 1	9 938
Number of feet driven during week	41
Distance in, July 8	9,979

Details of work performed are as follows, heading being 8x10 feet:

Holes drilled	173
Holes blasted	193
Average depth	6.24 feet
Powder consumed	359 lbs
Exploders consumed	201

ROCK.—Andesite, the hardest rock yet encountered, but blasting tolerably well.

WATER.—Sixty-nine miner's inches flowing. None in face.

REMARKS.—Lost twenty four hours in celebration of July 4th and twenty-four hours on account of defective electric wire, besides several more spent in attempting to repair and make wire efficient, nearly two and one-half days in all, clear loss of time. Everything now working smoothly again.

[Signed] A. SUTRO, Gen. Supt.

AT the Chollar-Potosi mine the preparations for the erection of the immense hoisting works and machinery, to be used in sinking this shaft, is making very favorable headway, and the whole will be put in readiness for future operations at the very earliest moment possible.

Notices of Recent Patents.

Among the patents recently obtained through Dewey & Co.'s SCIENTIFIC PRESS American and Foreign Patent Agency, the following are worthy of mention:

HAY PRESS.—John Dugan, San Francisco. This invention is an improvement in horizontal baling presses, and in the means of operating them, so that great power can be had in pressing a single bale and after the bale is finished to return the followers to their original position without delay. The body of the press is set on low wheels so as to be easily moved and give room enough for a man to enter beneath the press to tie the bale after it is pressed. Within the body two followers are fitted, which are moved to and from the center of the press. Three doors are fitted to the top of the press, and when the followers are separated so that they stand at opposite ends of the box, hay is thrown in until the press is full. If it is necessary to tramp it, the work can be easily done by one man moving from one end to the other until the box is full. The doors are then closed and secured, and power is applied to force the followers toward each other, thus compressing the hay towards the center of the press. When the bale has been formed, the strings are easily passed down through the vertical slots in the faces of the followers, and passing through the slots in the bottom of the press, can be tied from beneath. A side door is then opened to remove the finished bale and the followers drawn back to the ends of the box to admit another bale. In order to operate the followers the inventor provides a mechanism which is constructed as follows: Across the lower part of the body two shafts are extended turning in suitable boxes, and to these shafts, where they project beyond the sides of the press, ropes or chains are attached. These ropes are led over the pulleys near the end of the press, thence over pulleys just above the shafts, and from these pulleys the chains pass over pulleys which are secured to the ends of the bars of the followers, these bars projecting through slots in the sides of the box. From these pulleys the chains extend to where they are secured to the frame. The chains work in pairs, one pair upon each side serving to operate each follower, and it will be seen that by rotating the shafts the chains will be wound upon them and the followers drawn toward each other. In order to operate these shafts simultaneously and in the proper direction, pinions are fixed to the ends of each and a spur wheel is mounted upon a shaft in a line just above, so that when the wheel is revolved it will turn these and the shafts. The drum which receives the rope for applying power is secured to the side of the gear wheel, and when the power is attached to the rope the gears and shafts can be revolved. In order to return the followers to the ends of the press after a bale is finished, the inventor attaches a rope to the middle of each of the followers at the back and lead them thence through the ends of the press and over suitable pulleys. When the horse is driven back after having pressed a bale, these ropes are so attached that the followers will be simultaneously drawn back to the ends of the press. Suitable guides steady the followers in their movements.

CAR COUPLING.—A. V. Anderson, Virginia City, Nev. This invention relates to certain improved attachments to be applied to the ordinary link and pin coupling, which is used for connecting two cars of a railway train together, and the object of the attachment is to provide for automatically handling the link pin from the roof of the car, so as to obviate the necessity of any one going between the cars to guide the link and drop the pin. By this arrangement the coupling is operated entirely by a person standing on the roof of the car and entirely out of the way of harm.

AERIAL TOY.—Peter B. Fernandez, San Francisco, Cal. This little toy consists of a propellor of considerable size, mounted upon a shaft at one end of a horizontal arm, which is supported at some point in its length, so as to be revolved about its vertical axis by means of the impetus given to it by the rotation of the propellor. A suitable case is provided to hold the mechanism for rotating the propellor and a counter-balance may be mounted at the opposite end of the arm. The toy as made by the inventor has a representation of a balloon having a netting and car, so that by operating the mechanism the balloon and car are set in motion.

PREPARING COCOANUT.—Alexander P. Ashbourne, Oakland, Cal. This invention relates to an improved process for the preparation of cocoanut for domestic uses, and by this process the inventor is enabled to so perfectly prepare the article that it will keep fresh for many years.

THE Ophir mine is to be shut down about the 20th of the present month for the purpose of retimbering about 300 feet of the shaft, and the putting in of a new gallows frame. This will take some time, and the present increase in the amount of ore extracted is to keep the mills going while the mine is shut down.

THE Belcher air shaft will soon be completed to the 1300-foot level, and is doing most excellent work in ventilating the lower levels of the mine.

Short Lectures on Patents.

No. 11.—By J. L. Boone, of Dewey & Co's. Mining and Scientific Press Patent Agency.

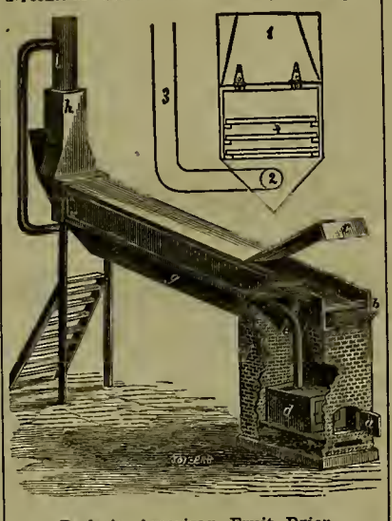
The Patented Article.

It is a provision of Patent Law that an invention, to be patented, must not have been in public use or on public sale for more than two years prior to the application for a patent, and has been held by the courts, and is now a permanent rule of Patent Law, that an inventor can make, use and sell his invention for two years, and then apply for and obtain a valid patent for it, notwithstanding such use. But he must not continue the manufacture, sale and use of the invention more than two years before applying for a patent, or the patent when obtained can be avoided. If it can be shown in any suit which involves the validity of a patent that the use and sale prior to the application was continued even one day over two years, the patent will fall. "A public use has been defined to be a use in public, and a single well authenticated instance of a use in public, whether by the inventor or any one else, constitutes a legal public use." This preliminary use of an invention is intended for the benefit of the inventor, for it is no more than right to allow him sufficient time and opportunity to thoroughly test the value and utility of his invention before he goes to the expense of applying for a patent. But few inventors take advantage of this provision of the law. They know too well that if they do so, many contingencies may arise which will cause them trouble and expense both in obtaining their patents and in sustaining them after they are obtained.

If an inventor manufactures and sells his invention before he applies for a patent, he is not entitled to mark the manufactured machines or articles with the words "Patent applied for," yet if he should do so I do not know of any harm that could come to him for so doing. It would only be a deception of the public which could in no case do any harm and might be a great benefit to the inventor by deterring others from manufacturing the articles. Neither has a caveator the right to mark the invented articles with the words "Patent applied for," because a caveat is not an application for a patent. He could, however, with full propriety, mark the articles or machines with the words, "Invention Secured" or "Right Secured," because a caveat is supposed to secure the rights of the inventor while he is testing his invention, and these words in all probability would answer every purpose quite as well as the words, "Patent applied for." After a patent has been applied for, and before it is obtained, it is usual for the inventor to mark each article or machine that he manufactures with the words "Patent applied for," but it is entirely optional with him whether he shall do so or not. It is better to do so, as it notifies the public that the inventor has taken the proper steps to secure his patent, and that any one who makes and sells the invention is liable to encounter trouble when the patent issues, as the patentee has a right to prosecute the user of a machine that infringes his patent whether the machine was made before or after the issue of a patent unless he gave permission to the manufacturer to make and use it, in which case the permission would be regarded as a special license, which would remain with the machine even after the patent was issued. After an inventor has obtained his patent, the law expressly declares that it shall be his duty, and the duty of his "assigns and legal representatives, and of all persons making or vending any patented article for or under them, to give efficient notice to the public that the same is patented, either by fixing thereon the word 'patented,' together with the day and year the patent was granted, or when, from the character of the article, this cannot be done, by fixing to it or to the package wherein one or more of them is enclosed a label containing the like notice, and in any suit for infringement by the party failing so to mark, no damages shall be recovered by the plaintiff, except on proof that the defendant was duly notified and continued after such notice to make use or vend the article so patented." In other words the law leaves it to the discretion of the patentee whether he will mark each article with the word "patented" and the date of the patent, or whether he will omit the marking and take the chance of discovering infringers and notifying them personally that they are infringing. In the latter case no damages could be obtained for what the infringer done before he received a notice from the patentee, while in the former case the marking of the articles is a public notice, and no other notice need be given. The better policy is to mark each article or machine before it leaves the hands of the manufacturer. The inventor is then better able to keep track of his machines and detect infringements. Most manufacturers, besides marking each article with the date of the patent under which they are manufactured, number them consecutively. This is an excellent plan, because it establishes the identity of each machine or article, so that it can be recognized from infringements. It is a public offense for any person to affix to or mark upon anything made, used, or sold by him for which he has not obtained a patent the word "patented," or any word of like import, with the intention of imitating an article which is patented, or for the purpose of deceiving the public into the belief that the article is patented. The penalty for such an offense is a fine of not less than one hundred dollars with costs, and one-half of the penalty will go to the person who sues for it. After a patent expires the inventor or manufacturer of the article for which the patent was granted has no right to mark them with the words "patented," but he must cease marking them altogether or he will be liable to the law in the penalty above mentioned for false marking. Richardson had a patent on a leather splitting machine, which he called during the life of the patent, "Richardson's Patent Union Leather Splitting Machine," but it was held that after his patent expired he had no further right to use the word "patent" in the name of the machine, because it tended to deceive the public.

Those parts of a machine which are not covered by the claims in a patent can be varied at pleasure by the patentee or manufacturer without affecting the patented part or parts. For instance, if A secures a patent on an "improvement in wagon wheels," and the claim in the patent covers only the method of securing the spokes in the hub of the wheel, he can apply his invention to any kind of a wheel, and he can use any kind of spokes and felloes that he pleases without departing from the spirit of the patent so long as he does not infringe the patent of another and retains the feature covered by his claim; and this is the case even if he has described in his specification one particular kind or style of wheel, and afterwards applies his invention to an entirely different wheel. The description of the old parts of a machine in a specification serves only to illustrate and explain the operation of the invented part and its connection with an entire machine.

Even the patented part, which is covered by the claims, can be varied if the features or functions which render it novel and patentable are retained. The law provides that a patent shall cover all devices which are equivalent to the parts claimed in a similar application of them, and the inventor can employ in the manufacture of the machines or articles any known mechanical equivalent of what he has claimed in the patent. "When a party has discovered a result as well as the machinery which pro-



Ryder's American Fruit Drier.

duces it, and introduces it in a practical form to his fellow men, he is the inventor, not merely of the mechanism, but of the force which operates through the mechanical medium. He has a right to assert and establish his property, not only in the formal device for which mechanical ingenuity can at once, as soon as the principle is known, imagine a thousand substitutes, but also in the essential principle which his machine was the first to embody and announce to mankind." This is the law plainly stated, and if such were not the case but few patents would be worth the paper they are printed upon.

Ryder's American Fruit Drier.

Some time since we gave a description of Ryder's American fruit drier, which has since, however, been greatly improved. The improvements can be seen by reference to the accompanying engraving: *a* is the door to the furnace; *b*, door for entering trays; c, fall door for covering the top of furnace and end; *d*, is the stove, entirely inside the furnace; e is the pipe from stove entering the improved hot air chamber; *f*, is the furnace, which is made of narrow tongue and grooved flooring, lined with zinc, or it can be made stationary of brick; *g* is the improved additional V-shaped hot air chamber through which the pipe lays, and is lined with zinc. The wooden fine, *h*, opens below into the hot air chamber to carry off the moisture, aided by the draft of smoke; *i* shows the pipe coming out of the upper end of the drier, as shown at 2, and entering the pipe flue at *l*. Fig. 1 shows the fall door which closes the upper end of the drier, and the dotted lines show the form of fine, as at *h*. Fig 3 shows the pipe as at *i*. Fig 4 shows trays at upper end. In drying cut fruits, such as apples, peaches and pears, the true principle is to subject them to a current of dry heated air, so as to dry the cut surface quickly, which prevents discolroation and makes an artificial skin or covering, and hermetically seals, so to speak, the cells which yield glucose or fruit sugar. It is claimed that the correct principles are practically applied in combination with a perfected mechanical arrangement in this drier, by which a current of dry heated air—automatically created—is made to pass underneath and around the fruit on the trays and then pass over them, carrying the moisture arising from the fruit out of the machine, without interfering with or passing through the trays above, the strongest heat being concentrated upon each tray when it first enters the drier. The machine has had practical tests on different kinds of fruits. The "factory drier" is four feet wide and twenty feet long, with three lines of trays on castors, and a capacity of from 350 to 400 pounds of dried fruit per day. A machine two feet by twelve with one line of trays, has a capacity of from forty to sixty pounds. J. M. Keeler & Co., 330 Sansome street, will furnish additional particulars to those desiring them.

Machine for Removing Broken Drills From Holes.

The apparatus shown in the accompanying engraving is an invention recently patented through the agency connected with this office, by John W. Platt, of Mineral City, Nevada, and is intended for removing stubs and broken pieces of drills from holes. We mentioned this device a short time since in the Press, and now give an illustration of it, by which it can be more clearly understood.

The operating mechanism is enclosed and protected by a case, *D*. Two gripping jaws

Apparatus for Removing Broken Drills from Holes.

are so curved as to form cylindrical sections, with roughened inner faces, as shown. The ends of these jaws are tapered to a blunt apex, and they are scarfed to an edge also, this being for the purpose of making it easy to work the jaws down through the rock and dirt that may be in the hole surrounding the stub. The sides of the jaws taper toward each other at the top, and unite so as to form a transverse cylindrical head. This head is fitted into a hole, *b*, bored transversely through the lower end of the stem, and a slot opens downward from the hole to allow the sides of the jaws to pass in. The stem, *C*, passes up through a cylindrical sleeve, or case, *D*, within which it is protected, and the upper end of the stem has a screw cut upon it, so that the handle or elongated nut can be turned up or down as desired. A stationary handle is fixed to the top of the stem, and by this is held while the nut is being turned.

This device is operated as follows: If a drill becomes broken in the hole the nut is turned back, and the elasticity of the sides of the jaws causes them to spread apart and draw out of the case until they are sufficiently well opened to pass down upon each side of the drill. The stem is now twisted from side to side by means of its handles and the jaws will be worked down upon each side of the broken stub so as clasp it. Now, by turning the nut or handle, the cylindrical case will be forced down over the jaws, thus forcing them together and causing them to compress the steel firmly, so that the whole can be withdrawn, the operation not occupying more than a minute or two, even in holes three or four feet deep.

If the jaws should become broken or injured it will be only necessary to remove the handle and nut so as to allow the stem to be slipped out, when the head will easily slide from its socket, and can be replaced by another.

The agents of this device in San Francisco, are Fleishman, Sichel & Co., 37 and 39 Battery street, and in Virginia City, Nev., Platt & Storer are agents, who may be addressed for further information. The device has been in use in several mines for some little time, and we are informed has given great satisfaction.

THE

Mechanics' Fair Daily

—OF THE—

TENTH INDUSTRIAL EXHIBITION

[Circulation Free]

Will be a superior publication, and contain all

Official Information

During the Exhibition, commencing Aug. 17th, 1875.

Its Illustrations

Will furnish accurate views of

New Inventions and Machinery.

The volume will give a substantial and readable

Record of the Fair,

Quite valuable for reference and preservation, in addition to a goodly variety of other reading matter, daily, embracing

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Making altogether a paper eagerly sought for (both in and out of the Pavilion) by nearly a

Quarter of a Million of Readers!

During the term of the Exhibition—a circulation reaching a greater number of different individuals than that of any publication yet issued. We shall make a specialty of inserting

Attractive Advertisements,

Representing the leading firms in nearly

Every Branch of Trade and Industry

On this coast, upon favorable terms, soliciting such as we believe will be most benefited by advertising in a well conducted, enterprising and everywise meritorious journal. We contemplate

An Advance Edition of Ten Thousand Copies

Of the first number to be circulated gratuitously

All Over the Pacific Coast

In advance of the opening of the Fair.

This beautifully illustrated sheet, issued upon such an occasion will receive close attention, and its contents—both reading and advertising being original—will be closely scanned throughout.

The Immense Pavilion

Has been enlarged for the coming Fair. An unusually large amount of space for exhibits has already been engaged. Stimulated by the list of premiums offered this year the exhibition will doubtless be a

Grand Success.

Orders for advertising, sent in early, will receive careful attention.

The undersigned publishers of the Mining and Scientific Press have successfully issued a popular daily in the Mechanics' Fair during six Industrial Exhibitions since 1864, and we are now confident of making the coming volume surpass all its predecessors in its standard of value as a reading journal of art and information and a medium of first-class business announcements.

We have been awarded by the managers of the Exhibition, the

Exclusive Publishing and Advertising Privileges

Of the Tenth Industrial Exhibition, and are determined to accomplish a work creditible to the Mechanics' Institute, to Our Patrons, and to Ourselves.

DEWEY & CO.,

Publishers and Patent Agents, No. 224 Sansome Street, S. E. Cor. of California, S. F.

Tenth Industrial Exhibition of the Mechanics' Institute, S. F., 1875.

PRELIMINARY ANNOUNCEMENT.

The Board of Managers of the Tenth Industrial Exhibition have the pleasure of announcing that an Industrial Exhibition will be held, under the auspices of the Mechanics' Institute, in the city of San Francisco, to be opened on Tuesday, the 17th of August, 1875, at 11 A. M., and to continue open at least one month thereafter.

In making this public announcement, the Managers desire that those who intend to exhibit should send in their applications for space as early as possible, so as to avoid the necessity of exclnding, as has been the case heretofore, the many desirable exhibitors who are unusually tardy in making applications.

The forthcoming Industrial Exhibition will be the tenth held under the auspices of the Mechanics' Institute, and the Managers are justified in saying that it will undoubtedly surpass in completeness of detail and general arrangement any heretofore held.

The last Exhibition was attended by 700,000 visitors, attracted hither by the fame of these Industrial Fairs, and for the purpose of investigation, business and pleasure.

All the available exhibiting space was applied for several weeks before the day of opening, and the Managers were compelled to deny admission to many desirable exhibits.

The Board of Managers desire particularly that the arts, the industries and natural products of the country should be well represented at the forthcoming exhibition, and no pains will be spared to make these classes of exhibits a special feature there.

The Exhibition will be held in the building constructed for that purpose in 1874, but it will be materially enlarged and improved in many details for the Exhibition of 1875.

The space under roof will exceed 180,000 square feet, or about four and a half acres, exclusive of the Horticultural Garden, which will occupy 24,500 square feet additional.

The location of the Exhibition Building, on Eighth street, between Market and Mission streets, cannot be surpassed for convenience and accessibility, and can be approached from every part of the city by means of the various lines of street railroads, any of which bring visitors within two blocks of the entrance gate.

The utmost care has been exercised in providing for ample ventilation and light, and during the evening the building is brilliantly illuminated by over 5,000 gas lights.

The promenade avenues are broad, and 3,000 seats are provided for the comfort of visitors, for whose convenience there is also an excellent restaurant, under the management of a first-class restaurateur.

Every afternoon and evening the best orchestra the city can supply will discourse excellent music under the direction of an accomplished leader.

The building is always well attended by visitors, and during the last Exhibition over 29,000 were daily admitted for a number of days, and under no similar circumstances can the manufacturer, the mechanic, the inventor, producer or business man so advantageously place himself before the people of the Pacific Coast.

Persons desiring to obtain information, or to make application for space, should address "Managers of Tenth Industrial Exhibition, San Francisco, California," or make personal application as below.

It is expected that the various transportation companies will convey goods intended in good faith for exhibition, at half the usual rates.

Exhibitors from abroad, if they have no agent or consignee in San Francisco, can consign goods and mark the same to the "Manager of the Tenth Industrial Exhibition, 17 Post street, San Francisco," and they will be stored, if they arrive before the day of opening, free of expense; but no charges or expenses for freight or forwarding, etc., will be paid by the Managers.

In order to secure space, application should be made on or before July 20th, 1875.

Blanks will be furnished on application.

Premiums will be awarded as follows, viz: 16 gold medals, 50 silver medals, Society Diplomas, Certificates of Merit and Special Premiums, as the Board may determine.

Blanks for space can be obtained at the Mechanics' Institute on application by letter or otherwise; and any information will be given, by applying to any member of the Board of Managers, as below:

A. S. HALLIDIE.....113 Pine street.
JAMES C. PATRICK.....122 Battery street.
HENRY L. DAVIS.....421 California street.
D. E. HAYES.....213 Fremont street.
ASA B. WELLS.....Mechanics' Mill.
P. B. CORNWALL.....Cor. Spear & Harrison streets.
CHAS ELLIOT.....516 California street.
GEORGE SPAULDING.....414 Clay street.
RICHARD SAVAGE.....139 Fremont street.
W. P. STOUT.....604 Merchant street.
J. H MACDONALD.....217 Spear street.
J. P. CURTIS.....320 Jackson street.
R. B. WOODWARD.....Woodward's Gardens.
JAMES SPIERS.....311 Howard street.

To the Librarian of the Mechanics' Institute, or to J. H. CULVER, Secretary, 27 Post street, S. F.

Rules and Regulations of the Tenth Industrial Exhibition, Mechanics' Institute, S. F., 1875.

I. The Pavilion will be open for the reception of goods on Monday, August 2d. The exhibition will be open to the public on Tuesday, August 17th, at 11 o'clock A. M.

2. Applications for space must be made on or before July 20th, stating character of exhibit, amount and kind of space required—wall, table or floor. And, if case, state length, width and hight of case. Blanks will be furnished for this purpose, and a clerk will be in attendance at the Library of the Mechanics' Institute, every day from 12 to 1, and 7 to 10 P. M.

3. All persons presenting articles for exhibition must have them registered by the Receiving Clerk, who will give a receipt for the same, which receipt must be presented when the articles are withdrawn, at the close of the Exhibition.

4. Judges will be appointed by the Board of Managers, immediately upon the opening of the Exhibition, to examine all articles presented, in accordance with Article III, and the Managers will award premiums on such articles as the judges shall declare are worthy, which will be delivered as soon as they can be prepared. One notice will be given of the announcement of premiums.

5. The mornings of each day, until 10 o'clock, will be appropriated to the Judges, and no visitors will be admitted during the time thus appropriated, except at the special request of the Judges, or by permission of the Managers.

6. Articles intended for sale may be labeled accordingly, but cannot be removed until the close of the Exhibition, except by written permission of the Managers.

7. Steam power will be provided, so that machinery of all kinds may be seen in actual operation, and every facility possible will be given to exhibit working machinery to the best advantage.

8. The name of every article must be attached by the exhibitor to it.

9. Articles intended for exhibition must be entered and placed on exhibition on or before Saturday, August 21st.

10. Perishable articles will be received, or may be removed at any time during the exhibition, with the consent of the Managers.

11. The most effectual means will be taken, through the agency of the Police and otherwise, to guard and protect the property on exhibition; and it will be the purpose of the managers that all articles shall be returned to the owners without loss or injury. Still, all articles deposited will be at the SOLE OF THE OWNERS.

12. In case of any misunderstanding, application may be made to the Managers, who will at all times be in attendance.

13. The Managers are desirous that articles should be presented early. Those from abroad, intended for exhibition, should be properly packed, and if not consigned to exhibitor's agent, must be marked, "MANAGERS OF TENTH INDUSTRIAL EXHIBITION, SAN FRANCISCO, CAL." All articles thus received, arriving too early, will be stored free of cost to the exhibitor, and the Managers will have them duly placed in proper position for exhibition. No freight charges will be paid by the Managers; but exhibitors are notified that arrangements are being made with various transportation companies to repay freight charges on evidence of goods exhibited.

Information will be furnished by addressing MANAGERS OF TENTH INDUSTRIAL EXHIBITION, SAN FRANCISCO, CAL.

Miscellaneous Notices.

QUICK-SILVER.

UNITED STATES PATENT OFFICE.

The Quicksilver Mining Company of New Almaden, California—Trade-mark for Quicksilver Flasks.

Statement of trade mark No. 1499, registered October 19, 1873; application filed September 29, 1873.

Specification describing a trade-mark, used by the Quicksilver Mining Company, a company chartered by the State of New York, and working and operating quicksilver mines at New Almaden, Santa Clara county, State of California, for Quicksilver Flasks.

Our trade-mark consists of the letter "A" straddling a circle. This letter has generally been painted upon the upper end of each flask, bottle, or jar in which the quicksilver is contained, its usual position being such that the opening or mouth in the upper end of the flask, bottle or jar will be between the spreading angular sides of the letter, the cross-mark of the letter passing along close to the edge of the hole.

This trade-mark we have used in our business for ten years last past. The particular goods upon which we have used it are quicksilver flasks, and it has always been applied as above described.

THE QUICKSILVER MINING COMPANY.
By J. B. RANDOL, Manager.

This trade-mark is also registered in the office of the Secretary of State, Sacramento, California, and all producers and dealers in quicksilver are cautioned not to use the said trade-mark.

For New Almaden Quicksilver, apply to
THOMAS BELL, Sole Agent,
Over Bank of California, San Francisco.

NEW ALMADEN QUICKSILVER.

TRADE **A** MARK.

The well known full weight and superior quality of the quicksilver produced at the New Almaden Mines having induced certain unscrupulous persons to offer their inferior productions in flasks having our trade-mark, "A." notice is given to consumers and shippers that quicksilver, "A" brand, guaranteed weight, can be purchased only from THOMAS BELL, San Francisco, or his duly appointed sub-agents.

J. B. RANDOL, Manager.

New Almaden, April 5, 1875.

DAVID WOERNER,

COOPER,

No. 104 and 112 Spear St., San Francisco.

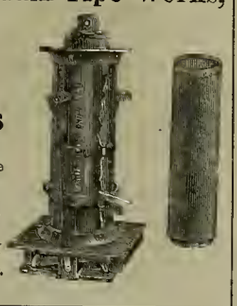
Wine Casks, Tanks, Tubs, Pipes, Beer Barrels, etc., Manufactured at Short Notice and LOW RATES.

LUMBER for CASKS, etc., TANKS, etc. Steamed and Dried if required.

eow-bp.

Office of Drain Pipe Works,

S. W. Corner Sacramento and Montgomery Sts., S. F.



DRAINS

CONSTRUCTED

In any part of the State, and

Work Warranted

E. T. MENOMY
Proprietor.

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THE NEVADA

QUARTZ MINING PROPERTY FOR SALE,

With a new 15-stamp mill, now running. Has its own water power, with houses, shops, etc. Government title; joins the Providence mine, on Deer Creek, Nevada City, Cal. For sale or to bond.

Address, I. S VAN WINKLE,
413 Market street, San Francisco.

PARKE & LACY,

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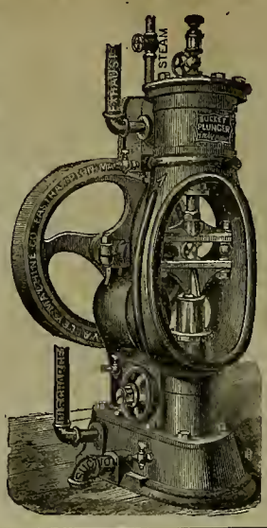


BUCKET-PLUNGER STEAM PUMP.

ALWAYS RELIABLE.

Sole Agents for WRIGHT'S

LEVI, STRAUSS & CO.,

Patent Riveted

Clothing,

14 & 16 Battery St.,

San Francisco.

These goods are specially adapted for the use of FARMERS, MECHANICS, MINERS, and WORKING MEN in general. They are manufactured of the Best Material, and in a Superior Manner. A trial will convince everybody of this fact.

Patented May 12, 1873.

USE NO OTHER, AND INQUIRE FOR THESE GOODS ONLY. eow-bp

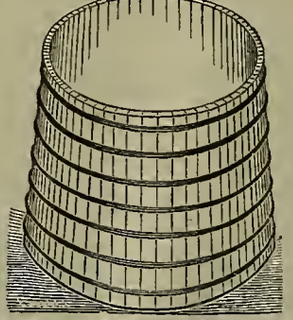
DIAMOND CATARRH REMEDY.

DIAMOND ASTHMATIC REMEDY.

DIAMOND INVIGORATOR.

DIAMOND NERVINE PILLS.

CATARRH AND COLDS — Dr. Evory's Diamond Catarrh Remedy never fails; perfect cure; try it; fifty cents per bottle. Depot, 608 Market street, San Francisco, Cal., opposite Palace Hotel. Sold by all druggists.



WATER TANKS of any capacity, made entirely by machinery. Material the best in use; construction not excelled. Attention, dispatch, satisfaction. Cost less than elsewhere.

WELLS, RUSSELL & CO.,

Mechanics' Mills, Cor. Mission & Fremont Streets,

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Ayer's Cherry Pectoral,

For Diseases of the Throat and Lungs, such as Coughs, Colds, Whooping Cough, Bronchitis, Asthma and Consumption.

The few compositions which have won the confidence of mankind and become household words among not only one, but many nations, must have extraordinary virtues. Perhaps no one ever secured so wide a reputation, or maintained it so long, as AYER'S CHERRY PECTORAL. It has been known to the public about forty years, by a long continued series of marvelous cures, that have won for it a confidence in its virtues, never equalled by any other medicine. It still makes the most effectual cures of *Coughs, Colds, Consumption*, that can be made by medical skill. Indeed the CHERRY PECTORAL has really robbed these dangerous diseases of their terrors, to a great extent, and given a feeling of immunity from their fatal effects, that is well founded, if the remedy be taken in season. Every family should have it in their closet for the remedy and prompt relief of its members. Sickness, suffering and even life is saved by this timely protection. The prudent should not neglect it, and the wise will not. Keep it by you for the protection it affords by its timely use in sudden attacks.

PREPARED BY

DR. J. C. AYER & CO., Lowell, Mass.,

PRACTICAL AND ANALYTICAL CHEMISTS.

Sold by all Druggists and dealers in Medicine.

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FRANCIS SMITH & CO.,

MANUFACTURERS OF

Hydraulic Pipe,

AND

ARTESIAN WELL PIPE.

Having the Latest Improved Machinery, we can make it an object to

Mining & Water Companies

OR

WATER WORKS,

To Contract with us for

SHEET-IRON PIPE.

All Sizes Made and all Work Guaranteed

30 Beale Street,

SANBORN & BYRNES,

STAIR BUILDERS.

Mechanics' Mills, Mission Street,

Bet. First and Fremont, San Francisco. Orders from the country promptly attended to. All kinds of Stair Material furnished to order. Wood and Ivory Turners, Billiard Balls and Ten Pins, Fancy Newels and Balusters. 25v8-3m-bp

F. MANSELL & CO.,

SIGN PAINTERS,

423 PINE STREET,

(Between Montgomery and Kearny.)

Persons engaged in the following business can have their Signs Painted at contract prices, for goods or articles in which they trade, viz:

Merchant Tailors,	Gents' Furnish'g G'ds,
Bootmakers,	Furniture Dealers,
Hatters,	Jewelers,
Hotels,	Piano Fortes,

Wine Merchants, Etc., Etc.

JOHN THOMSON. JOHN B. PARKER.

THOMSON & PARKER,

(Formerly with David Stoddart,)

112 Beale Street, San Francisco, Cal.,

ENGINEERS and MACHINISTS,

MANUFACTURERS OF

STEAM PUMPS, STEAM ENGINES,

And all kinds of Machinery.

REPAIRING PROMPTLY ATTENDED TO.

San Francisco Cordage Company.

Established 1856.

We have just added a large amount of new machinery of the latest and most improved kind, and are again prepared to fill orders for Rope of any special lengths and sizes. Constantly on hand a large stock of Manila Rope, all sizes; Tarred Manila Rope; Hay Rope; Whale Line, etc., etc.

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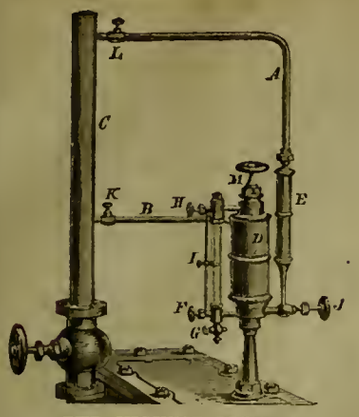
Machinery.

N. Seibert's Eureka Lubricators.



THE HIGHEST PREMIUM

Awarded by the Mechanics' Institute Fair, San Francisco, and State Fair, Sacramento, 1871.

These Lubricators are acknowledged by all engineers to be superior to any they have ever used; feed constantly by pressure of condensed water, supplied by pipe A, regulated under the oil by valve J, and forced out through check valve and pipe B into the steam pipe C; it then becomes greasy steam, passes to all the valves and cylinder at every stroke of the engine; glass tube I indicates amount used per hour. Packing on rods and stems lasts longer, and the rings on the piston will not corrode. One pint of oil will last from three to six days, according to speed and size of engine; I, sliding gange; K, valve to shut off when engine stopps; H, F, valves to shut off in case of frost; steam does not enter the cup; it is always cool; warranted t gives satisfaction. Patented February 14, 1871. Manufactured by California Brass Works, 125 First street, S F. 24v23

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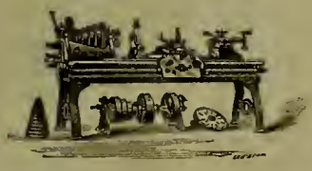

EXTRA HEAVY AND IMPROVED PATTERNS,

PUTNAM MACHINE CO.,

MANUFACTURERS.

LATHES, PLANERS, BORING MILLS, DRILLS, BOLT CUTTERS, DOUBLE NUT TAPPING MACHINES, SLOTTING AND SHAPING MACHINES ON HAND. GEAR CUTTERS AND MILLING MACHINES A SPECIALTY.

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PLANING AND MATCHING MACHINES

UNIVERSAL WOOD WORKERS
TRADE MARK
WOOD WORKING MACHINERY.

BENTEL, MARGEDANT & CO.
HAMILTON, OHIO.
Send for Catalogue and Price List.

"THE DANBURY" DRILL CHUCK.

The Favorite Everywhere.
Send stamp for circuler.
The Hull & Belden Company, Danbury, Ct.

P. S.—These Chucks are now on hand and for sale at manufacturer's prices by

H. P. GREGORY, Agent,
Nos. 14 & 16 First Street, S. F.

LANE & BODLEY,

John and Water Sts., Cincinnati.
Manufacturers of
PORTABLE & STATIONARY STEAM
ENGINES,
From two to two hundred Horse Power. Send for illustrated catalogue.

CRANK PLANERS.

Superior Design and Workmanship, Extra Heavy (1400 lb.)
DOWN, ANGULAR & CROSS-FEED,
TO PLANE 12x16x18.
The Hull & Belden Company, Danbury, Ct.

No. 4 Car Wheel Borer.

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MANUFACTURERS OF
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OF ALL DESCRIPTIONS
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We have the best and most complete assortment of
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In the Country,
Comprising all those used in
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We make Without Charge For Patterns, GEAR WHEELS, with our Patent Moulding Machine.

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"CALIFORNIA" ROCK DRILL,

MANUFACTURED BY
HAWKINS & CANTRELL, San Francisco, Cal.,
AND SPECIALLY DESIGNED TO MEET THE REQUIREMENTS OF MINERS ON THE PACIFIC COAST.

—ALSO—

AIR COMPRESSORS,

And Complete Mining Outfits for Power Drills.

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Patent Stamp Shoes
FRASER, CHALMERS & CO.
SUCCESSORS TO EAGLE WORKS M'F'G. CO.
MANUFACTURERS OF
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CRUSHING ROLLERS
AMALGAMATING PANS AND MACHINERY FOR SYSTEMATIC MILLING, SMELTING AND CONCENTRATION OF ORES
AGENTS FOR BLAKE STONE BREAKER
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ROASTING CYLINDERS
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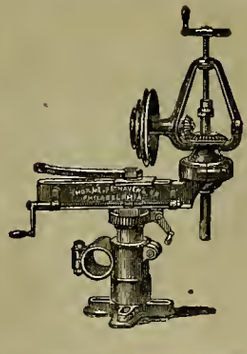

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DRILLING MACHINES.

PORTABLE DRILLS. Driven by power in any direction, self-feed and convenient adjustment.
RADIAL DRILLS. Self-feed—large adjustable box table—separate base plate, every convenience.
VERTICAL DRILLS. Self-feeding—of new and improved designs.
MULTIPLE DRILLS. For boiler work, etc., 2 to 20 spindles, fed and returned by power or hand, together or separately.
HORIZONTAL BORING AND DRILLING MACHINES. For large pieces—with boring head, adjustable, vertically and horizontally.
SPECIAL DRILLS. For special work. Gun Blank Drills, Coal Drills, &c., built to order.

REMOVED TO N. E. COR. CLAY AND KEARNY STS.

Practical instructions for testing and assaying minerals and metals.

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Examiner of Mines, Mineral Assayer, Etc.

By blowpipe, chemicals, crucible, scorifier, water and assaying machine.

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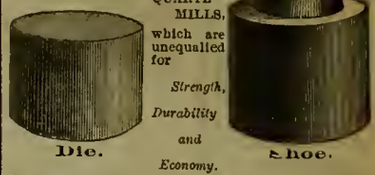
Price of the second edition, $10.50, (cloth); $12 (leather).

Inventor of the "WEE PET" Assaying Machine, which obtained a GOLD MEDAL at the San Francisco Mechanics' Institute Fair of 1869.
Price of the machine, with tools, fluxes and instructions, $100.

STEEL SHOES AND DIES FOR QUARTZ MILLS,

Made by our improved process. After many years of patient research and experiment we have succeeded in producing STEEL SHOES AND DIES for QUARTZ MILLS, which are unequalled for *Strength, Durability* and *Economy*.



Die. Shoe.

Will wear three times longer than any iron Shoes.

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Of Quartz Mills, Pans, Separators, Concentrators, Jigs, Hydraulic Rock Breakers, Furnaces, Engines, Boilers and Shafting, and General Mining Machinery in all its details, and Furnishers of Mining Supplies.
All orders promptly filled.

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Examination solicited.

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Mennfecturers of ENGINE LATHES, 48 inches swing and smeller; VERTICAL BORING MACHINES, suitable for jobbing end boring Car Wheels; UPRIGHT DRILLS, 36 inches and smeller, end other Mechinists' Tools.

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STEEL FRICTION ROLLERS,

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PRESSED LEATHER FOR PUMPS,

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Iron and Wood-working Machinery, Wood Planers, Lathes, Mitre and Cutting-off Saws, Iron Turning and Screw Cutting Lathes, Planers, Shapers and Drilling Machines, Screw and Scroll Chucks, from the best makers, always on hand and for sale cheep by

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Estimates given for Special Work of every description. Are fully equipped with first-class Machinery and Tools.
The Hull & Belden Company, Danbury, Ct.

IRON AND STEEL DROP FORGING.

Of Every Description, at Reasonable Prices.
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"DEAD STROKE" POWER HAMMER.

IMPROVED ADJUSTABLE CRANK PIN.
STRIKES BLOW HEAVY OR LIGHT, FAST OR SLOW.
Prices Reduced Jan. 1st, 1875.
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SCREENS

J. W. QUICK,

Manufacturer of perforated sheet metals of every description, at reduced rates. Mill owners using Battery Screens extensively, can contract for large supplies at favorable rates. This is the only establishment on the Coast devoted exclusively to the manufacture of screens.

To Miners and Capitalists.

FOR SALE OR LEASE!

A very rich gravel and cement gold mine in Placer County, 250 acres in extent. For full particulars,

Address J. L. COAN,
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Or call at 412 Market street.

Sales at S. F. Stock Exchange.

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95 Alpha.....17¾
170 Am Flat .....2⅛@3
100 Alta.....1⅝
1480 Andes.....1⅝@1⅞
145 Best & Belcher.45½@45¾
140 Belcher.....24
50 Bullion.....¾@.....
345 Chollar-Pot.....14@75
170 Crown Point..26¾@27½
120 Confidence.....21⅝@22
185 Con Virginia.....32@32½
515 California.....56½@56¾
500 ....do.....b 5..56¾
75 Caledonia.....16½
70 Challenge.....5¾@6⅜
200 Cosmopolitan.....27½
260 Empire Mill.....3¾
440 Gould & Curry.....16
100 Globe.....1¾
80 Hale & Norcross.35½@36
1120 Imperial.....1¾
100 .....do.....b 30..35
10 .....do.....b 5..
15 Justice.....83
520 Julia.....13@13¾
125 Kentuck.....2
520 Kossuth.....70@75
725 Lady Bryan.....1@1¾
80 Lady Wash.....1⅛
1595 Mexican.....19½@19¾
100 .....do.....b 5..19¾
200 Mint.....31c
25 Maryland.....75c
100 New York.....2
100 Niagara.....62½@70
200 N Carson.....23c
720 Opbir.....46¾@46½
100 ....do.....b 30..47½
310 ....do.....b 5.....46½@46⅝
200 Ophir Gold Hill..30@.....
100 Overman.....55@55½
485 Occidental.....
400 Prospect.....4½
150 Pacific.....
100 ....do.....b 30..
770 Rock Island.....2¼@
70 Savage 95c
235 Sierra Nevada..13⅝@14
30 Seg Belcher.....4½
75 S Hill.....33½@
30 S R Island.....6⅞
240 Union.....6⅞@
20 ....do.....b 30..
730 Utah.....9½@9⅝
655 Woodville.....4¾@
100 ....do.....b 30..
40 Yellow Jacket.....80

AFTERNOON SESSION.

180 American Flag.....2½
55 Belmont.....
245 Best & Bel.....45¾@46
70 Belcher.....24
20 ....do.....
130 Bullion.....40@41
82 Con Virginia.....315@320
640 California.....56¾@57
430 Crown Point.....27@28
180 Eureka Con.....50@60
1520 Gila.....5⅞@5¾
100 ....do.....b 30..5¾
1075 Golden Chariot..13@14⅜
50 .....do.....b 30..
500 Imperial.....
150 Illinois Central..33½@35
100 ....do.....b 30..
1530 Jackson.....1⅝@1¾
100 Jefferson.....
50 Julia.....1¾
780 Leopard.....16½@16¾
430 ....do.....b 5..16½
380 Meadow Valley.....8@8¼
300 ....do.....b 5..
50 ....do.....b 30..8
1500 Mansfield.....25c
555 Mahogany.....21c
625 Mexican.....19¾@19½
100 ....do.....b 5..19¾
250 Newark.....87½@
120 Overman.....55½@55¾
725 Opbir.....46¾@47
100 ....do.....b 5..47⅛@47⅜
50 ....do.....b 30..47
300 O G Hill.....1¾
210 Phoenix.....1⅝
25 Pioche.....3⅛
1230 Poormans.....
780 Raymond & Ely...60@57½
50 .....do.....b 5..59
30 St Patrick.....1⅝
715 South Chariot.....16@23c
10 Savage.....
150 War Eagle.....59c

SATURDAY, A. M., JULY 10.

1116 Andes.....3⅞@3¾
255 Alpbe.....18½@19¼
200 A Flat.....2@2⅛
145 Baltimore Con...3⅛@3⅜
410 Best & Bel.....46½@46
125 Belcher.....24½@24⅝
160 Bullion.....45¾@45
540 California.....56½@56¾
100 ....do.....b 5..56¾
770 Caledonia.....16¾@1
130 Chollar.....75
200 Confidence.....24@24
305 Crown Point.....27@27½
305 Con Virginia.....315@314
100 Dardanelles.....2⅛
150 Daytoo.....3½
210 Empire Mill.....3⅝@3⅞
40 ....do.....b 30..3⅝
70 Eureka Con.....61½@61
50 Eclipse.....
345 Gould & Curry.16¾@16¾
82 Globe.....1⅝@1¾
156 Hale & Nor.....37@34
1360 Imperial.....1¾@1⅞
220 Julia.....13@13½
20 Juet ce.....87@88
685 Kossuth.....85@.....
100 ....do.....b 30..75c
420 Kentuck.....14
90 Knicker.....2¾@3
100 Lady Wash.....1¼
100 ....do.....b 5..1⅝
1670 Lady Bryan .....1⅛@1¾
100 Mint.....35c
540 Mexican.....19¾@19
445 Mexican Valley...47½@47¾
200 Niagara.....70c
100 New York.....2
100 Occidental.....
1475 Opbir.....46¾@46¾
25 ....do.....b 30..46¾
125 Overman.....b@ 6⅞
300 Pacific.....2@2⅛
200 Phil Sheridan.....90c
200 Prospect.....4½
930 Rock Island.....2@2½
1350 Ray & Ely .....62 @63
60 ....do.....b 5..63
70 Silver Hill.....9½@9⅝
300 Savage.....1⅝@
415 Sierra Nevada...14¾@14
5 Seg Belcher.....80
290 Succor.....
6.5 Union.....9¾@9
900 Utah.....9¾@9⅝
365 Woodville.....2@2⅛
100 Wells-Fargo.....150
70 Yellow Jacket...8.@8⅝

AY, A. M. JULY 12.

70 Alpba.....19@19¼
2110 Andes.....4@4½
305 Best & Bel.....45½@46
50 ....do.....b 30..45¾
50 ....do.....b 5..45¾
190 Belcher.....24½@24
90 Balt Con.....4
300 Bullion.....45@45½
580 California.....56¾@56¾
100 Challenge.....
15 Chollar.....72@72½
150 Caledonia.....15
412 Con Virginia.....300@302
10 ....do.....b 5..301
50 Confidence.....22½
65 Crown Point.....28¾@29
95 Dayton.....3¾
100 Dardanelles.....2

WEDNESDAY A. M. JULY 14

320 Alpha.....19@19¾
1035 Andes.....4¾@4⅞
110 Am Flat 3
270 B & Belober.....45@44½
1040 Belcber.....27½@27
50 .....b 5..27¼
288 Bullion.....48@46
170 Baltimore Con.....4½
55 Chollar.....14
635 Confidence.....23@24
470 Crown Point.....31@32
100 ....do.....b 30..32¼
215 Con Virginia...305@309¾
10 ....do.....b 5..310
645 California.....56¾@58
100 ....do.....b 5..56½
50 Caledonia.....19
100 Challenge.....6¾
320 Dayton.....3⅞@4
850 Empire Mill.....3@3½
5 ....do.....b 5..6⅝
30 Eclipse.....190
1210 Globe.....62¾@61
260 Gould & Curry.....16
50 Hale & Norcross.....38½
930 Imperial.....33¾@34
20 Justice.....95
145 Julia.....14¾@15
175 Kentuck.....1¾
50 Knickerbocker.....1¾@2
330 Kossuth.....1¾@2
1690 Lady Bryan.....1¼@1⅝
175 Lady Wash .....1¼@1⅜
345 Mexican.....19½@19¾
550 Mint 320
583 New York.....2⅛@2¼
620 Opbir.....46¾@47⅛
100 O G Hill.....2¼
20 Overman.....62@62½
20 ....do.....b 5..61
100 ....do.....h 30..61
30 Savage.....96½@95
365 S Nevada.....13¾@13⅞
10 Seg Belcher.....
50 Succor.....1
335 S Hill.....10¼@10⅝
50 Tyler 750
90 Utah.....9⅛
6 Union Con.....7
2130 Crown Point.....29¾@30
100 ....do.....b 30..30
280 Eureka Con...52½@61¾
50 .....co.....b 5..62
250 El Dorado South.....1
1555 Gila.....5⅝
200 Jefferson .....4⅜@4½
50 Belmont.....2⅝@3
100 Bullion.....39@39¾
80 Baltimore Con.....3½
83 Belcher.....24@24⅛
163 Crown Point.....26@26⅜
40 Chollar .....70@71
125 Caledonia .....16¾@16¾
240 Confidence .....19¼@20
75 Con Virginia .....324@325
170 Dayton.....2⅜
50 Daney.....50c
50 Eclipse.....6½
55 Empire Mill.....2@2¼
1750 Mansfield.....25c
540 Mexican.....19¾@19¾
70 New York.....1⅞@2
1640 Ophir.....46¾@47⅜
2980 Phoenix.....1⅛@1⅝
50 Pioche.....4½
200 Prussian.....23¼@2⅜
30 Panther.....1⅜
415 Poorman 4
348 Raymond & Ely.....64@66
10 ....do.....b 30..64¾
50 Ray Patch.....1¾
100 St Patrick.....1⅞
500 So Chario 1
98 S Nevada.....
10 Savage.....98
100 Tiger.....87½c
100 Wasb & Creole.....75c
110 War Eagle.....90c
160 Y Jacket.....83@85

TUESDAY, A. M., JULY 13.

220 Alpba.....19¾@20
2330 Andes.....4@4¼
1080 Best & Belcher..45½@45¾
440 Belcher.....27½@28
410 Bullion.....49@50
3130 Baltimore Con...4¼@4½
155 Chollar.....
1110 Crown Point.....31@32½
50 ....do.....b 5..31
540 Confidence.....24@26
137 Con Virginia.....305@310
100 Cosmopolitan.....50
60 Challenge.....6¾
250 Caledonia.....18@18½
865 California.....56½@56¾
20 ....do.....b 5..56¾
225 Dayton.....3¾@4
290 Empire Mill.....6¾@7¼
10 Exchequer.....200
1620 Gould & Curry.....16¾
55 Hale & Nor.....38½@39
1050 Imperial.....9½@9¾
685 Julia.....14¼@14½
35 Justice.....33@35
1310 Kentuck.....14¾@14¾
940 Kossuth.....1¾@1⅞
10 Knicker.....3¼
3190 Lady Bryan.....1@1¾
500 ....do.....b 30..1⅝
100 Lady Wash.....1¼@1⅜
8.5 Mexican.....19¾@19⅝
150 Mary and.....2
110 New York.....2¼@2¼
630 Ophir.....47@47⅛
1630 Overman.....55¾@56
320 Occidental.....3¾@3⅝
130 Pacific.....2@2⅛
350 Prospect.....4½
100 ....do.....b 90..4½
100 Phil Sher.....1
1840 Rock Island.....2⅞@3
90 Savage.....98@99
980 S Nevada.....14½@14¾
1170 Succor.....1@1⅛
10 Seg Belcher.....85
460 S Hill.....10@10½
1045 Utah.....9½@9¾
600 Wells-Fargo .....15@15½
1070 Woodville.....4
230 Y Jacket.....88@90

AFTERNOON SESSION.

50 Am Flag.....2¾@2⅞
100 Belmont.....2¾@3
50 Bullion.....49@50
160 Belcher.....27½@27¾
25 .....do.....h 30..28½
70 Best & B .....45¾@45¾
1210 California.....56½@56¾
60 El Dorado South.....1
1555 Gould & Curry.....16@15⅞
33 Hale & Nor.....39@38½
200 Imperial.....9@8¾
1000 Jackson.....2@2⅛
610 Jefferson.....4¾@4½
145 Julia.....14¾@15
620 K K Con.....5@6
175 Leopard.....19@.8
780 Mahogany.....
1530 Mexican.....25c
1830 Meadow Valley..7½@7¾
243 Mexican.....20@19¾
250 Newark.....80c
3.5 Ophir.....47¾@47½
50 ....do.....b 5..47¾
425 Phœnix.....1⅝
50 Pioche.....4¼
100 Panther 1¾
350 Poorman .....1¾@
8.5 Raymond & Ely..60@61½
100 Ray Patch.....1¾
500 S Chariot.....1¼@1½
20 Savage .....56½@56
80 Tiger.....37½c
150 Utah.....9¾@9⅝
50 W & Creole.....75c
200 War Eagle.....80c
50 Y Jacket.....85

AFTERNOON SESSION.

50 Alpha.....19½
140 Andes.....4⅞
100 ....do.....b 10..5
100 Belmont.....3
130 B & Belcher.....46@46½
100 Bullion.....47
105 Belcher.....27½@28
110 Con Va.....309@310
100 Cosmopolitan.....50@55c
100 California.....56¾@57
260 Crown Point.....31@31½
120 El Dor S.....1
100 Eureka Con.....62
50 Empire I.....50c
415 Gila.....5¾@6
350 G Chariot.....24@24½
500 Georgia.....b 90..50c
100 Gould & Curry.....16¾
35 Ida Elmore.....1¾
100 Illinois Con.....4½@5
335 Imperial.....9@9¼
300 Jackson.....2½@2⅝
150 Jefferson.....4½
595 Mahogany.....2⅜@3
100 Newark.....1½
20 N Belle.....250
10 N Carson.....25c
10 Overman.....65
655 Ophir.....48¾@48¾
900 Phœoix.....2¾@2⅝
125 Mansfield.....25c

PATENTS & INVENTIONS.

A Weekly List of U. S. Patents Issued to Pacific Coast Inventors.

[FROM OFFICIAL REPORTS FOR THE MINING AND SCIENTIFIC PRESS, DEWEY & CO., PUBLISHERS AND U. S. AND FOREIGN PATENT AGENTS.]

By Special Dispatch, Dated Washington, D. C., July 13th, 1875.

FOR WEEK ENDING JUNE 29TH, 1875."

TRAIN TELEGRAPH.—Andrew Ryder, Oakland, Cal.

SODA BOTTLE CARRIER.—Albert F. Knorp, S F., Cal.

FOLDING TABLE.—Enoch J. Marstens, Stockton, Cal.

WINDMILL.—Joseph McGovern, Modesto, Cal.

——The patents are not ready for delivery by the Patent Office until some 14 days after the date of issue

NOTE.—Copies of U. S. and Foreign Patents furnished by DEWEY & Co., in the shortest time possible (by telegraph or otherwise) at the lowest rates. All patent business for Pacific coast inventors transacted with perfect security and in the shortest possible time.

Industrial Items.

COLTON is the name given to the new town projected around the depot of the Southern Pacific railroad, at a point on the Santa Ana river, about three miles southwest of San Bernardino. The railway company is making preparations to commence the building of their depot at once.

ARTICLES of incorporation of the Santa Rosa manufacturing company were filed in the office of the County Clerk last Saturday; object, to carry on the manufacture of woolen goods in Santa Rosa.

ARTICLES of incorporation have been filed of a company organized to construct a railroad and telegraph line between Ione, Amador county and Galt, on the line of the C. P. R. R.

THE Contra Costa *Gazette* says that John and Patrick Tormey are contemplating the erection of a warehouse 50x100, for their own storage, on the bay shore of the Pinole ranch.

IN Placer county there are twenty-eight saw mills, twenty steam power and eight water power. These mills during the year 1875 sawed out about 25,000,000 feet of lumber.

PIMPLES, ERUPTIONS, ROUGH SKIN.

The system being put under the influence of Dr. Pierce's Golden Medical Discovery for a few weeks, the skin becomes smooth, clear, soft and velvety, and being illuminated with the glow of perfect health from within, true beauty stands forth in all its glory. The effects of all medicines which operate upon the system through the medium of the blood are necessarily somewhat slow, no matter how good the remedy employed. While one to three bottles clear the skin of pimples, blotches, eruptions, yellow spots, comedones, or "grubs," a dozen may possibly be required to cure some cases where the system is rotten with scrofulous or virulent blood poisons. The cure of all these diseases, however, from the common pimple to the worst scrofula is, with the use of this most potent agent, only a matter of time. Sold by dealers in medicines.

COVERED WITH ERUPTIONS. CURED.

CLAVERACK, Columbia Co, N. Y.

DR. R. V. PIERCE, Buffalo, N. Y.:

Dear Sir—I am sixty years of age, and have been afflicted with Salt Rheum in the worst form for a great many years, until, accidently, I saw one of your books, which described my case exactly. I bought your Golden Medical Discovery and took two bottles and a half, and was entirely cured. From my shoulders to my hands I was entirely covered with eruptions, also on face and body. I was likewise afflicted with Rheumatism, so that I walked with great difficulty, and that is entirely cured. May God spare you a long life to remain a blessing to mankind. With untold gratitude,

MRS. A. W. WILLIAMS.

RUSSELL'S

OREON PILE CURE.

To those suffering from Piles—External, Internal and Itching Piles: You can be cured, as hundreds of others have been. Send for Circular and see undoubted testimony. Will send sample bottle for $1, or 6 bottles for $5.

Call upon your Druggist, or address

DR. RUSSELL,
No. 5 Post street, San Francisco.

STEAM ENGINES AND BOILERS.

From 3 to 75-horse power. Shafting, Pulleys, Hoist Gears, Quartz Mills, Water Tanks, Spanish Arastras, Pumps and Pipes, Hepburn and Belden Pans, and all kinds of Machinery for sale at lowest prices by

THOS. P. H. WHITELAW,
266 Brannan street, S. F.
Highest cash prices paid for all kinds of Machinery.

MILL MEN.

Wanted, by a thoroughly practical mill man, a situation as **First Engineer, Foreman, or General Manager.** Is an engineer and machinist by trade, and has a fair knowledge of assaying, melting, etc. Apply to A. M. KRUTTSCHNITT,
North C and Mill streets, Virginia City, Nevada.

Business Directory.

GILES H. GRAY. JAMES M. HAVEN.

GRAY & HAVEN,
ATTORNEYS AND COUNSELORS AT LAW
n Building of Pacific Insurance Co., N E corner California and Leidesdorff streets.
SAN FRANCISCO

JOHN ROACH, Optician,
429 Montgomery Street,
W. corner Sacramento.
Instruments made, repaired and adjusted
22v17-3m

WM. BARTLING. HENRY KIMBALL.

BARTLING & KIMBALL,
BOOKBINDERS,
Paper Rulers and Blank Book Manufacturers,
505 Clay street, (southwest cor. Sansome),
6v12-3m SAN FRANCISCO

BENJAMIN MORGAN,
Attorney at Law and Counselor in Patent Cases,
Office, 715 Clay Street, S. F.
Refers to Dewey & Co., Patent Agents; Judge S. Heydenfeldt or H. H. Haight. 6v28-3m

Banking.

The Merchants' Exchange Bank
OF SAN FRANCISCO.

Capital, Five Million Dollars.

C. W. KELLOGG.....President.
H. F. HASTINGS.....Manager.
R. N. VAN BRUNT.....Cashier.

BANKING HOUSE,
No. 423 California street San Francisco.

KOUNTZE BROTHERS, BANKERS,
12 WALL STREET, NEW YORK,

Allow interest at the rate of Four per cent. upon daily balances of Gold and Currency.
Receive consignments of Gold, Silver and Lead Bullion, and make Cash advances thereon.
Invite Correspondence from Bankers, Mining Companies, Merchants and Smelting Works.

French Savings and Loan Society,

411 Bush street, above Kearny..... SAN FRANCISCO
4v27tf G. MAHE, Director.

DIVIDEND NOTICE.

California Savings and Loan Society,
512 California Street. The Directors have declared a Dividend of Nine and Six-tenths (9 6-10) per cent. per annum on Term Deposits, and Eight (8) per cent. per annum on Ordinary Deposits, for the half year ending on the 30th of June, 1875, free from Federal Tax, and payable on and after Tuesday 6th of July, 1875. By order. D. B. CHISHOLM, Secretary.

DIVIDEND NOTICE.

San Francisco Savings Union—532
California Street, corner Webb. For the Half Year ending with June 30th, 1875, a Dividend has been declared at the rate of Nine (9) per cent. per annum on Term Deposits, and Seven and One-half (7½) per cent. on Ordinary Deposits, free of Federal Tax, payable on and after July 12th, 1875. By order.
LOVELL WHITE, Cashier.

University of California,
BERKELEY, near Oakland.

COLLEGES OF AGRICULTURE,
CHEMISTRY, MECHANICS,
MINING, ENGINEERING
and LETTERS.

Examinations for Admission, August 11th and 12th, at 10 o'clock A. M.

Tuition free. Circulars sent on request.
hp-td

Bronze Turkeys
Gobblers, 30 to 40 pounds. Hens 15 to 20 pounds.

Emden Geese
40 to 50 pounds per pair at maturity.
LEGHORNS,
BANTAMS
BRAHMAS, GAMES HOUDANS.
BLACK CAYUGA DUCKS

EGGS, fresh, pure, packed so as to hatch after arrival on any part of the Coast. For Illustrated Circular and Price-List, address
M. EYRE, Napa, Cal.
[Please state where you saw this advertisment.]

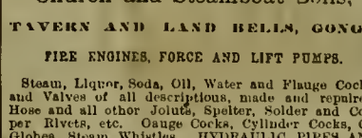
PACIFIC OIL AND LEAD WORKS,
SAN FRANCISCO,
Manufacturers of
Linseed and Castor Oils,
OIL CAKES AND MEAL.

Highest price paid for Flax Seed and Castor Beans delivered at our works.
Office, 3 and 5 Front street.
Works, King street, bet. Second and Third. fe15-eow

W. T. GARRATT.
CITY
Brass and Bell Founder,
Corner Natoma and Fremont Streets,
MANUFACTURERS OF
Brass, Zinc and Anti-Friction or Babbet Metal
CASTINGS,
Church and Steamboat Bells,
TAVERN AND LAND BELLS, GONGS,
FIRE ENGINES, FORCE AND LIFT PUMPS.

Steam, Liquor, Soda, Oil, Water and Flauge Cocks, and Valves of all descriptions, made and repaired. Hose and all other Joints, Spelter, Solder and Copper Rivets, etc. Gauge Cocks, Cylinder Cocks, Oil Globes, Steam Whistles. HYDRAULIC PIPES AND NOZZLES for mining purposes. Iron Steam Pipe furnished with Fittings, etc. Coupling Joints of all sizes. Particular attention paid to Distillery Work. Manufacturer of "Garratt's Patent Improved Journal Metal."
☞Highest Market Price paid for OLD BELLS, COPPER and BRASS. 6-tf

BLACK DIAMOND FILE WORKS.



TRADE MARK

G. & H. BARNETT,
Manufacturers of Files of every Description
Nos. 39, 41 and 43 Richmond street,
Philadelphia, Pa.

Sold by all the principal hardware stores on the Pacific Coast. 18v25.1y

Diamond Drill Co.

The undersigned, owners of LESCHOT'S PATENT for DIAMOND POINTED DRILLS, now brought to the highest state of perfection, are prepared to fill orders for the IMPROVED PROSPECTINO and TUNNELINO DRILLS, with or without power, at short notice, and at reduced prices. Abundant testimony furnished of the great economy and successful working of numerous machines in operation in the quartz and gravel mines on this coast. Circulars forwarded, and full information given upon application.

A. J. SEVERANCE & CO.
Office, No. 315 California street, Rooms 10 and 17.
24v26-tf

EXPLOSIVE COMPOUND.
PATENT FOR SALE.

This Explosive Compound, perfectly safe, is equal in strength to giant powder. Cost of material, only 11 to 20 cents per pound, for blasting purposes, torpedoes, shells, cannons, etc.—government use generally. It is particularly adapted for removal blasting, like common black powder. Patent right for sale, either for county, State, or the whole of America. Best of references given for its practical use. Further information and the address of the inventor can be had at this office.

Mining and Other Companies.

Bandereta Mill and Mining Company—

Location of principal place of business, San Francisco, California. Location of works, Coultersville Mining District, Mariposa County, California.

Notice is hereby given, that at a meeting of the Board of Directors, held on the 17th day of June, 1875, an assessment, No. 1, of twenty-five (25) cents per share was levied upon the capital stock of the corporation, payable immediately, in United States gold coin, to the Secretary, at the office of the company.

Any stock upon which this assessment shall remain unpaid on the 17th day of July, 1875, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Monday, the 2d day of August, 1875, to pay the delinquent assessment, together with costs of advertising and expenses of sale.

J. W. TRIPP, Secretary.
Office, room 15, No. 408 California street, San Francisco, California.

Eagle Mine and Mill Company—Location

of works, Lander county, State of Nevada. Location of principal place of business, San Francisco, California.

Notice is hereby given, that at a meeting of the Directors, held on the tenth (10th) day of July, 1875, an assessment, No. 1, of fifty (50) cents per share was levied upon the capital stock of the corporation, payable immediately, in United States gold coin, to the Secretary, at the office of the company, room 8, No. 533 Kearny street, San Francisco, California.

Any stock upon which this assessment shall remain unpaid on Monday, the sixteenth day of August, 1875, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on the 5th day of September, 1875, to pay the delinquent assessment, together with costs of advertising and expenses of sale.

H. L. BYRNE, Secretary.
Office—Room No 8, 533 Kearny street, San Francisco, California.

Electric Mining Company—Principal place

of business, San Francisco, State of California. Location of works, Lincoln Mining District, Butte County, State of California.

Notice is hereby given, that at a regular meeting of the Board of Directors, held on the 22d day of June, 1875, an assessment of Five cents per share was levied upon the capital stock of the corporation, payable immediately, in United States gold coin, to the Secretary, at the office of the company, in San Francisco, Cal.

Any stock upon which this assessment shall remain unpaid on the 26th day of July, 1875, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Monday, the 16th day of August, 1875, to pay the delinquent assessment, together with costs of advertising and expenses of sale.

A. B. PAUL, Secretary.
Office, No. 318 California street, San Francisco, California. Room No. 13.

Gold Mountain Mining Company—Principal

place of business, San Francisco, Cal. Location of works, Lower Rancheria, Amador County, Cal.

Notice is hereby given, that at a meeting of the Board of Directors, held on the 1st day of July, 1875, an assessment (No. 4) of twenty-five cents per share was levied upon the capital stock of the corporation, payable immediately, in United States gold and silver coin, to the Secretary, at the office, No. 115 Leidesdorff street, San Francisco, Cal.

Any stock upon which this assessment shall remain unpaid on the 5th day of August, 1875, will be delinquent, and advertised for sale at public anction, and unless payment is made before, will be sold on Monday, the 23d day of August, 1875, to pay the delinquent assessment, together with costs of advertising and expenses of sale.

W. A. KNAPP, Secretary.
Office—115 Leidesdorff street, San Francisco, Cal.

Morning Star Gold and Silver Mining

Company. Location of principal places of business, San Francisco, California. Location of works, Great Mogul District, Alpine County, State of California.

Notice is hereby given, that at a meeting of the Board of Directors, held on the 21st day of June, 1875, an assessment, No. 25, of one dollar (1.00) per share was levied upon the capital stock of the corporation, payable immediately, in United States gold coin, to the Secretary, at the office of the company, room 1, No. 402 Montgomery street, San Francisco, California.

Any stock upon which this assessment shall remain unpaid on the 24th day of July, A D, 1875, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Saturday, the 14th day of August, 1875, to pay the delinquent assessment, together with costs of advertising and expenses of sale. By order of the Board of Directors.

O. H. BOGART, Secretary.
Office, room 1, No. 402 Montgomery street, San Francisco, California.

Silver Sprout Mining Company—Principal

place of business, San Francisco, State of California. Location of works, Kearsarge Mining District, Inyo County, California.

Notice is hereby given, that at a meeting of the Board of Directors, held on the third day of July, 1875, an assessment of five cents per share was levied upon the capital stock of the corporation, payable immediately in United States gold coin, to the Secretary at the office of the company in San Francisco.

Any stock upon which this assessment shall remain unpaid on the tenth day of August, 1875, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Wednesday, the 1st (first) day of September, 1875, to pay the delinquent assessment, together with costs of advertising and expenses of sale. T. B. WINGARD, Secretary.

Office—No. 318 California street, San Francisco, (Room No. 13.)

Tolman and Miller Mill and Mining Company—

Location of principal place of business, San Francisco, California. Location of works, West Point, Calaveras County, California.

Notice is hereby given, that at a meeting of the Board of Directors, held on the 14th day of July, 1875, an assessment, No. 2, of thirty (30) cents per share was levied upon the capital stock of the corporation, payable immediately, in United States gold coin, to the Secretary, at the office of the company, room 1, No. 402 Montgomery street, San Francisco, California.

Any stock upon which this assessment shall remain unpaid on the 15th day of August, 1875, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Monday, the 5th day of September, 1875, to pay the delinquent assessment, together with costs of advertising and expenses of sale. By order of the Board of Directors.

O. H. BOGART, Secretary.
Office, room 1, No. 402 Montgomery street, San Francisco, California.

Umpire Tunnel and Mining Company—

Location of principal place of business, San Francisco, Cal.

NOTICE.—There are delinquent upon the following described stock, on account of assessment levied on the 20th day of May, 1875, the several amounts set opposite the names of the respective shareholders as follows:

Names.	No. Certificate.	No. Shares.	Amount.
Beal, W A, Trustee	213	100	$5 00
Beal, W A, Trustee	262	80	1 60
Beal, W A, Trustee	265	10	50
Beal, W A, Trustee	266	11	55
Beal, W A, Trustee	277	10	50
Beal, W A, Trustee	278	10	50
Beal, W A, Trustee	279	10	50
Beal, W A, Trustee	300	100	5 00
Beal, W A	201	50	2 50
Bromley, T A	222	100	5 00
Bromley, T A	223	100	5 00
Bromley, T A	224	100	5 00
Buffington, J M	321	350	17 50
Butler, Wm	196	400	20 00
Butler, Wm	197	800	40 00
Butler, Wm	198	1300	65 00
Cochran, J T	301	100	5 00
Davis, W W	22	500	25 00
Davis, W W	23	50	2 50
Davis, W W	24	50	2 50
Davis, W W	25	50	2 50
Davis, W W	26	50	2 50
Davis, W W	155	1500	75 00
Davis, W W	156	100	5 00
Davis, W W	157	100	5 00
Davis, W W	158	100	5 00
Davis, W W	159	100	5 00
Davis, W W	312	100	5 00
Davis, W W, Trustee	302	1000	50 00
Davis, W W, Trustee	304	500	25 00
Davis, W W, Trustee	305	500	25 00
Davis, W W, Trustee	306	710	35 50
Dunseth, J D	201	130	6 50
Eakins, P A	4	10	50
Eakins, P A, Trustee	288	40	2 00
Eakins, P A, Trustee	298	50	2 50
Edgerly, Samuel	50	20	1 00
Edgerly, Samuel	59	20	1 00
Edgerly, Samuel	55	20	1 00
Edgerly, Samuel	68	20	1 00
Edgerly, Samuel	76	10	50
Edgerly, Samuel	82	10	50
Edgerly, Samuel	91	50	2 50
Edgerly, Samuel	237	100	5 00
Edgerly, Samuel	238	100	5 00
Edgerly, Samuel	239	100	5 00
Edgerly, Samuel	240	100	5 00
Edgerly, Samuel	241	100	5 00
Edgerly, Samuel	255	100	5 00
Edgerly, Samuel	256	100	5 00
Edgerly, Samuel, Trustee	281	50	2 50
Finch, J W	226	100	5 00
Finch, J W	227	100	5 00
Finch, J W	278	100	5 00
Finch, J W	229	100	5 00
Finch, J W	230	100	5 00
Finch, J W	231	100	5 00
Finch, J W	232	100	5 00
Finch, J W	233	100	5 00
Finch, J W	234	100	5 00
Finch, J W	235	100	5 00
Flood, F L	327	40	2 00
Gaius, H A	257	40	2 00
Lamar, J B	324	1000	50 00
McPhetridge, E	284	250	12 50
Moodie, G W	207	300	15 00
Newman, O W	335	186	9 30
Smith, J P	308	100	5 00
Smith, J P	309	100	5 00
Smith, J P	310	100	5 00
Smith, J P	311	100	5 00
Smith, J P	325	500	25 00
Smith, J P	326	500	25 00
Squier, David	208	60	3 00
Van Houten, J, Trustee	138	100	5 00
Van Houten, J, Trustee	190	20	1 00

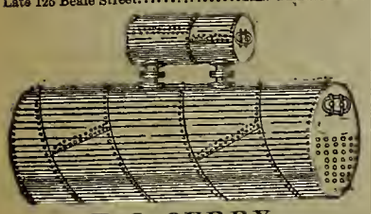
And in accordance with law, and an order of the Board of Directors, made on the 20th day of May, 1875, so many shares of each parcel of said stock as may be necessary, will be sold at public auction, at the office of the company, room 1, No. 531 California street, San Francisco, Cal., on the 2d day of August, 1875, at the hour of one o'clock P. M., of said day, to pay said delinquent assessment thereon, together with costs of advertising and expenses of sale.

WM. SMALL, Secretary.
Office—Room 1, No. 531 California street, San Francisco, California.

Iron and Machine Work.s.

San Francisco Boiler Works,

N. W. Cor. Harrison and Main.
Late 125 Beale Street.....SAN FRANCISCO.



F. I. CURRY,
Late Foreman of the Vulcan Iron Works,) Proprietor

High and Low Pressure Boilers of all Descriptions.

SOLE MANUFACTURERS OF THE CELEBRATED
SPIRAL BOILER.

SHEET IRON WORK of every description done at the Shortest Notice.
All kinds of JOBBING and REPAIRING promptly attended to. 17v25-3m

THE RISDON
Iron and Locomotive Works,

INCORPORATED.....APRIL 30, 1868.
CAPITAL.....$1,000,000.

LOCATION OF WORKS:
Corner of Beale and Howard Streets,
SAN FRANCISCO.

Manufacturers of Steam Engines, Quartz and Flour Mill Machinery, Steam Boilers (Marine, Locomotive and Stationary), Marine Engines (High and Low Pressure). All kinds of light and heavy Castings at lowest prices. Cams and Tappets, with chilled faces, guaranteed 40 per cent. more durable than ordinary iron.

Directors:

Joseph Moore, Jesse Holladay, C. E. McLane,
Wm. Norris, Wm. H. Taylor, J. B. Haggin,
James D. Walker.

WM. H. TAYLOR.....President
JOSEPH MOORE...Vice-President and Superintendent
LEWIS B. MEAD.....Secretary
24v17-qy

FULTON
Foundry and Iron Works.

HINCKLEY & CO.,
MANUFACTURERS OF
STEAM ENGINES,
Quartz, Flour and Saw Mills,
Hayes' Improved Steam Pump, Brodie's Improved Crusher, Mining Pumps, Amalgamators, and all kinds of Machinery.

N. E. corner of Tehama and Fremont streets, above Howard street, San Francisco. 3-qy

UNION IRON WORKS,
Sacramento.

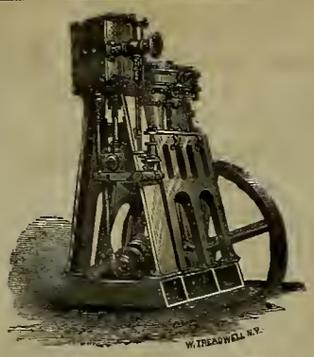
ROOT, NEILSON & CO.,
MANUFACTURERS OF
STEAM ENGINES, BOILERS,
OROSS' PATENT BOILER FEEDER AND SEDIMENT COLLECTOR
Dunbar's Patent Self-Adjusting Steam Piston
PACKING, for new and old Cylinders.
And all kinds of Mining Machinery.
Front Street, between N and O streets,
SACRAMENTO CITY.

SHEET IRON PIPE.
THE
Risdon Iron and Locomotive Works
Corner Howard and Beale Streets,

Are prepared to make SHEET IRON AND ASPHALTUM PIPE, of any size and for any pressure, and contract to lay the same where wanted, guaranteeing a perfect working pipe with the least amount of material.
Standard sizes of railroad Car Wheels, with special patterns for Mining Cars. These small wheels are made of the best Car Wheel Iron, properly chilled, and can be fitted up with the improved axle and box—introduced by this company, and guaranteed to outlast any other wheels made in this State.
☞ All kinds of Machinery made and repaired.
24v22-3m JOSEPH MOORE, Superintendent.

O. W. PRESCOTT. | W. R. ECKART.
Marysville Foundry,
MARYSVILLE, - - - - - - - - - - - - CAL.
PRESCOTT & ECKART,
Manufacturers of Quartz and Amalgamating Machinery. Hoisting Machinery, Saw and Grist Mill Irons, House Fronts Car Wheels, and Castings of every description made to order.
Steam Engines constantly on hand for sale. 9v28-1y

THOMPSON BROTHERS,
EUREKA FOUNDRY,
129 and 131 Beale street, between Mission and Howard, San Francisco.
LIGHT AND HEAVY CASTINGS,
of every description, manufactured. 2v16qr



PARKE & LACY,
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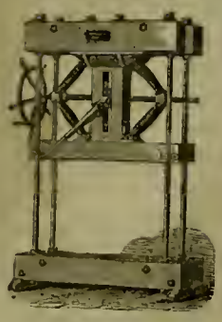

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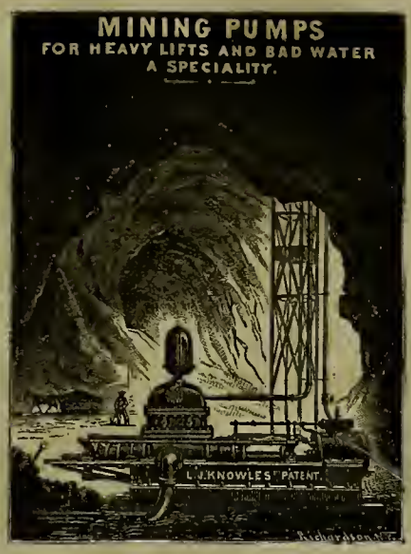

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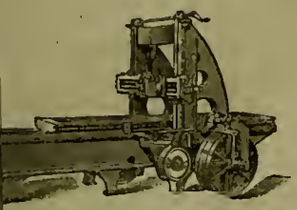

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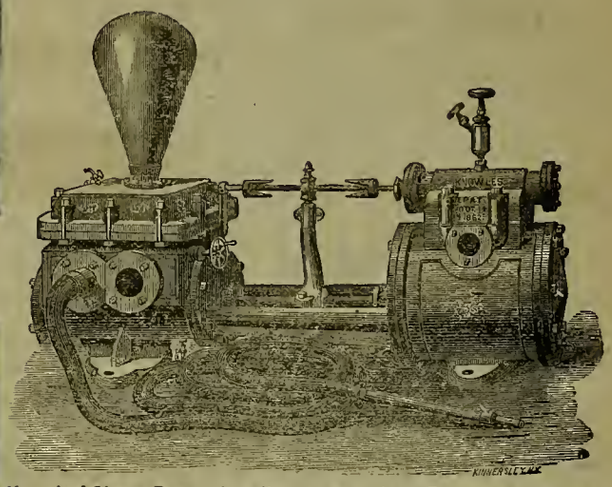

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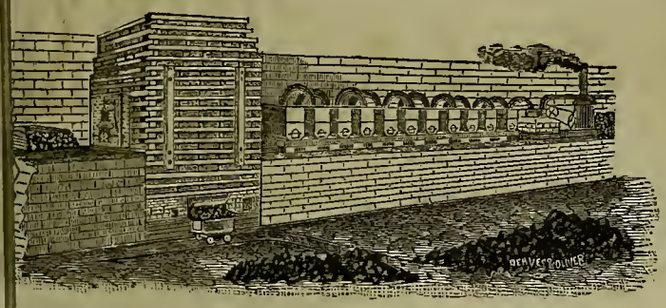

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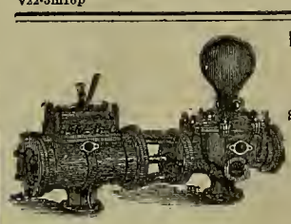

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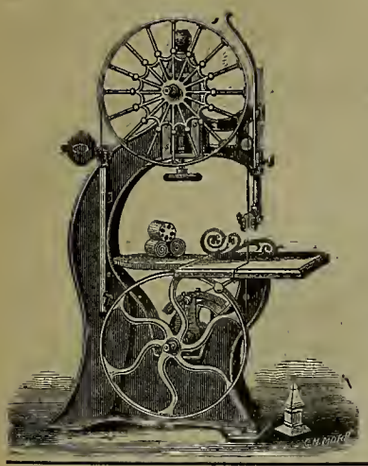

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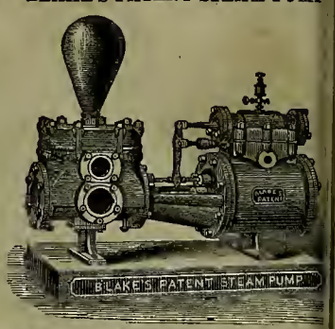

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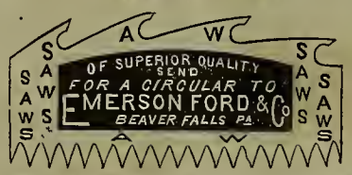

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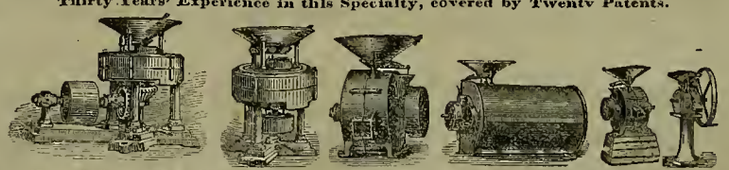

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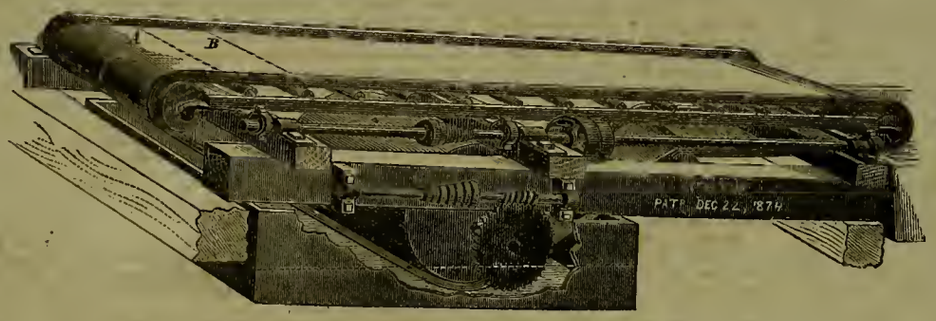
VOLUME XXX. Number 4.

A New Concentrator.

We give on this page an engraving of an improved ore concentrator, the invention of Wm. B. Frue. In this machine there is an endless belt with raised sides, to which is given a quick lateral motion, and also a slow movement up an incline of from six to twelve inches. Experience thus far teaches that a belt of rubber is to be preferred.

The ore is fed on the belt with water by a spreader, at *B*. The tailings or lighter portions pass down the belt, and are carried off at the lower end, through the box as shown. The quick lateral motion keeps the ore on the belt agitated, so as to allow the mineral or heavy parts of the ore to settle through the pulp to the surface of the belt, where it is carried up the incline over the head of the machine and into a tank of water through which the belt travels, depositing the concentrated material. The belt is forty inches wide and twenty-seven feet, eight inches in entire length. The capacity of each machine is from seven to eight tons a day, and one-half horse power is required to operate it. It needs but little water and one man can attend to six or seven machines. The price of each machine is $750.



FRUE'S IMPROVED CONCENTRATOR.

This concentrator has been brought to this coast by Mr. Adams, formerly of Silver City, Idaho, and author of a series of articles on "Hints on the Washoe Process," recently published in our columns. Mr. J. M. Adams has been making some experiments on amalgamation of the low grade ores at Silver Islet, Lake Superior, and took there for that purpose one of Stevenson's mold board pans, made at the Golden State foundry in this city. The ores run about $30 per ton, and he worked them up to eighty-five per cent. clean silver, which with his concentrations equalled ninety-three per cent., at a cost of $8.20 per ton with quicksilver at $1,50 per pound. The Frue concentrator was being tried there at the same time and its results were a little over ninety per cent., at a cost of only twenty-five cents per ton for concentrating.

Mr. Adams, seeing the efficiency of this machine, concluded to bring it to this coast, and has attained very good results on ores from Panamint district, on which he can use it in connection with the Stetefeldt furnace by crushing the ore wet instead of dry, and then passing through the furnace the concentrated material alone. This would naturally increase the capacity of the furnace and decrease the cost of working the ore, for only three or four hundred pounds would go through in place of the two thousand pounds of unconcentrated ore. The small proportion of concentrated material could easily be dried before being put into the furnace. Adams & Carter are the agents for California, Nevada and Owyhee, and may be addressed care of Edgerton, Allen & Co., No. 1 Brittain's Building, San Francisco. The inventor has been using the concentrator lately in experimenting on the tin ores in Cornwall, in which he has been quite successful. There are now twenty-four of these machines in operation at Silver Islet, Lake Superior.

At the Ophir mine the foundation sills have been laid for a new hoisting works building, which will be large enough to entirely inclose the old building, so that the new one can be finished before it will be necessary to tear down the old. The putting in of the heavy stone foundations for the new pumping machinery is making rapid progress. The erection of the new incline hoisting machinery is rapidly approaching completion, both engines being in place, and the driving, spur and balance wheels all on the driving shaft, ready for use.

In the Gould & Curry mine, on the Comstock, the great heat of the 1700-ft level still prevents any rapid or extensive operations in that quarter, although the level is gradually cooling, and in time will be pleasant as any other portion of the mine for working.

Academy of Sciences.

The regular semi-monthly meeting of the California Academy of Sciences was held on Monday evening last, Dr. Henry Gibbons, Sr., in the chair. The donations to the museum consisted principally of a number of mineral specimens and a small collection of stuffed birds. The secretary read the fourteenth of a series of papers on Pacific Coast *Lepidoptera*, by Henry Edwards.

S. C. Hastings read a characteristic paper, "On Phenomenal changes of Climate in past times."

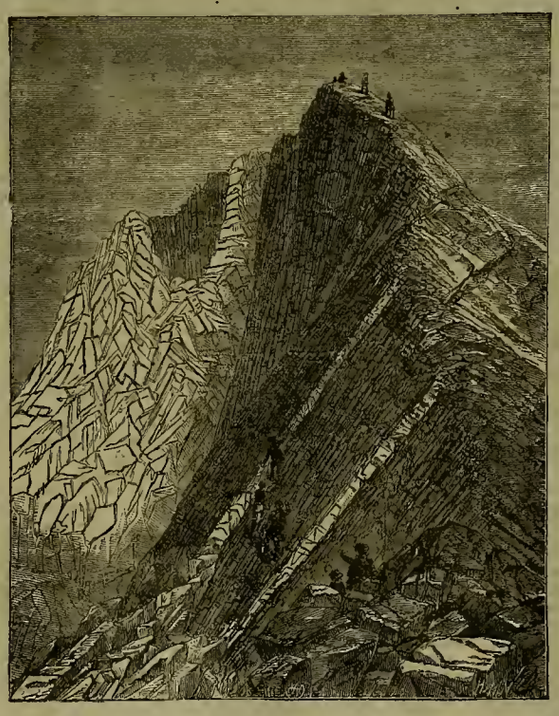
Dr. Saxe called the attention of the Academy to the discovery of another grove of big trees in this State. This grove is situated in a basin at the head waters of the San Lorenzo and Boulder creeks. One of the trees eclipses all that have been discovered on the Pacific coast. Its circumference as high as a man can reach, standing and passing a tape line around, is a few inches less than 150 feet. This is beyond the measurement of any tree in the Calaveras Grove. The hight is estimated at 160 feet, and a part of the top lying on the ground is over 100 feet in length. The other trees in the vicinity are not as large, but all are of immense girth. Dr. Saxe promised to get information more in detail from Mr. Silent, President of a flume company in that section.

In reply to a question Mr. Harford stated that Professor George Davidson, President of the Academy, was now in Naples.

Dr. Gibbons read a short memoir on Marshall Hastings, a son of S. C. Hastings, after which the Academy adjourned.

Italian Mountain.

The peak illustrated on this page is a member of the great Sawatch range of mountains in Colorado, and is thus described in "Hayden's Geological Survey:" This peak is literally filled with dikes, which have so changed the contiguous rocks that they present a great variety of structure and color; and hence the name. To the west is a vast group of sharp, jagged peaks and crests, saw-like, with stratified, cone-shaped pyramids, some red, others dark ashen brown, or maroon color. The general level of the summit of the peaks is upward of 13,000 and perhaps 14,000 feet. To the east we see with great distinctness the valley of the Upper Gunnison, and on the west of the range the ridges of stratified rock inclining from it. We behold thousands of feet of stratified rocks, tilted in every direction by a great number of local upthrusts of the igneous rocks; so that we see strata of different ages, sometimes on the summits of the highest peaks, over 14,000 feet above the sea."



ITALIAN MOUNTAIN.

Working Ores Dry.

There is evidently a strong sentiment beginning to develop itself among a great portion of intelligent and experienced miners that to procure the proper percentage of the precious metals, they must be manipulated in some other manner than that so generally in use, especially in California mining.

All ores cannot be handled in the same way, for while one class should pass through the dry reduction treatment, then by fire, to render it the most profitable for chlorination or lixiviation, another class may be reduced dry by ordinary battery process, and treated in any of the various kinds of amalgamators. Another class of ore may, previous to an attempt to amalgamate, be found more profitable to have passed through the White's, Bruckner or Stetefeldt furnace, and to do this it must necessarily be reduced dry.

There are various modes of treating ores, and whether by furnaces, chlorination, lixiviation, pans, the Paul barrel process, or by whatever mode it may be, the ore should first be reduced dry; you then handle it as desired, and let it pass away when you get ready to have it run to waste.

To this mode, the only objection which we hear offered is dust; this, to us, is a senseless excuse, if it is acknowledged that a much larger percentage of the precious metals can be saved by the dry reduction. Have not our mill men and mechanics skill enough to do away with this simple obstacle, when they possess so much genius in inventing machines? We think so, and it is probable that before long a general sentiment will be in favor of an entire change from the present mode to the handling of ores dry.

We do not advocate any system, but we do say to the miners of our State to drop their prejudices against dry working and investigate, but stop, by some means, this waste of the precious metals, which for twenty-five years has only been building monuments of failures in every county of the State.

Copper in Liverpool.—James Lewis & Son's monthly report on ores and metals says that the copper market remained very steady during the first half of June, but about the middle of the month rumors began to be circulated of commercial difficulties, which went on increasing, and were followed by a long list of heavy failures. They were, however, restricted to a particular business, and although copper has partaken of the general depression it has remained steady, there having been only one or two forced sales as low as £81 5s and £81 10s, by parties anxious to realize speculative lots. The sales during June were about 2,000 tons of bars at £81 5s to £83 10s, according to brand. Quotations on 1st inst. were: Bars, £81 10s to £83 10s, according to brand; copper ore, 16s 3d to 16s 6d, and regulus, 16s 9d to 17s per unit. Stocks of west coast produce are estimated at 14,312 tons fine, against 12,756 tons on June 1st

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The Ophir mine is now yielding 300 tons of ore per day, and it is the intention to continue this amount for about a week longer, in order to get a six weeks' supply of ore on hand for the mills, when it is the intention to shut down the mine for the purpose of repairing a portion of the shaft and putting in a new gallows frame.

In the California mine, on the 1400-ft level, the north drift from cross-cut No. 3 is being rapidly advanced to connect with the Ophir mine on the same level. This connection when completed will vastly benefit the ventilation of both mines, and greatly aid in the extraction of the vast bodies of California ore.

Antimony is selling in London at £58 to £60 per ton for French Star Regulus.

CORRESPONDENCE.

Hydraulic Gold Mining.

Before procseding to the discussion of the process of this importent brench of industry, it might not he out of place to state my stend-point, viz: my idea of the formation of the old chennels and the grevel hanks which now constitute our hydraulic mines.

In the Octoher numher of the *Overland Monthly* for the year 1868, I think, wes puhlished an article from the pen of John S. Hittell, entitled "The Dead Rivers of California." I contemplated at that time, answering pnblicly some of its many, to me, erroneous statements and falss theories. I lost sight of the article, and as time pest in the daily routine of husiness, my purpose gradually faded, until revived a short time ago hy a newspaper article, apparently plegerized from Hittell's.

My principel object, however, is not so mnch to edvance my own theory of the formations of the old channels, or "Dead Rivers," and the censes which filled them with gravel and gold, as to give a succinct statement of the progress of mining therein at this plece and vicinity.

But, first, thet my premise mny he understood, and second, that this letter mey he of interest to the general reader, I propose giving my theory of the formetion of the

Old Channels,

As they are familiarly celled by the miuers, and the deep gravel heds whioh fill and overlie them.

The reeder will please hear in mind that I write dogmatically and generelize solely for the sake of hrevity.

The great auriferous helt of California is sitnate npon the western slope of the Sierra Nevada. The bed rock of this helt consists prin cipally of trap, serpentine and talcose slate. Its average widtn may be estimated at forty miles, and it extends from Fresno county on the sonth to the southwest corner of Oregon on the north, a distance of several hundred miles; narrow at the south, it gradually widens to the northward, till it is lost heneath the waters of the Pacific.

A line drawn through its center would run north northwest and south sontheast, parallel with the western snmmit of the Sierra Nevada, forty miles a to the Westward thereof, at an average altitude of ahout three thousand feet above the sea.

Within this helt are three distinct talcose slete atrata; the western or lower, the middle, and the eastern or npper, whioh are separated hy strata of other rock.

The rock separating the lower and middle slate is highly metemorphic, and is not distinct nor continuous aloug the whole line of the auriferous helt.

Of this lower slate atratnm I have nothing more to say in this letter, I have only to do with the middle and upper strata, which are distinctly separated hy strata of trap and serpentine, the latter skirting the upper slate and the former the middle slate. These different strate rnn parallel, so to speak, to each other, lengthwise of the helt. The slate strata are largely composed of telc and ore quartz hearing, containing all the principal gold hearing qnartz ledges and veins, from which, in pert, the gravel and gold filling the old channels came. I say in part, for there is reason to believe that not only the precious metals, hut quartz also, were, at one time suspended or held in a diffused, vaporous state, and that during the epooh of ledge formation, in the cracks and fissurea of the bedrock were, hy the slow action of chemical process in nature's great lahoratory, precipitated, and, by the natural law of crystalization, formed not only the ledges and veins, but also overspread the entire surface of this region of the country with a deep inorustation of gold hearing quartz.

These old cheunels are remnants of ancient and extinct river systems, of which there are three or fonr very distinct and eeparate. I shall write of only one of them, known among miners as the Big Blue. It occupies the central portion of the great auriferous belt, from Calaveras county on the sonth to Plumas connty on the north, and drained a country two hundred miles and possibly more in length. Mr. Hittell traced the Big Blue from Sierra conuty, southward to Forest hill in Placer couuty, a distance of about sixty miles, and erroneously assumed it to have been once a large and powerful river flowing to the southward, and imagined its source to have been far to the northeast in Montana or Idaho. He correctly assumed that this ancient stream flowed in all its pristine majesty and heauty, prior to the existence of the Sierra Nevada as a formidahle mountain chaiu. It is unreasonahle to suppose that a river of any capacity would flow, for even sixty miles, along the side of a high mountain range, parallel with the bend of its summit, at an elevation of from three to five thousand feet above the sea.

The land occupied hy the Big Blue and its two main trihutaries was, prohehly, no higher above the levsl of the ocean at ths time their channels hegan acively to fill with gravel, than the valleys of the Sacramento and San Joaquin are at present; Sacramento city heing hut sixty-five feet in altitude. These two lerge valleys were then a part of the ocean, end the coest range of mounteins cropped ont of it a long line of island reefs.

Our present river system, though larger, is copied from the ancient one, we now heve the Secramento from the north, and the San Joaquin from the south; their waters meet and flow into the ocenn through the Golden Gate. All of their principal tributaries take rise in the mounteins to the eastward.

The Big Blne hed its main north and sonth hrauches which took their rise, as did also their tributaries, in what was then the rising hilly upland to the eestward; they ran down npon, end for meny miles along the soft rock of the upper slate, thence across the intervening, nougold producing strata of serpentine and trap—which latter streta average ahout seven miles in width—to the middle strata, thence, generally along this slete stratum to their confluence, a short distence sonth of Scott's flat, in Nevada county, forming the Big Blue, which runs thence for eight or nine miles southwesterly to Buena Vista slide; thence north of Gress Vallep to Alta hill; down north of Rongh and Ready to Mooney's flet, Smartsville and Timhuctoo, emptying thence into the then oceen not far to the west of the letter plece.

The south Blne or mein south fork crossed the serpentine and trap streta, from the npper to the middle slate in the neighborhood of Newtown, in El Doredo county; it passed Placerville to Gold Hill, Memaluke hill, Bald mountein, Peckham hill, Yankee Jim's, Wisconsin hill, Iowa and Indiana hil s e distence of meny miles along the middle slate; at the latter plece it turned to the eastward npon the trap stratum and followed it to Dutch flat. Let the reeder bear in mind this digression of the stream from the slate at this point, for it hes to do with explenatious hereafter—thence it bore to the westward, along where is now the canon of Beer river, to Little York, You Bet and Red Dog; thence ahout half way to Hunt's hill, when it made a sherp horseshoe hend southwesterly, along down the present line of the canon of Green Horn river to the western edge of the slate, where it struck a hard stratum of syenite, faced with a narrow stratum of trap, which caused it to cnt an acute (if I may so speek of a running stream) angle, and following the western edge of the slate, ran north to its junction with the north Blue or main north fork.

Again, we trace a large trihutary of the south Blue, rnnning to the northward along the npper slate in El Dorado county, to the east of Volcanoville, it crossed the serpentine and trap, striking the middle slate at Forest hill, and another ran hy Michigan blnffs; these nnited with the south Blue before it reached Indiana hill.

Still farther to the east, and up the mounteins, we find channels of old streams at Dead Wood and Last Chence, which ran down to and united upon the npper slate, flowing northward to Damascus, taence to Alta, on the railroad, where it was joined hy a large stream from the northeast; thence to Dutch Flat and debouched into the sonth Blue at Thompson's hill—of which hereafter. The waters flowing in this trihutary channel caused the south Blue, at this jnnctnre to hend its courss to the westward and forced it back to the middle slate at Little York. One other large tributary is worthy of mention; it dreined what is now the eastern central portion of Nevada county, and is called the Quaker hill and Hunt's hill chaunel. This stream nnited with the sonth Blue, just south of Hunt's hill, causing it to turn down where now rnns Green Horn, as before mentioned. All these streams were, of course, supplied with numerons tributaries, and all their watere flowed in the south Blue to the northward.

The north Blue, from the highlands of Plumas, came down along the upper slate by Downeyville, Forest City, Allegeny and Chip's Flat to Snow point, in Nevada county; thence down to North Bloomfield, crossing the serpentine and trap to Kenebeck hill; thence along the middle slate a south by east course to Blue Tent, Scott's Flat and the Junction. It is poeaihle that the main junction was between Hunt's hill end Red Dog, where I have loceted the junction of the Hunt'a hill channel with the sonth Blue, but I think not; time will develop the truth regarding it. The north Blue also had its nnmerous tributaries aud drained a large area of country.

Another stream of considerahle maguitude ran down through Yuha county, by Camptonville, to North San Juan and French Corral, and was received by the Big Blue at or near Mooney's Flat, forcing the mein river southward from thence to Smartsville.

Thns I have set forth the true theory of the formation of the ancient channels which underlie, are filled with. and in many places are deeply buried beneath the auriferous earth aud gravel which constitntes our hydraulio and drift mines.

These ancient river chaunels hecame filled with auriferous earth, gravel and debris during the slow upheaval of the land. This rise was most rapid to the eastward, along the line of the summit of the Sierra Nevada, and required a great many thousand years for its accomplishment, for if we allow a rise of two and one half feet every century, (a very high estimate if we allow no interval of repose,) it would require four thousand centuries, or four hundred thousand years to elevate the land ten thousand feet and plaoe the summit where it stands to-dey; and it has once heen more elevated than now.

As the land arose to the eastward, the cnrrents of all the trihuteries to the south and north Blue, and even theirs, from their sonrces for some miles along their courses was accelerated from century to century, and the lend reeching gradually into the higher, consequently the colder regions of atmosphere, condensed continuelly more and more moisture which fell es snow and rain, these increasing the volume of water which, elone would increase the rapidity of the cnrrents; their channels wore deeper, the qnartz ledges and veins were cut down; slides occurred on all sides; trees slid into the streams; the crustaceous quartz overlying the surface came tumhling down, and the entire surface of the land hecame in time dennded. This mass wes deposited in these old streams, washed away, re-dsposited and re-weshed at eech snceeeding freshet, over and over again and again, till it fonnd its final plece in the Big Blue, the north Blue and the sonth Blne, whose currents were too sluggish to carry it elong to the ocean. It blocked np these streams, (and set hack into the months of the trihuteries) spreading out to a greet width along nearly their entire course, but principelly along the middle slate stratum.

When this depositure was overtaken by the volcenic epoch, the Dutch Flat gravel heds were three or fonr hundred feet thicker then when first discovered hy the miner, and such was the cass all along the middle slete.

Subsequent to the deposition of this enormous mass of earth, gravel and debris, the most extensive volcenic ection known took place. Great leva fields extended from sonthern central Oregon to Tejon Pess; from the summit of the Sierra Nevade to the valleys of the Sacramento and the San Joaquin, end eastward throughout the Great Basin. During this long era the leva from hundreds of volcanoes, or creters, poured over ths land, filled the old ohannels left nnfilled hy gravel, covered the latteral mountein ridges to n level; flowed over aud covered up the ancient gravel deposits, of which, those now lying along and to the east of the upper slate stretum, are mostly still covered hy it, in pleces to the depth of a thousand feet or more.

During this epoch the ancient rivers were ohliterated, aod, it is possible the land was so heated es to vaporize and drive away all moisture, that uo stream of any magnitude existed npon this desert waste.

Afterwards the present river system had its hirth ou the surface of the lava, followed hy a long period of glacial action, during which the lava was to a great extent worn away, and long lines of the old gravel deposit laid hare, the major part of which waa swept along hy the ice and rivers into the valleys to the west.

I have thns briefly set forth the true theory of the formation of our ancient channels and our anriferous gravel beds. I am aware that I open a wide field for discussion, and raise a gateway for a flood of interrogatories from hoth the learned and the unlearned; yet I suhmit the foregoing, confident that I can maintain my position with faots, sound reason and fair logic, and if the most skeptical require ocoular proof, let them follow these streams for miles beneath the lava npon these mountains, trace them across these deep gorges and canons and satisfy themselves. It wonld he easier for me to trace the ohaunels thau to satisfy all, or even, perohance, a majority of your patrons with the pen.

C. J. Brown.

Dutch Flat, June 22d, 1875.

(To be Continued.)

The Work of Children in French Mines.—The decree of May 12th, regulating the honrs of work, etc. of children in mines, provides that the duration of actnal work hy boys twelve to sixteen years old in the nndergronnd workings of mines, opeu workings, and quarries, shall not exceed eight honrs out of the twenty-four, broken hy rest of at least an hour. Children from twelve to sixteen may not he employed in miuing work proper, snch as getting (*abatage*), horing holes, timhering the workings, etc. They can only he employed in aorting and loading the ore, in managing the tubs, and drawing them to the eye, in attending to and working the air doors, in turning the faus worked by hand, and other such work not too heavy for their strength. Children employed in turning the ventilators may not be eo engaged for more than four hours, broken hy a rest of at least half an hour. As a transitory measure, in those mines in which the attendance is now fixed at ten hours of aotual work, children may continue to be engaged during the same time and under the conditions fixed in Article 2, hut only np to the 1st of January, 1878, from which date children may only work eight hours out of the twenty-four, as above stated.

Work is progressing satisfactorily on the Sonoma and Mariu railroad. About seventy men are employed on the tuunel, and the same number in grading along the marsh.

The Marysville *Appeal* of last week says tbat the California Paoifio railroad is rebnilt to Sutter stetion, and that cars were to he put on immediately.

Over 2,500 tons of iron have heen shipped through Wilmington, during the past month, for the Southern Pacific railroad.

Water for Hoisting.

The Virginia *Chronicle* says: A new water engine is abont to he introduced into the Ophir works, which will prohably effect a radical change in the method of hoisting. The engine itself is an English invention, and the novelty consists in its application. J. F. Thompson, the well known mester machinist of this city, and Mr. Moore, of the Risdon iron works, San Francisco, are the gentlemen who first conceived the idea of applying the engine to hoisting machinery, and the work of erecting the machinery will he nnder their supervision.

The Water Engines

Are two very small affairs nsed in conneotion with the main engines. Two points will project two feet over the pillow blocks of the main shaft and at these points the weter engines are situated. These engines, run hy a great pressure of water, exert an enormous power, and ect so as to exactly halance the weight of the cage and cable end entirely relieve the steam engins of their weight. As the onge descends the shaft, the movement of the main engine acts upon the small ones so as to convert them into pnmps, which force the water beck to the reservoir above. As the cage is ahout to be drewn np, the reaction of the immense weight of water upon the small engines is of sufficient force to work the reel, while the hig engine does nothing.

The Same Water is Used

Over and over egain, and the saving of wood for the steam engine is ahont $50 or $60 a day. The work of putting the new machinery in plece is now progressing.

Mr. Sharon has ordered the same kind of engine for the nse of the Palace hotel, and expects to obtain such a power that he will let it out to parties in his vicinity.

Flying Soundings.—William Thompson, in n letter to the London *Times*, describes an apparetus for taking flying soundings, which, he says, if used on hoard the *Schiller* after her speed bad been reduced, would have enahled her "to feel her way around the Scilly islands without ever coming nearer than the fifty fathom line, which, at its nearest, is four miles from the Retarriere ledges." He describes the apperatus as follows: The apparatus consists in an oval weight of thirty ponnds (lead or iron, hut lead slightly to he preferred), attached by half a fathom of hemp cord to a ring or "thimble," properly secured on one end of a length of 200 fathoms of pianoforte wire coiled on an exceedingly light wheel of thin galvanized sheet iron of about a foot diameter, monnted on a framework fixed in a convenient position on the ship's teffrail. The wheel has a secoud rim, with a simple kind of friction hrake, hy which a constant force of five pounds is applied to it when the wire is running out. There is also attached to the same sbaft a ratchet wheel end pawl, which can be thrown out of gear or into gear at pleasure. A counter to count np two hundred turns completes the apparatus. To take a sounding hy it let the weight hang by a short cord direct from the wheel and clear of the teffreil, lift the pawl and throw it out of gear, holding the wheel hy hand till reedy to hegin, then let go the rim and stand hy. The momeut the wheel is heerd to go slower ley hold of the rim with hoth hands (protected hy a piece of canvas or thick leather gloves) and stop it; reed the connter, and the sounding is complete. So far one man only has had anything to do. Two men, working on handles applied for the purpose, heul in the wire, and recover the lead easily and speedily.

The numher of bones in the frame-work of the human body is 206,—108 of which are in the feet and hands, there heing in each twenty-seven. The quantity of blood in adults is on an average thirty pounds, which passes through the heert once in four minutes. Only one-tenth of the human body is eolid matter. A dead body weighing 120 pounds was dried in an oven by way of experiment, till all moisture wes expelled, when its weight was found to he hut twelve ponnds. Egyptian mnmmies are bodies thoronghly dried anu nsually weigh ahout seven pounds. The lnngs of an adnlt ordinarily inhale forty cnbic inches of air at every inspiration, and if we breathe twenty times in a minnte, the quantity of air consnmed in thet period will he 800 cnhic inches, or 48,000 inches en honr, and 1,152,000 inches in a day, which is eqnal to 86 hogsheads.

Hardening Small Tools.—It is seid that the engravers and watchmakers of Germany harden their tools in sealing wax. The tool is heated to whiteness and plunged into the wax, withdrawn after an instant, and plunged in again, the procese heing repeated nntil the steel is too cold to enter the wax. The steel is said to hecome, after thia procese, almost as hard as the diamond, and when touched with a little oil or turpentine the tools are excellent for eugraving, end also for piercing the hardest metals. English engravers often use soap or white wax for the same purpose.

The Santa Cruz *Sentinel* chrouicles the arrival of the first locomotive for the Felton railroad.

The San Fernando tunnel is to be 6,800 feet long.

A soap factory is to he estahlished at Alvarado.

Scientific Progress.

The Motive Power of Light.

A correspondent of the *Scientific American* calls attention to the fact that the late experiments of Mr. Crookes, proving the motive power of sun light are not the first successful experiments of the kind which have been made and put on record. "The Practical Astronomer," by Thos. L. Dick, published in 1848, contains the following paragraph in regard to this matter:

Light, though extremely minute, is supposed to have a certain degree of force momentum. In order to prove this, the late ingenious Mr. Mitchell contrived the following experiment: He constructed a small vane in the form of a common weathercock, of a very thin plate of copper, about an inch square, and attached to one of the finest harpsicord wires about ten inches long, and nicely balanced at the other end of the wire by a grain of very small shot. The instrument had also fixed to it in the middle, at right angles to the length of the wire, and in a horizontal direction, a small bit of a very slender sewing needle, about half an inch long, which was made magnetical. In this state the whole instrument might weigh about ten grains. The vane was supported in the manner of the needle in the mariner's compass, so that it it could turn with ease; and to prevent its being affected by the vibrations of the air, it was enclosed in a glass case or box. The rays of the sun were then thrown upon the broad part of the vane, or copper plate, from a concave mirror of about two feet diameter, which, passing through the front glass of the box, were collected into the focus of the mirror upon the copper plate. In consequence of this, the plate began to move with slow motion of about an inch in a second of time, till it had moved through a space of about two inches and a half, when it struck against the back of the box. The mirror being moved, the instrument returned to its former situation; and the rays of the sun being again thrown upon it, it again began to move, and struck against the back of the box as before. This was repeated three or four times with the same success.

Combustion and Decay.—Decay of inflammable substances, when exposed to the action of atmospheric oxygen, is in fact a very slow combustion, which by Liebig has been called *Eremacausis*. Thus for example a piece of wood which, when burned, would produce a rise of temperature of 1,000 deg., for say one minute, will, when slowly decaying during say 1 000 days, evolve the same 1,000 deg. of heat; but being diffused over the length of time of 1,000 days will only evolve one deg. in twenty-four hours, or 1,440th of a deg. per minute, a quantity of heat utterly inappreciable, as it is constantly lost in the surrounding atmosphere. Every housekeeper knows that decayed wood is next to worthless for fuel, and the reason is simply that the heat obtained when sound wood combines rapidly with oxygen was lost during the slow combustion or decay. It is the same with coal when exposed to the access of the air. Under a shed it loses, according to the experiments of Varrenstrass, twenty-five per cent. of gas by oxidation and ten per cent. of the heat giving power, while when exposed without the protection of any shed, so much of the gaseous constituents are oxidized as to cause the coal to lose one-third of its original weight and more than one-half of its heating power.

A New Use for May Bugs.—Dr. Chevreuse, of Switzerland, announces a new and curious utilization of the may bug or cockchafer. It consists in decapitating the living insect one hour after it has fed, when, on opening the stomach, several drops of a colored liquid are obtained, which varies with the nature of the plant fed upon. This substance has been used as a water color for painting with considerable success, Dr. Chevreuse having formed a scale of fourtsen different tones or shades. It is a permanent pigment, unalternble by air or light, and imparts this quality, it is stated, to other paints with which it may be mixed.

Another Ancient City to be Uncovered.—The ancient city of Cætobriga, in Portugal, submerged by the sea with all its inhabitants in the fifth century of our era, is to be disentombed. The sea has within some years receded, and left the buildings covered with sand, but free from its irruptions. The city was first Phœnician, then Carthagenian, then Roman, and excavation is expected to reveal remains contemporary with Dido.

The New Discovery in Light.—A New York commentator on the wonderful experiment proving that light has mechanical power, asks: "But how long this force will be before it finds its Kepler and its Newton, the future will show. Why in the ranks of our American astronomers should we not look for the expected teacher to rise up?"

Plates or bars of soft metal, when electroplated, are now rolled out into sheets, and a novel marbleized, or frosted surface, is obtained by the breaking of the skin of plating into flakes and blotches. The process is patented, and designed to be applied to domestic ware.

Curious Effects Produced by Lightning.

Figures produced on the human body by lightning strokes are discussed by Dr. Tomlinson in *Nature*, with particular reference to the interesting account of the lightning strokes received by Mr. D. Pidgeon, son, and wife, given in a late number of the Paper. Dr. Tomlinson characterizes the account as particularly valuable because it is unaccompanied by any theory. It was formerly supposed that ramified marks were the pictures of some near or distant tree, photographed upon the bodies of men or animals. Dr. Tomlinson cites a number of instances where these marks have been discovered, and in the accounts of which they are attributed to this sort of electrical photographing. He, however, describes experiments which were performed by him, an account of which was presented to the British Association at Manchester, 1861, which demonstrate that these tree-like figures are not the portraits of trees, but are simply the imprints of the "fiery hand" of the lightning itself. He has produced these figures upon ground glass by passing over them the contents of highly charged Leyden jars. The plates he employed were first put into a strong solution of soap and wiped dry with a duster. The plates should be about four inches square, and should be held by the corner against the knob of a small charged jar, and with one knob of the discharging rod resting against the outer coating. The other should be brought up to the knob of the jar with the glass between. The spark will then pass over the surface of the glass, turn over its edge, and thus arrive at the knob of the rod. Nothing will be visible upon the plate until it is breathed upon, and then the diffused breath settles in the form of minute dew on those parts of the soapy film that have not been burned off by the electricity, while on the lines that have been burned off or made chemically clean, the moisture condenses in watery lines, bringing out the trunk, branches, and minute spray of the dendritic figure in a very perfect manner. The discharge sometimes exhibits bifurcations and sometimes even trifurcations. The main trunk is evidently a hollow tube, as in vitrified masses known as fulgurites, where lightning plows through a sandy soil. Should the plate be too thick, the main discharge may not pass, in which case the plate represents spray only. It is hence inferred that the spray precedes the discharge, and acts as a feeler for the line of least resistance. Dr. Tomlinson says it is an old observation among sailors that before a ship is struck, every one on board feels as if cobwebs were being drawn over his face.

Aphorisms from the Metallurgy of Iron.—P. Tunner calls attention to the physical and chemical changes undergone by iron. Iron wire, which is very brittle when drawn, becomes very much less so if allowed to remain undisturbed for a few days. Iron loses sulphur in the course of years. Gray pig-iron is produced with less fuel, in charcoal furnaces, when a siliceous charge is prepared than when a basic one is used, the SiO^2 acting as a substitute for C. In coke furnaces, on the contrary, where the greater part of the S is carried off in the slag as CaS, basic charges are to be preferred to siliceous ones, as the S is more powerful in producing white iron than the SiO^2 gray. When containing Si, steel is not rendered more brittle by the presence of Mn; on the contrary, its wielding power and tensile strength are increased. Mn is a very active agent in separating S from iron. Mn promotes the absorption of C by iron, but as chemically combined C. In order to promote the reduction of Mn in a blast-furnace, this should work hot and with a basic charge to unite with free SiO^2. The amount of P which is fatal to the use of an iron, depends upon the manner in which the latter is manufactured and treated.

Powder Mill Explosions.—A correspondent of the *Scientific American* offers the following suggestions, which are well worth a careful consideration, and, if possible, verification: "When a powder mill explodes, the men at work are unable to explain its cause; this leads me to think that such calamities may be caused by electricity. At all events it is a well known fact that persons dressed in woolen clothing for the body and leather shoes for the feet can, when the air is dry, by moving and twisting their bodies so their clothing will rub against them, produce from their finger ends a spark of electricity sufficient to ignite a gas jet. Can it be that the men who work in powder mills, dressed as above described, in preparing for their work, create so much electricity in their bodies that, when their hands come in proximity with any metal, a spark is given off, which, even if insufficient in tension to explode the powder, may ignite some inflammable gas generated from the chemicals? The powder is exploded, the mill goes up, and the people cry 'spontaneous combustion.'"

A New Idea in Telegraphy.—Telegrams, by a device founded on the idea of the Jacquard loom, may now be committed to a roll of paper, punched with holes instead of letters, and dispatched automatically. The punched roll delivers its message to the instrument without attendance, and the message is printed at the other end of the line at the same time. The advantage claimed for this system is a gain of time, and the liberty to send messages when the line is in the most favorable condition without the assistance of the operator.

Mechanical Progress.

The Burning of Wet Fuel.

Every one knows that blacksmiths burn wet coal dust, and in this way obtain a great heat; but every one does not know that in Northern Germany and Holland almost everybody burns wet coal in the stoves used for heating rooms, experience proving the advantage of this, as by wetting the particular kind of coal dust used there, it takes together in a cake, and the loss of heat by the evaporation of the water is more than compensated for by the solid form the pulverized fuel obtains in consequence of this evaporation. The semi-bituminous coal of this kind comes chiefly from the rich coal mines in Rhenish Prussia, near the river Rahr, one of the tributaries of the Rhine. Similar to coarse sand, with here and there some pebbles, this coal is found in the trade in the pulverulent form, with very few solid pieces, as it has a tendency to crumble into powder. This powdered coal is almost unfit to be burned when dry, as it falls down heavily between the burning parts, closes all openings, and thus smothers the draft, while a large portion falls through the grate unburned.

In localities where this coal is abundant, it is used wet under steam boilers. Of course its use requires experienced hands, so as to keep up the steam, the principal point being to feed the surface of the grate in sections, and not to cover the whole burning surface simultaneously with fresh wet fuel.

There are, however, instances where other kinds of wet fuel may be used with advantage, such as spent tan or sawdust. This has been proved within a few years, thanks to the skill of the firemen or stokers. The furnaces used for this purpose differ from the ordinary ones only in having a brick arch turned above the grates; in others having cone grates with special arrangement and proportions of air space; and with excellent results in a furnace having an overhead brick arch, with a grate so proportioned that a considerable amount of fuel could fall into the ash pit and burn there, and the separate ovens, two or more in number, so arranged that the products of active combustion in one furnace should be mingled *en route* to the boilers, with the products of distillation and with moisture expelled from the fuel, in a similar adjacent oven or furnace, which fuel was at the same time drying under the heat radiated from the furnace walls and arch, and received from the fire in the ash pit, thus dessicating preparatory to subsequent combustion. The latter requisite of preliminary dessication, is secured also by a system of alternate firing of the separate fuel holes in the same oven.

The ordinary furnace used for our ordinary dry coal or wood, and for the wet pulverulent German coal, is unfit for this kind of fuel, as when it is placed on a fire the low dry portions are burned up before there is time to make the upper wet portions dry enough to become combustible.

Withdrawing the grates from under the boiler, and securing a reservoir and radiator of heat by throwing over them a brick arch gives a form of furnace known either as a Morrison or a Crockett furnace, in which wet fuel has been burned with partial success; and when the grates are so set that some of the fuel may fall into the ash pit as it dries, and there burn, the conditions become those of the second case to be described.

Prof. Thurston, of the Stevens Institute, Hoboken, N. J., recently read a paper before the American Society of Civil Engineers, in which he gave an account of his experiments in regard to the efficiency of this fuel when used on a large scale. The first example of a furnace burning wet tan, of which the efficiency was determined by him, was of the kind known as the Thompson furnace, which embodies all the favorable conditions described in the preceding paragraph.—*Manufacturer and Builder.*

Iron Manufacture.—The history of the growth of the iron manufacture in the United States within the last fifty years exhibits a remarkable progress. From a production of 54,000 tons in 1810, it had become 165,000 tons in 1830, 347,000 tons in 1840, and 600,000 tons in in 1850, as near as can be estimated. In 1860, it had reached 919,870; in 1870, 1,865,000; and in 1872, 2,880,070 tons; while the diminished production of 1873, 2,695,434 tons, shows already the effect of the depression under which the iron interest of the country still suffers. Of the production of 1873, very nearly one-half was made in Penasylvania, and not less than 1,249,673 tons with anthracite, while the total amount of charcoal-made pig iron was only 524,127 tons, to which are to be added 50,000 tons of malleable iron made by the direct process in biomaries. The importation of foreign iron and steel for 1872, was 795,655 tons; for 1873, 371,164 tons; and for 1874, less than 200,000 tons. From the figures for 1872 and 1873, we may conclude that the consumption in the United States was then equal to about 3,500,000 tons of iron yearly.—*Harper's Magazine for June.*

A western railroad is now paying $120, gold coin, per ton for English steel rails, in fulfillment of an old contract. The price of American steel rails is now $75. The former figure was the price of English rails before American competition, born and nurtured by protective duties, brought the price down.

Wrought Iron Philosophically Considered.

Dr. Anderson, in his lecture on "Tools" lately delivered at Manchester, England, said: When we think of any sort of material beyond the working treatment of their mechanical properties, we seem to be in another world. Take, for example, a piece of common wrought iron. It seems to us as of the earth earthy, but if we are closely questioned in regard to the reason for its various properties, we find that we scarcely know anything. Tracing it from the ore through its various stages until it is in the hands of the smith is comparatively easy. We know the natural law that governs the elasticity, the limit of its elasticity, its ultimate strength; that it can be welded; that it is ductile, and can be drawn out into a fine wire; that it is malleable, and can be spread out into a sheet, or worked round from the sheet into a goblet, and may be gathered back again, if by so doing it served any useful purpose; but when we think of the marvellous changes which have taken place amongst its molecules during the operation, we are lost in wonderland. To many minds the piece of cold iron seems to be a solid; under the pressure of the testing machine it is shown to be an unstable fluid. When the smith has the misfortune to leave a piece too long in the fire it vanishes; it has found evil companions, and gone off under an assumed name and a new character. When a piece of iron is broken and carefully examined under a microscope, we can see that it is composed of fine crystals; but these crystals, we are told, are composed of innumerable molecules, which are not to be seen by the microscope, being smaller than the human mind can imagine; still, the smith feels himself under their influence. In homely words he speaks of the iron being "red-short" or "cold-short," without thinking that he is on the threshold of some of the impenetrable secrets of nature. The steel maker can take advantage of the molecular properties. With heat he can push them asunder and infuse amongst them the subtle vapor of carbon, and the iron becomes steel, highly improved in most of its mechanical properties, and with an increase of strength and elasticity. It may be inferred that each iron molecule is a little world in itself, surrounded with a thin wrapping of infinite space, no single molecule being in actual contact with any other molecule. We have reached the limit of sub-division, so far as the engineer dare venture. The investigating philosopher, however, ventures much further with his speculations; he tries vainly to penetrate into the supposed ultimate atoms of matter of which the molecules are composed, but further we need not follow. Suffice to say that a piece of common wrought iron is altogether a mystery, and teaches man the lesson of humility.

Ericsson's Solar Engine.

The grand way in which machinery of human invention supplements the beneficence of the Almighty Maker is seen throughout history in the outcoming, from time to time, of some new and vast discovery for utilizing some hitherto useless material. Loadstone, steam, gas, etc., were not new elements, but by new applications of them, the globe was circumnavigated, enginery equal to the manual strength of the human race was created, and night was almost abolished. One of the gravest debates of late years in the British Parliament was had upon scientific reports of the probable time when coal would be exhausted in Britain. So, much trouble has been borrowed from the reflection that increase of numbers is so rapid and the habitable parts of the planet so small. But, if not literally, yet substantially, the old woman's answer is good, that when the known world is full, a fresh Columbus will discover a new one. Thus, Captain Ericsson has constructed an engine to be driven by sun-power, which, if successful, would evoke an illimitable motive power in precisely those regions of the globe where the strength of animals and men is least available. He thinks, for example, that in cloudless Upper Egypt, there may grow a mighty manufacturing nation, while, in effect, the tropics will become the place of labor of the world, and the temperate regions the homes and schools; the cheapness and facility of transportation keeping up their rate of progress.

The wonderful engine is not yet patented, nor its details disclosed. We, however, could spare space at present for but a few hints. The motor is substantially a steam engine driven by heat derived from polarized sunshine, each ten square feet of which yields 33,000 foot-pounds, equal to one horse power, of minimum avails, after all losses and allowances, upon practical experiment. He curiously reckons the stupendous waste of sun-power by selecting out several strips of land making altogether 8,000 miles long, one mile in width, equal to 223,000,000,000 square feet, of which mere chalk-mark on the earth's surface the power wasted would drive more than two thousand millions of one-horse power engines.—*American Manufacturer.*

The Most Powerful Gun Yet.—The construction of a gun weighing 100 tons has been begun by Sir William Armstrong, in England. This gun is to be a muzzle loader, seventeen inch bore, and if successful will be the most powerful weapon ever constructed. Naval armaments are still in a transition state. It is asserted in England that the moment an eighty ton gun is fairly afloat, in a ship built to carry it and use it, the fate of sea going armor clad vessels of the present type is sealed.

MINING SUMMARY.

THE following is mostly condensed from journals published in the interior, in proximity to the mines mentioned

California.

ALAMEDA.

COAL.—The *Independent*, of Jnly 17th, publishes a letter from Capt. Wm. Grey, concerning a visit to the Black Hawk coal mine. We extract therefrom tha following: On Sunday, the 20th inst., in compsny with friends from Ssn Jose and Santa Clara, I had the plessnra of visiting the Black Hawk coal mine, situated about two and a half or three miles in a northeastern direction from Niles ststion. We entered tho tunnel, and I was well satisfied with tha black slate in it. I wonld say that the rock was well defined for coal. We came out of the tunnel and ascended to the snmmit of the mountain, a distance of 700 ft, and there enterad an inclined shaft. The shaft is 100 ft deep, with water in the hottom. I find the vein is 4 ft wide with 2 good wslls well defined. I fiud seams of pure coal in tha vein, and all the vein impregnated with coal. It is bituminons coal and the best that I have ever seen ou the coast. The vein pitches from north to south at an angle of 51 degrees, and its conrse is from east to west. Then wa laft thst mine, and weut in a southwest direction ahont 1 mile, and thera entered another mine called the Cumberlsnd, whera they hsd a tannel in the side of the mountain. That mine also has a fine show to make a good coal miua. Aa well aa oue csu judge, the veins are abont 300 ft apart, aud runniug psrallel with each other. I think the prospect is good, and I am well satisfied it is a coal region.

THE TASAJARA COAL MINE.—Livermore *Enterprise*, July 17: On Sunday last we visited the newly discovered coal mine at the head of Tasajara vallay. It is located in one of the fineat apots, about 2 miles above J. Johnson's ranch, we ever saw. The shaft was but 12 or 14 ft deep, and ahout 6 ft wida by 6½ ft in depth. From the hanging to the foot wall a series of almost solid stratas of coal appeared, running from east to west and pitching to the north at an angle of ahout 42 degrees. The upper half is interlined with a soft blue or slate colored rock, and the lower half has one seam of coal about 18 inches in thicknesa. Tha coal is of a hard glosay kind, and has much the appearauca of tha Cumberland. It has been used by the blacksmith at the mine and with great success. It makea an excellent srticle of coke, and welds finely.

AMADOR.

THE MINES.—*Ledger*, July 17: The Gover, near Dayton, we are informed, is looking remarkahly promisiug, witb a large and well developed ledge at tha 700-ft level. Experts who have recently examined the mine, give it as their opinion from careful observation, that the entire mass of ore below the 500-ft level, will pay by ordinary mill process not less than ten dollars per ton. When a steady motive power shall be furnished to the Gover, its receipta will he satisfactory to tha owners. The ditch from the Amador canal to supply the Gover with water power is now being pushed forward, and will soou be completed.

GOLN mountain may he regarded as a valuable mine. The ledge as far aa sunk upon, will average 12 ft iu width and good judgea inform us tha ore will mill over $10 per tou. In this mine an immense body of pay ore lies near tha aurface, easy of access, and which can he taken from the mine and crushed in the mill attached to tna mina, at a cost not to axcead $2 per ton. The mill will be furniahed with water power from the Amador canal, through tha branch ditch now beiag constructed.

THE Kennedy still improves as work pro gresaes, and is preseuting a very fine appearance. The hody of ore in the deepeat level is very large and very rich, and contiuues so, as far as the workmen have drifted uorth. Everything ahout the miue is very enoonraging.

WORK has been resumed on the Good Hope mine adjoining town and we hope will steadily proceed to a development of the mine.

THE uew mill of the Volunteer mine is nearly r adv for crushing. It will be run by water and employ 10 stamps. The ore in the Volunteer is repreaented as being very rich.

KEYSTONE.—*Foothills Ensign*, July 16: This mine, one of the oldest in the State, never looked more prosperous than now. At no period of its history hsa there been so largc a quantity of ore in aight, and the ore of so good a quality.

THE new mill for the Quartz Mountain mine, near Drytown, ia fast approaching completion. It is expected that it will be ready for work in two weeks. The branch ditcb, however, from the Amador caual to the works, a distanco of fourteeu miles, will take considerable lahor to complete.

THE large sulphurets works, near the Lincoln mine, are nearly completed. Mr. Garland expects to get to work next week. Tbe old works, we believe, will be shut down wheu the uew mill is iu ruuning order, there not heing enough sulphurats to keap both going. The mill will he capahle of workiug four tons per day.

BUTTE.

ELECTRIC.—Oroville *Mercury*, July 16: The Electric mine, near Enterpriae, has its mill in ruuning order. It ia crnahing rock that will pay. The Panl prooess is nsed at this mill and is doing wonders in the way of saving gold. It has beeu tried with the grestest of success on rock from the Forbestowu miues.

FROM a communicstion from Forbestown we lesrn that the mines in thst plsce snrpass anything before known. The company are now engaged in getting mschinery by maans of which all the gold may be saved. At present a large psrt of it is lost, it baing very light. Our correspondent adds, "The company has as valuable deposits and ledges of gold ore, and in such large quantities that thay have as good a honsnza as any iu this State; a 100 ton mill will mske no imprassion on their ora bodies for years to oome. Some of thair tailings taken ont of tha creek a considerable distanoe below the mill contain twelva dollars to the ton. Thus their ore is richer than they ever dresmed of, aud thay find that thay hava wasted enough to pnt np splendid works. They don't intend to waste any more if msohinery oan be got that will save it."

THE HEWITT claim, just on the edge of town, continues to turn out the usual amount of gold. Every thing ia in the best of running order. Good flumes, plenty of wster, and a mountsin of gravel full of gold, no wonder it keeps one man busy packing gold dust to tha express office. This is a closa corporation—so close, in fact, thst it is impossible for us to find out the receipts, but they are knowu to he very large, mora so the past six months than ever before.

CALAVERAS.

SAN BRUNO.—*Citizen*, July 17: Reports from tha Sau Bruno mine at Mosquito continna to be of the most cheering nsture. Very rioh rock has been atruck in the 300-foot west level, the ledga showing fnlly two feet ia width. The work of atoping from the east level is going stesdily on, the ore extracted being all high grada.

BIG YIELD.—Sixty-ona tons of quartz, taken from Lewis & Fairchild's mine, near Leavitt's ranch, Mosqnito district, yielded $2,670—an average of about $44 per ton. The rock came from a depth of about 70 feet, and there is plenty more of the same quality iu sight. It waa crushed in Garland's mill.

AN IMMENSE ledge has heen developed in the 1,000-ft level in the Gwin mine. The vein shows 20 feet in width, and it ia all fair milling ore. Sinking for the 1100-ft level is progressiug rapidly. An abnndance of rook ia being taken out to keep the batteries in constant motion.

CONTRA COSTA.

NEW COAL MINE.—Antioch *Ledger*, July 17: A few weeka siuce we noticed the fact that Mr. Richard Mills, of Somersville, had leased the Corcoran ranch for a term of years, with the intention of developing a ooal mine, on which oonsiderable time and capital have heen expended heretofore. On Monday last Mr. Mills aent tha firat load to Antioch. The quality will be nearly the aame as that of the Central at a similar depth. Mr. Milla ia at present sending in ona six horae tesm daily, but will shortly increase the force of men and teams.

EL DORADO.

THE MOUNT PLEASANT.—*Republican*, July 17: This miue, located near Grizzly Flat, owned hy O. D. Lambard, is at present far the moat promising qnartz mine in the county. Mr. Lambard hss faith in it, aa is ahown in the fact that np to the present time he haa invested ahout $100,000 in it, and now expects a speedy return. He has had a 10-stamp mill erected, which started up last week, snd the first clean-up will probably be made on Saturday of this week. A large amount of rock, which assays wall, lies upon the dump, and there is said to be an endless quantity more in sight.

INYO.

IMPORTANT SALE.—Panamint *News*, July 14: J. J. Dolan, Superintendent of the Panamint Consolidated mining oompany, has recently purohased 3 of the best mines ia the Lookout district—the Keystone, Minuie-Etty and Mountain View. The consideratiou is $60,000, $2,000 of which is paid down, the balance ($58,000) to be paid in 6 moutha, the purchaser to he permitted to enter upon aud prospect the ground in the iuterim hetween the first and last payments. This is helieved to be, by those competent to judge, a very valuable property. The ledges are large, are traoeable for long distances and contain argentiferous or carbonate ores of a very high grade, assaying from $100 to $1,100 per ton iu silver and 40 to 50 per cent. in lead. The district is situated ahont 10 miles east from Darwin and 25 from Panamint.

LOS ANGELES.

NEW MINING DISTRICT.—*Express*, July 17: We have frequently made allusion to the receipt here, from a new miuing district, of specimens of ore, which, on heing assayed, proved to be very rich. A company was organized on the strength of these asaays, and Mr. Gaertner, the assayer and mine expert, procured an outfit and proceedad to the locality of the discovery. It proves to be about forty miles from here iu a northeasterly direction. The route taken is up the Tejnnga canon, theuce across a wide valley, and up in the range of mountains to the east of the Sierra Madre. It is a most difficult place to reach, and its accessibility is obstructed aa well by rugged and precipitous steepa as a dense growth which is almost impenetrable. Mr. Gaertner, who returned from the mines thia morning, asaures us that the district ia a very promising one. He says that at the point where the Charlotte mine is located he traced one lead for four miles, and another for two aud a half miles. He also fouud six distinct veins runuiug parallel with each other. He says the whole country gives evideuces of metallic wealth, sud tha bad rock, in every direction, is composed of quartz. He found that a nnmber of locations had been made there before, and one, made by an Anahaim company, is still being held. He farther assnres us that in a small bottom, two and a half miles from the Charlotte location, ha found placer diggings, covering a space of perhaps 160 acres in size. The gold is cosrse, and if there were water available, the diggings would pay well.

NAPA.

QUICKSILVER SHIPMENT.—Russian River *Flag*, Jnly 17: The Redington quicksilver mining company shipped during the month of June 675 flasks of quicksilver.

NEVADA.

NEW YORK HILL.—*Foothill Tidings*, July 17: A cloud which has for sometime threatened the fair fame of this mina, in the shape of a snit for a portion of the ground claimed by the compsny, has this week heen cleared away. The case, after several postponements, came up for trial in the Distriot Court and was decided on Weduesday last; tha jury bringing in a verdict for the defendaut. The following is the latest officisl informatiou from the mine: There ara 15 stamps running, capabla of reducing 30 tons in 24 hours. The main shsft is below tha 2d level 39 ft, ledge large snd of good quality. The east drift from the 2d lavel is in 78 ft, ledge small, with indications that it may enlarga as it advances. The stopes are looking better than ever between Nos. 1 and 2, west side. The ledge averages ovar 18 inches, with the most excellent pay rock. The raise is up 138 ft from the tnnnal, ledge large and good pay. The winza ia down 29 ft from the upper tunnel, and the superintendent soon expecta to strika the ledge here. During the week 60 tons of ore wara raised, 60 reduced, and there remains on the dump 302 tons.

EUREKA.—Iu addition to the work iu the cross-cut on the 13th level, which is now harder ground than usual, and in Eureka No. 2, Superintendent Watt ia having a shaft sunk on the Roanuise ground, which is now down nearly 30 ft and tha gronnd is said to ha better than waa expected.

THE V Fluma is now completed to aloug the slope of Banner mountain and is to ha fiuished to the Town Talk Houae, between here and Nevada City, by the firat of August. Here the work will rest for a time, as the finme company haa the contract for anpplying ties and timbers for the R. R., to be used between here and Nevada and they will he delivered at that point.

MR. FBYER assurea us there is no such word as fail in tha matter of his enlarged works for treating ores by his new process. From two to thrae months will he raquired to complete the larga establishment, hut in the meantima tasta will be made of small lots of ora from any part of tha country.

FINE SPECIMENS.—Grass Valley *Union*, Jnly 17: Supt. Snydar brought np from the New York Hill miue yeaterday, another lot of specimens. Thay came from all parts of the miue; tha maiu shaft, the stopes above the aecond level, and from the extreme end of the drift running toward the former workings of tha old company. All of the rock was very rich in free gold, bnt that taken from the main shaft, forty feet below the second level, not only ahowed gold in abuudance, hnt was mora heavily oharged with galena and anlphureta than any whioh has heretofore heen taken from the mine.

PLACER.

SANGUINE OF A GOOD CLEAN-UP.—*Argus*, Jnly 17: The Aubnrn gravel mining and ditch company are rnnning day and night, and with their fine water power are making the hills tremble and the gravel disappear at a fearful rata, whila the honldera at the ssme time are flying in all directions. The oompany ia saaguina of the largest clean-up ever made in this connty according to the number of inches of water nsed.

THE St. Patrick mill claaned np on the 8th of Jnly for a month's run, of which there were only twenty days actual running time, the reaalt proving satisfactory oousidering that after the mishapa to the old boiler, only the power of a common donkey was at command for hoisting in the miue, necessitating a reductiou of the common working force. The delay in putting the donkey np, with the good time that every one was bound to have about the time honored Fourth of July, caused a still greater reduction of the working time for the month. The total hollion product shipped in bars was 643¾ onnces; of which 244 onnces was the yield from 87 tons of rook taken from the 440-ft level, and 301¾ ouuces from 283 tona rock from the 312 and 360-ft levels. A new hoiler haa heen set np at the Crater mine hoistiug works, promising suffioient power for a still more ancoesafnl working of the mine.

IN FULL BLAST.—*Herald*, July 17: The Aubnrn gravel mine is running in fnll hlast. In eight fnll days' rnu they piped off, at the lowest estimate, 10,000 yards of gravel, and expect to run off that much more this week. As they get fairly into Grizzly hill they find the gravel bed deeper, and the extent of the hill even more extenaive than they had calculated. The amalgam in the slnice aud underenrrents is thickening up, and every indication promises an exceeding rich clean-up.

PLUMAS.

NORTH FORK.—*National*, July 17: The North Fork mining company cleaned np on Saturday last, after a run of twenty-three days, and took out 600 ounces. They have suspended work for a few days in order to ohange the pipe over to tha west side of the hill, aud as soon as thst job is complated they will commenca piping again. Everything promises well, as in this rnn they washed top dirt, being some 20 ft above bedrock. The tunuel claims are paying well. In one drift, working five men, they clesn up from seven to twelve ounces per day.

MR. R. L. HOBART will commence crushing quartz from his ledge in Argentiue in a few days. He will use the nine-stamp mill which formerly belonged to Judge Moora.

THE contractors for the ditch work of the Giant gravel miniug company, Mr. A. J. Gould, superintandent, commenced work on Mondsy last.

PIERSON, WINTERS & Oo. are still driviug their tunnel into the hill, this side of Nelson, snd getting blue gravel aud good pay. They hava not got bedrock.

A MOST flattering gravel strike hss recently heen made by Smith, Anstin & Oo., near Butterfly valley. Their claim promises to be one of the richast gravel mines in tha county.

SANTA BARBARA.

QUICKSILVER.—*Index*, July 10: The first shipment, consisting of 29 flasks of quicksilver, from the Los Prietos mines, passed down Ststa street to the wharf lsst Mondsy. A fair heginniug.

SAN BENITO.

QUICKSILVER DISCOVERY.—Hollister *Enterprise*, July 17: Exceedingly rich and promising discoveries of ciunabsr hsva lately heen msda in the Coast range, adjoining the Stayton mining company's property, on the northwest. The ownera are R. G. Stayton, Dr. Crapiu, R. M. Shackelford, J. L. Murphy and T. L. Baldwin. Cousiderahle work has alresdy beeu doue in the way of cutting tnunels, sinking shsfts, etc. Tha company has bean incorporatad under the title of the "Consolidated Wonder oompany" and it is the intentiou to vigoronsly prosacute the work of development. Seven looations have been mada and so far aa prospected, all look well. One discovary—the "Doctor'a Wonder"—is said to be the moat flattering aurfaca proapect aver found in Califoruia. The vein is 60 ft wide, and some of tha hest qnality of ore has heen takeu ont from a depth of a few inohes. From preseut indications this hids fair to be one of the bast quicksilver minea of tha State. These mines are all in San Benito connty, aad only abont 10 milea distant from Hollister—a nice prospect for au increase of revenua.

IRON ORE.—A Mr. Thompson and others have recently discovered an immense body of iron ore, near the summit of the Gavilan mountains ahout 10 miles sontheast of Hollister. The croppings are traceable for aeveral milea. Specimans from these mines were assayed at San Francisco and Santa Olara, yielding 89 per cent. iron. The metal haa beeu pronounced by experts to he the very best yet fonnd on tha Americau Continent—equal to the finest of Switzerland.

SAN DIEGO.

THE HUBBARN.—*Union*, Jnly 15: We are indebted to Assessor Shaffer for a very rich specimen of qnartz from tha Hnbbard miue, of Bannar district. We learn that the company now have a tunnel in 300 ft, where there is a vain 4 ft wide streaked with just snoh ore as the specimen referred to. They propose to erect a mill to be rnn hy water power, and operatious will go forward immediately.

SISKIYOU.

QUARTZ INTERESTS.—Yreka *Union*, July 17: The quartz interests on this aide of the county are at preseut decidedly auimated. The Eliza mill will he started up next week on rock from that company's ledge, aud the prospects are that it will pay well.

THE workmen at the Clark & Cornish ledge hava been engaged in taking out rock for some weeks past, and have now aome sixty tous on the dump. The rock of this company will be taken to the Eliza mill for crushing. The proprietora of the mine are talking ahout huilding a mill this fall. Their rock ia very rich.

THE four-atsmp mill at the Adelaide ledge, on Humbug, ownad hy Warreu and others, is now being removed and put up on Greeuhorn, to work the rock of a ledge owned by Messrs. Abhot, Edgerton, Warren aud others. It is the intention to ruu the mill by steam. The rock takeu from the ledge has every evidence of being very rich, and the owners inteud to give it a thorough trial.

SONOMA.

MINING ITEMS.—Rassian River *Flag*, Jnly 17: T. N. Wand, of San Francisco, has honght a controlling interest in the Excelsior, and proposes to put meu at work at an early day—perhaps this week. Some alterations will be made in the condensera of the farnace, which, it ia believed, will cause the furuace to work satisfactorily.

THE Brandt miue (Cinnabar district—adjoining the Bacon), was sold laat Monday to an English company for $30,000.

CAPT. BILLY WILLIAMS, formerly Superintendent of the Opbir of Nevada, and latterly Superintendeut of the Redington, has been elected Superinteudent of the Blne Jacket gold and silver mine, near Piue Flat. Twenty men were put on the mine last Monday.

OCCIDENTAL has strack good ore—working 18 men. Geo. A. Koch is Superinteudent. The mine haa over a mile of tnnnels, and ia looking well.

LIVERMORE furnace (near Cloverdale) started up again laat waek. About 30 men at work.

A MARBLE quarry has bean discovered on the Live Oak, near Cloverdale.

TUOLUMNE.

MINING ITEMS.—*Independent*, Jnly 17: Sinking on the Lady Washington will be commenced at once. A contract has been let for 100 ft in depth. It is the intention to go down 300 ft fnrther if the indications are favorable.

TWENTY stampe ere running at the Confidence mine, ell bneily engeged in pnlverizing the 100 tone of rock on the dump. The broken up vein, in the developing shaft, givee indications of coming in eolid end rich.

Nevada.

WASHOE DISTRICT.

OPHIR.—Gold Hill *News*, Jnly 15: The ore breasts recently opened on the 1500 and 1600-ft levele are mnch better than wne expected, and promise a fine yield of good ore for the fntnre. The face of the north drift from the bottom of the northeast winze, on the 1600-ft level, ie still in good ore. No new developments have been made dnring the week by east cross-cnte Nos. 4 and 5, on the 1700-ft level.

CALIFORNIA.—Cross-cnts Nos. 5 and 6 on the 1500-ft level are eteadily advancing to the east-ward, the face of both etill in good ore. The lateral drift rnnning in the ledge on thie level hae been connected with croee-cnt No. 4, and ie now being pushed rapidly ahead to connect with croes-cut No. 5. A drift has also been started from croes-cut No. 5 to meet and connect with this leteral drift. All of theee drifts are in good ore. The ore developmente on the 1400-ft level going toward the Ophir line are much richer than wae expected, adding greatly to the value of the mine. Sinking the C. & C. shaft ie making splendid progrees. The erection of the new mill ie feet getting in shape for a swift and speedy oompletion.

CONSOLIDATED VIRGINIA.—Daily yield 600 tons of ore. The mine is looking splendidly throughout, all the levels continuing their regular yield of rich ore, without any indication whatever of exhanetion. The lateet bullion returne obteinable, which are up to the 13th of the month, showed at that time $184,003.80 in the office, to $105,998.16 at the eame date in Jnne, giving an excess for the present month over that of last month of $78,005 64, which has probably increeeed hy to-day to near $100,000. The mills are all running eteadily, and if no interference is caueed hy a slackening of the supply of water the yield will be fnlly np to, if not in excese of, that of last month.

CHOLLAR-POTOSI.—Daily yield 60 tons of ore, the aseay value of which is $26 per ton. Sinking the main incline ie making the neual good progrese. Driving the eonth proepecting drifte on hoth the 1150 and 1250-ft levele afforde no new featnres whatever. Sinking the new shaft is being preseed with all the epeed poesible, everything being done in the most thorough and snbetantial manner. Thie ehaft when completed to the point at which it will intersect the ledge, will withont doubt he the model shaft of the Comstock.

OVERMAN.—The pnmp at the 1000-ft level was etarted np yeeterday, and ie rapidly draining the water below that point. Everything ie now in fine working condition.

SOUTH CALIFORNIA.—Sinking the main shaft is going steadily forward, the bottom still in ledge matter mixed with streaks of quartz of a very fine character.

BULLION.—Cleaning ont and repairing the old incline ehaft ie being pressed ahead with all the energy poesible. The north drift from the Imperial, is eteadily advancing, the quartz and ore showing a eteady improvement and adding confidence daily to the expectations of the development of a good paying mine.

IMPERIAL-EMPIRE.—The recent connection of the worke on the 2000-ft level with the air winze from the level above, is furnishing a good draft of air, whioh is gradually cooling off the winze and drifte eo that it will not now be long before the prospecting of that level can be commenced in good earneet.

SAVAGE.—Sinking the eouth winze, below the 2100-ft level, is making eteady and favorable headway. Driving the north and south drifte on the same level hae produced no importent reenlts during the week.

CALEDONIA.—Sinking the new shaft is making the same rapid progress as heretofore. The flow of water oontinuee quite strong, bnt ie easily handled by the pnmpe. The new hoisting worke building ie nearly completed; also the foundations for the heavy hoieting and pumping machinery; in fact everything at the new works ie making all the progreee poesible.

LEO.—Good progreee is still being mane in sinking the winze below the main tnonel level. The ledge ie well defined, and the hanging wall ie smooth and unbroken. The ledge material ie of the Cometock character, and ie eteadily improving in quality as greater depth is attained.

COSMOPOLITAN.—The air connection being completed in the etopes, giving much needed ventilation, ore extraction at that point is reeumed, and the Hope mill will start np again the first of next month. The winzee below the main tunnel level are showing well in ore.

NORTH CARSON.—The face of the main drift is in a little softer material than it wae last week, and every indication showe that the main ledge is near at hand. The quartz eeams or feeders pessed through continue giving good aesays.

ORIGINAL GOLD HILL.—The south crose cuts continue in fine ore, and a good sized body of it is already developed, which can be made available as soon as proper extracting arrangemente are made.

PIOTOU.—Some very fine feeders or seame of quartz carrying metal have been paseed through of late, and the main tunnel mnst be approaching the ledge.

BELCHER.—Deily yield 500 tone of ore. The ore breeets etill promiee a goodly yield, and the openinge on the 1500-ft level are abont eufficiently advanced to begin the extraction of ore from that portion of the mine. The opening drifts of the 1600-ft level are eteedily advancing, bnt hnve not yet reached the ore vein. The air shaft ie nearly completed to the 1200-ft level. The mills are doing good work and everything ie looking bright end proeperons.

CROWN POINT.—Daily yield 500 tons of ore. The ore breaete are all looking well and yielding the nsual amount of ore. Preparatione are being made for a more complete exploration of the 1600-ft level.

JOSTICE.—The main incline is in hard rock with plenty of water. The workinge at the 400-ft level and below, in the south mine, give a fine ehowing of ore, nnd more and more of it.

NORTH CONSOLIDATED VIRGINIA.—During the week there hae been bnt a slight increase of water. The new steam hoisting and pumping machinery ordered will be along shortly.

AMAZON AND GLASGOW.—The new engine ie in place, ready to etart up. Sinking the winze in the eenth drift at the first station level ie making good progrees, the bottom still in qnertz and ore.

UTAH.—The water is drained from the shaft, and the bottom ie being cleaned end retimbered preparatory to reenme the einking. The new pumping and hoieting machinery ie jnet what was needed, and is doing ite work to perfeotion.

SOUTH COMSTOCK.—Bottom of shaft in eplendid ledge materiel, mostly quartz, giving good aeeaye. Valuable ore depoeite may be looked for at any time, ae the proper point for the same ie now being arrrived at.

NEW YORK CONSOLIDATED.—The masqn work for the foundatione of the powerfnl new hoisting and pnmping machinery, is being pnshed ahead as faet ae is compatible with snch snbetantial and permanent arrangements.

NEVADA.—Cross-cutting at the lower level in low grade ore of a very promising quality, which is expected to develop into eomething richer before the vein ie cut through.

SUCCOA.—Still driving the prospecting drifts on the 550-ft level, with some very encouraging indicatione of nre developmente ahead.

JACOA LITTLE CONSOLIDATED.—Plenty of ore is developed by the main west drifte and cross-cuts, and the work goes eteadily forward.

HALE & NOACAOSE.—Sinking the main incline hae been suspended at a point 50 ft below the 2000-ft level, for a few daye, for the purpoee of opening a etation and starting drifts for the prospecting of the mine at that point.

JULIA.—Sinking the main ehaft ie going rapidly forward; the Burleigh drille at the bottom are doing eplendid work, and greatly aiding the speed. It is now down a little over 1400 ft.

LANY WASHINGTON.—The fonodatione for the new machinery are ahout completed. The heavy caetings are being placed on the pump-bob preparatory to lowering it into place. In a day or two more everything will be in reediness for commencing the putting in of the pumps.

Arizona.

"THE OLD MINE."—*Citizen*, July 10: "The Old mine"—eupposed to be the old Tnmacacori—has recently been discovered by Henry Allen, and ite ehafts and tnnnele are now being cleaned out preparatory to further development and actual mining. Money enongh hae been put up to clean ont the old works and rnn the lower tunnel 100 ft under all the old worke, and the work is now being done under direction of Mr. Darrah. The present evidence of the extent and richnese of the mine are ample. There ie a very large dump of ore worth an average of $50 per ton, the lowest grade aeeaying $7 and the higheet $7,000. Thie dump evidently consiste in the main of the refuee ore at the time the mine was worked many yeare ago. Already, in cleaning out the mine, Mr. Darrah has found two sacke of eilver ore worth at the rate of $7,000 per ton. He finds the old drill holes to be four inchee eqnare, proving that the work wae done very many years ago. He also fonnd ekeletons in the old worke, leading to the belief that the workmen staid by the mine nntil they were murdered, and this theory ie etrengthened by the very rich ore found on the dnmp, which in caee of abandonment would very likely have been taken along. Until cleaned ont, the preeent extent of development cannot be known, bnt a number of ehafte and tunnele are plain enough. "The Old mine" is in the Oetrich monntain range and is abont seventy-five milee eouthward from Tucson. Wagons can eseily be taken within two or three miles of the mine. Wood and water are plentiful and near the worke.

Idaho.

SILVER CORN.—Owyhee *Avalanche*, July 17: The new shaft ie down 105 ft helow the 3d level, end hy eioking 10 ft further, there will be 140 ft on the incline of good etoping gronnd. The machinery moved from the old ground ie doing ite work well. The perpendicular shaft intersects the winze and the ledge 305 ft below the eurface. The distance from the old ehaft to the new ie about 250 ft, and the character of the operations thus far will necessitate the etarting of lovele and the commencement of etoping at an early day. The prospecte are very favorable. The shaft ie now in new ground, and from the proepeoting that hae been going on in that direction it ie certain that a rich ore chute exiets there. The ledge ie 16 inchee in width and although rather narrow develope a fine pay etreak from which the most promieing resnlte may be expected. The ore in considerable qnantitiee will in a few weeke be fnrwarded to the mill for crnehing.

BELLE PECK.—The point at which the ledge has recently been etrnck preeents some remarkable developmente, indicating the exietence of a very prolific mineral belt, from which nntold wealth is liable to emanate.

POOAMAN.—Three cross-cnts ere in, and a fonrth will be etarted on Monday. The ledge will be intersected in a few daye, end there is a degree of anxiety awaiting developmente. Sinking has been diecontinned for the preeent, end the operations are confined mainly to croes-cntting.

EMPIRE (Idaho).—The raise from the 6th level is completed to the 5th; ledge being in the reise from 3 to 5 ft wide, ehowing eome very fine ore. The Snperintendent expects to etrike the ledge in crose-cnt from the 5th level drift within 2 or 3 days. The 6th level ie eonth 140 ft, end showing very favorable.

THE LEONARD MILL.—R. H. Leonard hae nearly completed hie new qnartz mill, which ie located on the grounds of the old Mineer mill, about a mile and a half from town. It will have a capacity of crnshing 15 tone of ore per day, and ie eo conetrncted that the machinery can be duplicated at any time hereafter and the capacity increeeed to twice that quantity. The wood work is being pnt in for rnnning 5 stamps, and the operatione will for the present be confined to that nnmber.

Oregon.

PRONUOT OF THE VIATUE MINE.—Bedrock *Democrat*, Jnly 14: On leet Tnesday we were shown, at the banking house of J. W. Virtne, three beautiful gold bare, the result of sixteen days' rnn of the Virtue mill, from rock from the Virtue mine, which were of the value of $9,633 40. Thie mine ie improving in appearance end richneee at every lick of the pick or drill that ie strnck in it. It now furnishes employment for from 70 to 100 hends. New hoisting machinery, boilers, etc., were shipped on the 2d of thie month from San Francisco for thie mine.

Progress at the Sutro Tunnel.

The following ie the report of progrees in the Sutro tunnel, for week ending Jnly 15, 1875:

Number of feet in tunnel, July 8,.....	9,979
Number of feet driven during week.....	70
Distance in, July 15,.....	10,049

Details of work performed are ae follows, heading being 8x10 feet:

Holes drilled.....	294
Holes blasted.....	355
Aggregate depth.....	1668 feet
Average depth.....	6.35 feet
Powder consumed.....	836 lbs
Exploders consumed.....	356

ROCK.—Andesite, very hard to drill, but fair blasting.

WATER. — Qnantity flowing, forty-eight miners' inchee.

AIR.—Temperatnre at mouth, 83 deg.; at ehaft 1, 61 deg.; at shaft 2, 79 deg.; at header, 83 deg.

[Signed] A. SUTRO, Gen. Snpt.

A NEW REVENUE COTTER.—The Portland *Bulletin* says: The revenue outter, authorized by Congress, the contract for the construction of which hee been awarded to the Oregon iron worke company, at Albina, will be a novelty in her way. Having no uee for the depth of hold, which a veesel of her draft and general dimensions would possese, the plan provides for her being built eolidly np to the water line; the interior being filled up with eolid timbers, braced and bolted together to within five feet of the oar lines of the spar deck, all of whioh is to be eo closely fitted and caulked that the veeel would be dry, even though her outeide planking was entirely omitted. Throngh all thie mase of timber, the bed plate of her machinery ie to be bolted, and to a novice in the eervice of shipbuilding it would eeem ae though there will be no end to her strength. The spar deck, instead of being laid on car-linee, rounded off to a oircle, and dove tailed and fastened in the nsnal manner, will he composed of two long knees eplioed amidships, the ends resting on the eolid timber below, and bolted to the frame in the moet approved manner. The eolidity of the vessel in general will be better understood when we say thet it will take over 350,000 feet of lnmber to complete the hull, independent of the deck hamper.

A BAIDOE DESTROYEN AY FAOST.—On the 15th of February last, the iron bridge whioh epans the Olonaba river at Peterboro, near Toronto, Canada, suddenly fell and was ehivered "to atome," ae the diepatch read. An inquiry into the particulars of the occurrence reenlted in the following report:

"The hridge wae a bow-string hridge, oonetrnoted hadly—the linke far too emall, and no provieion made for contraction or expaneion—and, to sum np, the iron was of the woret kind, there being no eupervieion of the work. The oontractors did ae they pleesed. Our winter hae been exceedingly severe, and the contraction necessarilly great, and it is euppoeed that the links broke under the severe strain."

BEAR FRIGHTENED TO DEATH.—One of the black bears, introduced into the pit with other beare last week, at Woodward's Gardene, was frightened so that it died.

WOODWARD'S GARDENS embraces an Aquarium, Museum, Art Gallery, Conservatories, Tropical Houses, Menagerie, Seal Ponds and Skating Rink.

General News Items.

A DISPATCH from London nnder date of the 21st inet. seye that heavy raine have been falling in Lancashire and Yorkshire, and edjoining countiee. The river Calder has overflowed its banke for twenty miles, from Helifax to Barneley. Roede are submerged, also meny streete and honsee in Todmorden, and the Eastward bridge hee floated awny. The Don threatene to inundate the low-lying parts of Sheffield. The Ribble has risen and overflowed the country for a distance of thirty miles.

MONDAY night, of leet week, a bend of sheep belonging to Mr. Ashurst, of this city, were running along the edge of a precipice back of Mission San Jose, when the leader, by some means, lost his footing and was hnrled down the steep declivity. The rest of the flock followed to the number of 800, or, as estimated by others, 1,200 to 1,500 head. All that fell were inetantly killed.

DONALD MCLENNAN, Esq., has returned from a visit to Washington, where he was very successful in negotiating contracts for woolen goods, products of the Mission woolen mills, with the War Department. He has received contracts for blankets and woolen clothe amounting to $300,000.

THE triel of John D. Lee, the Mormon, for complicity in the Mountain Meadow meseacre is now going on at Beaver, Utah. Lee hae made a confession, but it has been rejected by the prosecution.

SECRETARY Bristow stands firm in his purpose to sell the distilleries lately seized for fraud practiced by their owners. A considerable excitement among the whiskey men is the result.

FEMALE nominees have been named for the office of Superintendent of Schools in the counties of Inyo, Butte, Marin, San Luis Obispo, Santa Barbara, Shasta and San Diego.

THIRTEEN miners and four wagons were captured last Friday, forty-five miles north of Fort Laramie, en route to the Black Hills. The miners were sent to Fort Laramie on parole.

A cloud-burst in Winnemucca valley, Nevada, the other day, flooded the ranches of George W. Hepperly and Frank Dickson, ruining their crops completely.

THE Commissioner of the Land Office has rejected the survey of the Rancho Cnyama, located in Santa Barbara county, Cal., and ordered a new survey to be made.

A SMALL bird, known as the groesbeck, is destroying the crop of potato bugs in Colorado, and that afflicted people expect a pretty good crop yet.

THE Turkish Government has ordered the Governor of Bosnia to dispatch troops against the insurgents in Herzegovina.

THE Carlist general, Dorregeray, is said to have reconstructed his army and repulsed a party of Alfonsists.

THE publishers of the Sonoma *Democrat* will commence the publication of a daily on the 25th instant.

A COUNCIL of delegates from all Presbyterian churches in Christendom is now in session in London.

THE American squadron which has been lying at Cronstadt, Russia, has sailed for home.

A GENERAL strike among the Lancashire cotton operatives is said to be imminent.

THE American team positively decline to shoot another match.

Industrial Items.

ABOUT three-fourths of a mile of the Petaluma and San Rafael narrow gauge railroad has been graded. One hundred and forty men are at work on the tunnel of the big hill, near San Rafael. It is estimated that it will take ten months to complete this tunnel.

THE Grass Valley *Union* says the railroad is progressing famously and that the tunnel between Bear river and Greenhorn is now in 105 feet and the ground is very favorable for rapid work. The Bear river bridge is being pushed ahead with all energy.

THE engineer of the San Francisco, San Mateo and Santa Cruz railroad states that he has been able to get a very favorable line both as to grade and alignment, and recommends a tunnel through the Tom Moore hill, between Pomponin creek and Pescadero.

THE yacht *Effort*, under sixteen tons, which left Fleetwood, England, May 29th, arrived at St. John's on the 19th instant, after a voyage of forty-nine days, which was remarkable for heavy weather. The crew consists of captain, mate, and two boys.

REN BLUFF is moving in the matter of a woolen mill. A steam flouring mill of great capacity is about completed, and a foundry to utilize the iron lately discovered in the neighboring county of Shasta is talked of.

THE San Bernardino *Advertiser* says that a twenty-five horse power steam mill has been ordered from the East to be located in the mountains north of Gilman's ranch.

THE English land reclamation company, whose large tract of marsh land in the vicinity of Centerville is being dug and turned over, will place 1,000 acres under cultivation next spring.

A SOAP manufactory has been established at Petaluma.

Grass Valley Mines.

The *Transcript* of last week says: We took a little run among some of the mines in this vicinity Thursday, and found most of them busily at work and doing well. The Providence, one of the largest in this district, is at the present time looking remarkably well—much better than ever before. Such rock as is coming to the surface now, proves what we have repeatedly asserted, viz: that it is one of the best mines in the county when thoroughly opened. It must be remembered the present company have only had control of it for about three years, during which time they have had to commence everything anew. New machinery, new shafts, new sulphuret works, new mill, and all their works have been put up since they came into possession of the mine. During the time, they have merely been prospecting among the mountains of quartz belonging to them. The ledge has been all sizes, from eight feet to fifty feet in width. Any of it will pay for extracting and milling, and a greater portion will yield a nice working dividend. Recently in the 600-foot level, about 250 feet south of the working incline, a body of ore has been struck which far surpasses in richness anything yet found in the mine. The ledge is eight feet wide and the rock will average one-half sulphurets. A great portion of it is fully four-fifths sulphurete and galena. This body has been run on eighty feet horizontally, and sixty feet perpendicularly, and through the whole distance the character of the rock is the same. What has been taken out while running the prospect drifts has been saved, and will be worked by the Fryer process. Old miners who have seen the rock think it is a little ahead of any sulphuret rock they ever saw. There is one thing connected with the discovery of this ore body worth mentioning. The company were running drifts in the direction of it but were only doing so out of curiosity, to see what kind of rock lay in that direction. When Godfrey, the "mining wizard" came around here, he visited the Providence, and in company with some of the employees, he walked on the surface to the southward, following the ledge. When he reached a distance of about two hundred and fifty feet from the working shaft he stopped, and told his attendants there was a body of ore underneath richer in mineral than anything they had yet seen in the mine. The owners afterwards continued their drift in that direction with as much dispatch as possible, and soon reached the point designated. The prediction of Godfrey was verified.

It is but justice to say his "guesses" have been proved true in numerous other instances here and elsewhere in the county; and old miners who have heretofore believed that "silver and lead run in leads, but gold is where you find it," now think that Godfrey can in every instance tell where it is to be found. Several shafts are being sunk about here for the purpose of testing his ability, and it will shortly be demonstrated whether it is guess work with him or whether he can really tell where mineral can be found with certainty. At all events the owners of the Providence are satisfied he told them truly.

The Nevada Mine,

Which is an extension of the Providence, and is on the opposite side of Deer creek, is no doubt an equally good mine, if it could be as thoroughly explored and developed. At present the mill only crushes "tribute" rock. The mill and hoisting works are run by water power, and ore that will pay five or ten dollars per ton can be worked with profit. We understand the ownership is about to change hands. By the investment of a little capital in further developing the mine it would become productive property.

The Wyoming

Is situated about a quarter of a mile below the Nevada on the banks of Deer creek. The company own two ledges, one of which is called the Ural, and the other the Wyoming. Rock is being taken out of the Wyoming on shares, and is crushed at the mill owned by the company. It is very low grade ore at present. Godfrey, when here, walked over the Ural and designated a point where good ore in large quantities could be found; and a shaft is now being sunk on the spot to test it. It is near the mill, and where no one supposed the ledge ran. If this prediction proves as true as it did in the Providence, the company will have a good thing. The shaft is now down forty-five feet, and drifting to strike the ledge was commenced Thursday. A few days will tell the story.

The new shaft on the Gold tunnel is being pushed ahead rapidly, and the machinery will be removed to it as soon as completed. Godfrey also passed over the Gold tunnel near where the shaft was being sunk, but he did not know it, nor could he see it. When he reached that point, however, he told those who accompanied him that there was a rich body of ore underneath. Harvey Helm, we believe, once took out very rich rock under the same spot. Of course the Superintendent did not stop sinking the shaft because Godfrey confirmed him in his belief that rich rock was underneath.

The Manzanita

Is daily improving. The gravel is growing better all the time and seems to increase in extent. There are now about sixty white men employed in hydraulicing and drifting, and more will be put on shortly. It seems the direction of the channel has now been so nearly determined that those all along the supposed line of it have perfect confidence they can strike it in a short time. When that is done gold will be taken out by the bushel daily (as it were). There is considerable prospecting for quartz going on in this vicinity, and we learn the result of crushings are encouraging.

The old Stiles ledge is being worked by a whim, and the rock looks well. Hinds & Co., are taking out rock just below the Gold Tunnel, and Mattingly is prospecting still further down the creek. Altogether the mining situation of the district looks well.

Sam. Eddy and Jesse Holcomb a short time since commenced to run a tunnel from the old American Hill claims, situated at Rogers' ranch, and which were worked out and abandoned years ago, thinking that by running from the bottom of the cut south, they might find a small body of gravel or a channel. After running about eighty feet they did strike gravel, and gravel that prospects as high as two dollars to the pan, and it is now thought they are on the regular ancient river channel—the same as found in the Manzanita. A distance of twenty feet has been run across the gravel, and no signs are yet manifest of its giving out. This is another discovery showing which way the channel runs. There is every evidence now of mines being at work in a few years for miles on the same ancient stream.

On the Rough & Ready ridge, at the head of Peck's ravine, a company called the Excelsior, have been running a tunnel for the past two years for the purpose of striking a gravel channel supposed to run along that ridge. The tunnel is now in about eight hundred feet, and it is now thought that twenty or more feet will reach the channel, as all the indications are favorable. The members of the company are Wellington, Frank Beatty, Maltman, Williams, and others. The Murchie gravel mine is supposed to be on the same channel. McCormick's ground is also supposed to be a part of it. Gold Run has been very rich and there is but little doubt the gold came from this channel running above in the ridge. The tunnel being run through Town Talk hill may cut the channel, as it must run near that vicinity.

The Cold Spring company, whose ground is located east of the Harmony company, on the Washington ridge, about one mile east of the Nebraska, have commenced to sink again on their old incline, which is about 180 feet deep, for the purpose of striking down to the bottom of the channel running through there. The ground has lain idle for some time, but since the recent discovery on the line of the old channel running around Sugar Loaf they have resolved to sink and develop what is known to be rich ground. They expect to strike the channel in about two hundred feet.

Coal for the Comstock.

The Virginia *Chronicle* says: A mineral discovery has been made within twenty miles of this city, which, if present indications are to be relied on, is only second in importance to the bonanza. In 1862 some shepherds, while drinking in the creek in El Dorado canon, a few miles beyond Devil's Gate, had their curiosity aroused by a brownish black substance, which cropped up in the bottom. They carried specimens to town, where it was declared to be a species of coal. Messrs. Kelly, Crozier and O'Brien located a claim, organized a company, and upon sinking a shaft discovered a considerable body of the mineral. In 1863 a yard was set up on the Divide, and it seemed for a time that Virginia would be freed from the heavy tax of wood. The great expense of hauling, however, soon discouraged the owners of the mine, and upon their yard being destroyed by fire, they abandoned the work.

A Live Company Organized.

The fact that coal had ever been discovered in El Dorado canon had almost passed from mind, and nothing further was done to develop the mine until April of last year, when the Virginia City coal company, composed of R. M. Daggett, President, M. Lynch, Superintendent, C. C. Stevenson and James Kelly, Trustees, was organized with a capital stock of $1,000,000. The work of sinking the shaft and running drifts for prospecting purposes was begun with vigor, and has gone forward ever since. The developments have been of such a nature that there is no reason to doubt the existence of a gigantic coal field. Three levels have been opened. The chief work has been done on the second and third. The lower level is down 180 feet, with a drift running due south 480 feet, with a cut off of 400 feet, making a sort of fork. The whole distance is through a solid mass of coal.

The Amount of Coal in Sight.

On Tuesday last a *Chronicle* reporter visited the mine and made a careful examination. The course of the vein is southeast and northwest, with a pitch of twenty feet in the 100. The width is in some places as great as fourteen feet, but lessens to about eight in others. The average width is about ten feet. (The Mount Diablo mine, which produces such vast quantities of coal, has a vein of scarcely three feet in width.) Another drift is being pushed forward with the most promising indications. On the second level there is a drift of 270 feet with an incline winze running down through the vein 380 feet to the lower level (where a length of about 700 feet has been developed) the pitch of the vein gives about 900 feet to the surface. Calculating the width of the vein at ten feet and the distance to the surface 900 feet and twenty cubic feet to the ton, it is found that 315,555 tons of coal are already secured. No diminution of the vein is shown at any point. Every drift or winze that is run tends to demonstrate that the deposit is practically inexhaustible. The company could with present facilities take out 200 tons per day, but wagon hauling is so expensive a mode of transportation that it would hardly pay. Their energies are, therefore, devoted to ascertaining definitely whether the dimensions of the deposit will justify the expense of a railroad.

A Geologist's Opinion of the Mine.

Professor Denton visited the mine in December last, and pronounced the vein inexhaustible. The coal he declared brown lignite, and from the geological character of the ground assured the superintendent that at a greater depth coal of better quality would be found. His prophecy was justified a month later, when on sinking the shaft for the purpose of opening another level, a firm black coal was struck. Water drove the workmen out, however, and the company have determined to prospect the upper works thoroughly before going deeper. The *Chronicle* reporter bore off with him a section of a tree turned into coal which had been taken from the sump. It is hard, black and lustrous. Colonel Lewis, the coal expert, has also been at the mine, and his decision as to the extent and prospects of the deposit agree with those of Professor Denton. Professor Frank Stewart also made an examination and endorsed the opinions of the other scientists.

A Second Vein Discovered.

In making the excavations for the hoisting works another vein was discovered. Boring is now going on 1,500 feet to the south, in the hope of striking this new deposit. Last week at a depth of 100 feet a vein two feet in thickness was passed through. We are informed that to-day, at a depth of 200 feet another vein has been entered. Down the creek about three-quarters of a mile from the hoisting works, croppings of still another vein have been discovered. All this points to the existence of a vast, continuous coal bed.

No satisfactory test of the value of the coal has yet been made. The Douglass mill was run for two months upon it. The grates were wood burners and unsuited to the coal, a ton of which, notwithstanding this disadvantage, proved, according to Mr. Stevenson, the owner of the mill, to be equal to a cord and a quarter of wood. The high price of hauling more than made up the difference in cost, however, and a return to wood was made. At the mine the hoisting works are run with the coal, and the engineer considers it excellent fuel. A scientific test is shortly to be made.

A Narrow Gauge Road to be Built.

When the owners are perfectly satisfied that the extent of the mine will justify the outlay, a narrow gauge railroad will be constructed. The grade of El Dorado canon is well suited for a railroad, being very even, and very little grading would be necessary. It is estimated that a narrow gauge from the mine to Virginia could be built for $200,000. The rolling stock of such a road would be a small item, as the company would not at first aim at other business than transporting their own coal. If desirable, the line can be run through Silver City, engage in bringing wood to the city, and in time branches for the transportation of ore to the mills could be built. The coal could be landed here at $2 per ton first cost, when the railroad was finished.

Economical Consideration.

The vast importance of this coal deposit to the mining interests of Nevada cannot be overestimated. The sources of wood supply are very limited, and are rapidly being exhausted. Mackey, Fair, Flood & O'Brien have secured a supply for ten or a dozen years, but if cheap coal could be dropped at their mines and mills they would naturally much prefer turning their forests into square timber instead of burning the wood for fuel. The supply of Yerington, Bliss & Co. cannot last three years longer, and all the other sources whence wood can be drawn are either too far away or disappearing under the constant drain. The development of this coal deposit will therefore be an unmixed benefit, as no interest will be damaged seriously by the substitution of coal for wood. Were it otherwise the cheaper fuel must force its way. However much opposed mill men and mine owners might be to the change, a ton of coal, equal to a cord and a half of wood in heating capacity and one-half cheaper, would need no stronger arguments.

This great cheapening of fuel must also greatly increase the production of the precious metals, as the low grade ores which will not now pay for the working may then be crushed with profit.

The discovery of this coal mine bears out a principle that most old miners have faith in—that where nature places the precious metals there will always be found the necessary materials to reduce them to a useful state. It is more than probable that within two years coal trains will be running into Virginia City.

THE Consolidated Virginia mine, which paid its usual monthly dividend of $1,080,000 a few days since, yielded during the past month a little in excess of $1,500,000, which, after paying the current expenses and dividend of the month, will still leave a considerable surplus. It is the expectation that the yield for the month of July will not vary but little, if any, from that of June, as the same mills will be employed and about the same amount of ore extracted. All the machinery is in fine order, everything working with the utmost smoothness and perfection. The operations of the new mill especially are without a parallel for the steadiness, amount and perfection of its work.

A New Chlorinizing Furnace.

As there are but few things of more interest or importance to the people of this section than a cheap and rapid chlorinization of base ores, we are impelled to make mention of a new furnace for that purpose, about which we have learned a few facts from J. D. Pringle, late superintendent of the Pacific mining company of this city.

Mr. Pringle left this city several weeks ago for a visit to Colorado Territory, to examine the workings of the Bruckner furnace (recently described in the MINING AND SCIENTIFIC PRESS), with a view to its introduction in the mill of the Blue Jacket mining company, at Blythe City, Elko county, Nevada. He visited the Cariboo mill, at Cariboo, Colorado Territory, which is the property of a Holland company, where he found the furnaces in operation. He showed us a sworn statement of the results of the workings for a period of seven months; but we refrain from giving it to our readers, as Mr. Pringle does not desire to raise expectations too high. Mr. Pringle on seeing the results attained by the furnace, became so impressed with its value as a cheap and complete chlorinizer that he associated himself with James Dawley, a well known former resident of Austin, and together they purchased the right to erect the furnaces in Utah, Arizona, Nevada and California, for which they now hold the exclusive agency. These gentlemen are well known in this section as experienced and reliable mill men, and being thoroughly convinced as to the ability of the furnace, they will give a guarantee in its construction of a product in bullion of ninety-two per cent. of pulp assay, no matter how base are the ores worked.

The capacity of the furnace is six tons, the amount of fuel required to roast the same being but three-fourths of a cord of wood. Mr. Pringle estimates the total cost per ton for roasting the ores of Lander hill by this furnace—including labor, fuel, salt, repairs, etc., at $7, which he says is a high estimate. He will leave here on Sunday for Blythe City, where he will put up two of the furnaces which he ordered while in the East, and when they are at work a practical test of the merits will be had in our own immediate vicinity. It is worthy of mention that the results obtained in the Cariboo—which were far above ninety-two per cent.—were from ores averaging an assay value of $40 per ton, which is far under the value of any ores worked in Austin; and it is a well known fact that the higher the grade of ore, the higher the percentage obtained in chlorinization. If the Bruckner furnace will do what Mr. Pringle claims for it, it is destined to effect a revolution in the reduction of sulphuret ores.—*Reese River Reveille.*

Mineral King.

The Antioch *Ledger* says: George W. Brown, superintendent of the New England tunnel and smelting company, Professor E. G. Moss, assayer and metallurgist, and Russel Eddy, surveyor, left Antioch for Mineral King mines, on Tuesday last. Mr. Eddy goes hence to survey the town site of Beulah, which belongs to the company. Several thousand dollars' worth of the stock has been sold upon the very favorable reports of Prof. Moss and Mr. Brown, and these gentlemen return to further prosecute the work of building mills, furnaces, and developing the mines of the company, with every prospect of success. Letters published in the Visalia papers, as well as private letters to parties here from those now at Mineral, King represent the country as abounding in mineral wealth, with an abundance of water and timber. The location is sixty miles from Visalia. Thirty miles is at present traveled by stage, to Lovely's station, and the remaing thirty on horseback over the mountain trail. The present obstacle to the development of this extensive mineral region is the absence of a graded road over the thirty miles of rough, mountainous country, but should further developments prove the mines to be as rich as is now anticipated, capital will seek investment in so profitable an enterprise as a toll road to this district. A building for an assay office is expected to be completed upon the return of Prof. Moss, which gentleman will shortly thereafter publish a professional report accompanied with assays of the various mines belonging to the New England company. As soon as possible a smelting furnace will be built, and Mr. Brown now expects to continue work during the coming winter. Professor Moss, a candid, intelligent gentleman, informs us that in all his extended travels, and examinations of various mining districts in this State, Nevada and Mexico, he has never before witnessed such an extensive body of well defined ledges, so rich, so accessible, and so conveniently located for working at so small an expense, there being an abundance of wood and water in the heart of the district.

MINING SUIT.—Suit has been brought in the Fifteenth District Court by the Mammoth Consolidated quicksilver company against the Bradford Consolidated quicksilver company, to recover possession of mining ground 27,000 feet in length by 1,000 feet in width, on that certain range of cinnabar heretofore known as the Mammoth claim, and lying in Lake mining district, Lake county.

The daily income of Flood & O'Brien, the mining capitalists of this city, is stated by business associates to exceed $40,000, or $1,300,000 a month.

Useful Information.

Fire Proof Compositions.—A French journal says, that of the score of fire proof composition that have been brought forward within as many years past, there is scarcely one that possesses superior or even equal adaptiou, to the purpose, to the following: Dissolve, in cold water, as much pearlash as it is capable of holding in solution, and wash or daub with it all the boards, wainscoting, timber, etc.; then, diluting the same liquid with a little water, add to it such a portion of fine yellow clay as will make the mixture of the consistence of common paint, and then stir in a small quantity of paper hangers' flour paste to combine both the other substances. Give three coats of this mixture, and, when dry, apply the following composition: Pot into a pot equal quantities of finely pulverized iron filings, brickdust, and ashes, pour over them size or glue water, set the whole near a fire, and, when warm, stir them well together. With this liquid composition, or size, give one coat, and, on its getting dry, give a second coat. It resists fire for five hours, and prevents the wood from ever bursting into flames; that is, it so resists the ravages of fire as, at most, only to be reduced to coals or embers, without spreading the conflagration by additional flames. It is found that a quantity equal to twenty pounds of finely sifted yellow clay, a pound and a half of flour for making the paste, and one pound of pearlash is sufficient to prepare a square rood of deal boards.

An English Invention.—"Priming," or the carrying of water in the steam from the boiler into the cylinder, often causes trouble and damage to the engine. To prevent this, and obtain a dry steam, a dome is fixed to the top of the boiler from which the steam is taken. A recent English invention aids this by fixing an upright pipe next the dome, having suitable connections with it and the bottom of the boiler. In this pipe is secured a circular winged deflector, or propeller-shaped helix. The steam in passing this is given a whirling motion, and the water it holds is thrown out by the centrifugal force, and falls back into the pipe that leads to the bottom of the boiler. A stop-valve prevents its return, and the apparatus is said to be a practical success.

A Cure for Sooty Chimneys.—A contemporary furnishes the following striking evidence of the utility of a well known practice in the construction of chimneys: "About fifteen years ago a dwelling was raised one story higher, and a chimney had also to be raised some feet higher; and as the chimney was built up, it was plastered on the inside with salt mortar, to prevent the adhesion of the soot. The result is that the part plastered with salt mortar is white and clean to this day, while the other part gets filled with soot up to the very line where the salted part begins, and has to be cleaned each year, the chimney being in almost constant use. The proportions used were one peck of salt, added while tempering, to three pecks of mortar."

Apparitine.—A new product called "apparitine," and useful as a glaze or finish for papers and fabrics, and doubtless to be applied in time to many other uses has just been brought out in France. It is made by stirring twenty parts of potato starch into one hundred parts of water, and then adding ten parts of potash or soda lye of twenty-five degrees. The whole is stirred vigorously till the milky mixture becomes transparent, viscous, and stiff. Poured out and dried it gives thin sheets of a colorless, odorless, transparent substance, resembling horn, but more pliable and tenacious. As a stiffening and surfacing material, it is said to possess many valuable properties.

Windows for Dark Rooms.—To light a dark room looking out on a narrow yard or street, let the glass be roughly ground on the outside and set flush with the outer wall. The light from the whole of the visible sky, and from the remotest parts of the opposite wall, will be introduced into the apartment, reflected from the innumerable faces or facets, which the rough grinding has produced. The whole window will appear as if the sky were behind it, and from every point of this luminous surface light will radiate the room. The common window let into the wall takes only the reflection from opposite buildings.

Treating Corks with Paraffine.—Corks saturated with paraffine are used for corking bottles containing alcoholic or caustic liquids. Rusohhanpt prepares them as follows: Paraffice is fused in a suitable vessel, the dry corks are added and immersed in the paraffine by means of a perforated cover or disk. The air is now easily expelled from the pores of the corks, which, after about five minutes, are removed and cooled. They may now be cut and bored like wax, are easily driven into the necks of bottles, and readily removed, retain their smoothness, and are gas-tight throughout.

A New Discovery.—It is worth knowing that if one volume of castor oil be dissolved in two or three volumes of spirits of wine it will render paper transparent, and the spirit rapidly evaporating, the paper in a few minutes becomes fit for use. A drawing in pencil or in India ink can be made, and if the paper is placed in spirits of wine, the oil is dissolved out, restoring the paper to its original condition. This is the discovery of Herr Fischer.

To Remove Mildew.—We have several times been asked for a reliable recipe for the removal of mildew. We doubt whether there is any method that is infallible in all cases; but the following, which we find in an English journal, will often prove effectual: Make a very weak solution of chloride of lime in water (about a heaped-up teaspoonful to a quart of water), strain it carefully, and dip the spot on the garment into it; and if the mildew does not disappear immediately, lay it in the sun for a few minutes, or dip it again into the lime water. The work is effectually and speedily done, and the chloride of lime neither rots the cloth nor removes delicate colors, when sufficiently diluted, and the articles rinsed afterwards in clear water.—*Journal of Chemistry.*

Bag Marking Ink.—A correspondent of the *English Mechanic* gives the following recipe for an ink, the permanency of which he says is perfect, even when bags filled with chemical manures have been in rain and sunshine over ten days: Boil one pound of logwood chips in one gallon of water at boiling point ten minutes, then stir in the eighth of an ounce of bichromate of potash, and boil this ten minutes longer, then add, when cold, one-half pound of common gum, previously dissolved, and stir well in. This will flow well from the pen, and will mark bags with either the stencil plate or block. The cost of the above ink is about 6d. (12 cts.) per gallon.

A Perpetual Paste.—To make perpetual paste—which will remain sweet for a year—dissolve a teaspoonful of alum in a quart of water to which add sufficient flour to make thick cream. Stir in half a teaspoonful of powdered resin and half a dozen cloves, to give a pleasant odor. Have on the fire a teacup of boiling water, pour the flour mixture into it, stirring well at the time. In a few minutes it will be of the consistence of mush. Pour it into an earthen vessel; let it cool; lay a cover on, and put it in a cool place. When needed for use, take out a portion and soften it with warm water.

Eggs in Oxygen Gas.—In dry oxygen gas eggs are uneffected unless punctured. Moist oxygen decomposes the eggs. In moist nitrogen eggs will keep three months. Hydrogen the same. Eggs, whether pierced or whole, were perfectly preserved in carbonic acid, dry or moist. Illuminating gas the same. In chlorine water 1 to 500 eggs kept eight months in a closed vessel. In a solution of dilute chloride of lime, eggs would not keep ten days. Lime-water and sulphate of lime kept them a little longer. Carbolic acid solution 1 to 500 preserved them about six weeks.

Memory in Birds.—A carrier pigeon which was captured in a balloon during the siege of Paris, and sent by Prince Frederick Charles to his mother, recently escaped from captivity and returned to the house of its former owner in the French capital. This is certainly a remarkable instance of the exercise of memory in the lower animals, to which it would appear difficult to find a parallel case. The bird must have kept its former haunts in recollection for nearly five years.

Awnings can be rendered waterproof by plunging the fabric into a solution containing twenty per cent of soap, and afterwards into another solution containing the same percentage of sulphate of copper. Wash and the operation is finished.

Iron may be cemented in wood by dropping in the recess prepared in the latter, a small quantity of a strong solution of sal amoniac. This causes the iron to rust, rendering it very difficult to extract.

Good Health.

Tar in Bronchial Catarrh and Winter Cough.—In a note sent the *British Medical Journal*, Drs. Sidney Ringer and Wm. Murrill state that in the treatment of these complaints they have employed tar in two-grain doses, made into a pill, every three or four hours. From October to January, inclusive, its effects were watched on twenty-five patients, whose age varied from thirty-four to seventy. All these patients had suffered several years from winter cough during the whole winter. Each attack of the paroxysmal and violent cough lasted from two to ten minutes, recurring ten or twelve times in the day and breaking their rest at night. Expectoration was abundant, frothy, and purulent. Breathing was short on exertion, but most could lie down at night without propping. The physical signs showed a variable amount of emphysema, with sonorous and sibilant rhonchus, and occasionally a little bubbling rhonchus at the base. These patients usually began to improve from the fourth to the seventh day; the improvement rapidly increased, and in about three weeks they were well enough to be discharged. The improvement was so decided that even those patients who, in previous years, had been confined to the house during the whole winter, returned to their work. On discontinuing the tar, relapses often occurred in a week or two, but on re-administering the medicine relief was again obtained.

Sun Stroke has become so common in New York that an establishment for the special treatment of such cases is talked of. Sun stroke is something almost unheard of in California.

Mad Dog Bites.

Two months ago a lady was bitten by a dog in East Newark; the next day the husband, in whipping the animal, was bitten on the hand; the dog was killed, the wound healed, and the circumstances were almost forgotten; but a few days since the husband experienced some difficulty in swallowing, soon fell into horrible convulsions and died. The wife is well. As all are exposed to the bites of domestic animals, cat or dog, the mind ought to be informed as to what ought to be done on the spot.

The moment anyone has been bitten or stung, a rag should be thoroughly wetted with spirits of hartshorn and patted on the bitten place for an hour, then bound on, to be repeated for twenty-four hours, for two reasons; the hartshorn creates a smarting, and redness and inflammation, which keeps the blood on the surface, tends, as it were, to keep the poison on the outside, so that it may be washed out. Second, the virus of poisonous bites and stings is an acid; hartshorn is the strongest alkali, and will antagonize an acid in an instant. If no hartshorn is at hand, take the ley of wood ashes, or even make a poultice of fresh wood ashes and water, which make an alkali, let it remain on the wound until some hartshorn can be procured.

A dog ought not to be killed if he has bitten a person, although he may appear to be mad, because such animals, when allowed to become quiet and composed, have often returned to a perfectly natural condition, and thus the mind of the person bitten has been saved from most terrible forebodings.

Medical observation shows that about one person in twenty, bitten by mad dogs, become hydrophobic. In one noted case, a dog bit twenty-one animals and persons, and but one of these became hydrophobic. Not all persons exposed even to smallpox, take it; or to cholera, measles, or any other communicable disease; showing that even dreadful diseases invade only those systems, or states of constitution, which are susceptible to their influence. A London brewer's drayman, who has been swilling several quarts, if not gallons of beer daily, for forty years, is scratched on the hand with a pin, recovers from it, if at all, very slowly, often never; sometimes death follows in a few days from convulsions or mortification. I knew a gentleman of wealth, whose foot slipping as he was stepping into his carriage, the shinbone was thrown against the scraper or step, and he died of mortification of the limb in a few days; because he was a steady hard drinker of whisky, and his system had no power of recuperation or resistance against disease. This principle is proven by the case in hand; the husband died, the wife was unaffected. It is not impossible that if a perfectly healthy man of strong mind was bitten by a mad dog, he would not become hydrophobic; but the precautions named ought to be taken by all, even if the dog or cat be not mad.—*Journal of Health.*

The Treatment of Diarrhœa.—In a paper in Virchow's *Archiv*, Dr. Hertsen observes that diarrhœa of all sorts goes along with an irritable state of the intestinal canal, and any increase of this irritability is to be carefully avoided. He considers that the more usual astringents are, in addition, irritants; and he instances among them the salts of lead, zinc, and bismuth. In all cases, soothing means should first be adopted; and of these, warm applications to the abdomen, in the form of bread poultices, or fomentations, are perhaps the best. The chief medicine recommended is opium, which soothes, but in large doses, interferes with digestion. If the diarrhœa be so violent as to hinder the adoption of opium introduced into the stomach, then morphia should be injected subcutaneously. Of equal importance is the diet. If the person be strong, everything, both solid and fluid, should be withheld; but, where this cannot be done, the food should be of the lightest and simplest. The author especially refers to rice and arrowroot as simple vegetables diets, while any animal food given should be free from fat. Milk should not be too much used, and in any case should be boiled.

A New Mode of Administering Iodine.—An English journal says that the cows on the island of Ushant, off the coast of Brittany, feed principally on sea-weed, and that consequently their milk is particularly rich in iodine; and it is proposed that this milk be used for the cure of diseases benefited by iodine, as it does not produce the constitutional disturbances that often result from the administration of iodine in other forms. Apropos of iodized milk, an Italian physician fifteen years ago, proposed to obtain it by feeding cows on hay that had been sprinkled with a solution of iodide of potassium.

Congestion of the Brain.—A French medical man reports to the Academy a case in which he has succeeded in curing grave congestion of the brain, along with paralysis of the whole right side, by making the patient inhale pure oxygen; from the first inhaletion the patient got relief, and motion and sensibility returned by degrees.

A New Use for the Eucalyptus.—According to a French scientific journal, a captain in the French army, who had always experienced headache, vertigo, and pains in the stomach after smoking, has discovered that by mixing a few dried leaves of *Eucalyptus Globulus* with his tobacco all these effects are prevented.

Domestic Economy.

Something About Soups.

A correspondent sent us some time ago an account of Prof. Blot's manner of making soup. The recent death of Prof. Blot gives it especial interest. He was earnestly engaged in the attempt to teach our people better and more economical use of food than was generally practiced, and his loss is greatly to be regretted.

"*Pot-au-feu.*—Six pounds of fresh beef, (ribs, knuckles, or loin) in a crockery kettle, with five quarts of cold water, salt, and a little pepper on a slow fire. Take off the scum carefully when it rises. Add two white onions with one clove in each, a small parsnip, a carrot, two middle-sized turnips, half a head of celery, two leeks, two sprigs of parsely, one of thyme, a clove of garlic, a bay leaf, and a little caramel to color it. Simmer five or six hours. Dish the meat with the parsnips, turnips, and leeks around it, to be served warm after the soup or kept for the next day. Strain the broth, skim off the fat at the top, put back on a good fire, and at the first boiling, pour on croutons in the soup-dish and serve."

Thus endeth the Professor's recipe. Observe, firstly, that you must use a "crockery kettle"—that is, some good soup-kettle. Many are the husbands who expect as good home-made soup, as they get at first-class restaurants, and many are the discouraged wives who would gladly cook to please their husbands, but who neither of them dream that anything better than a common iron kettle is necessary in which to make nice soup. So, nine times in ten, the soup is more or less flavored with iron. Prof. Blot always says "a crockery kettle" or a "stow-pan," when he mentions the utensil for cooking any dish, meaning the glazed or enameled ware. Marion Harland tells us never to cook onions in an iron kettle. Observe, secondly, that you are to simmer your soup "for five or six hours." To simmer is to boil gently, yet the boiling should not cease for a moment during those five or six hours. Observe, thirdly, that you must skim off all the fat. Many people imagine that the melted tallow gives richness to the soup, but all the cooks agree in saying, "take off all the fat"—and so, I think save every educated stomach.—*Am. Agriculturist.*

How Salt Fish Should be Freshened.—Many persons are in the habit of freshening mackerel or other salt fish, and never dream that there is a right and wrong way to do it. Any person who has seen the process of evaporating going on at the salt works, knows that the salt falls to the bottom. Just so it is in the pan where your mackerel or white fish lies with the skin side down; the salt will fall to the skin and there remain, when if placed with the flesh side down, the salt falls to the bottom of the pan, and the fish comes out freshened as it should be. In the other case it is nearly as salt as when put in.

A Pan Dowdy.—Did you ever hear of a pan dowdy? It is an old-fashioned New England dish and has a flavor of our grandmother's cookery. Make a rich crust, line a deep earthen pot with it; now slice some pie apples quite thin for the first layer; strew the apples with molasses and spice and a teaspoonful of milk; cover with a thin crust and repeat the process. Cover the top with crust and your pan dowdy is made. Bake it in a slow oven. A brick one is made use of in New England generally. When done, turn it on a platter and serve hot.

Currant Jelly.—A correspondent of the Germantown *Telegraph* writes: I have seen two or three recipes in the *Telegraph* for making currant jelly, but I like none of them so well as the following, which will give a perfectly transparent article and will satisfy every housekeeper, who will prefer it to all others or I'm mistaken: Scald the currants, then press, strain and measure them. Put the juice on to boil ten minutes; pour it while boiling over the sugar, allowing a pound to every pint of juice.

Breakfast Muffins.—Housekeepers will value this recipe as a dainty substitute for bread at breakfast or tea: Two eggs well beaten with a cupful of sugar, and a lump of butter the size of an egg; to this add one pint of milk, with a teaspoonful of soda, one quart of flour, and two tablespoonfuls of cream tartar; bake in muffin rings on top of the range, or in gem pans in a quick oven.

Muffins.—One quart of milk, five eggs, one tablespoonful of good yeast—if home made, three or four; a lump of butter the size of a walnut, and sufficient flour to form a stiff batter. Set in a warm place to rise, and when light bake in muffin rings.

Green Corn Griddle Cakes.—Make a batter of three eggs, a pint of flour, a little salt and water, or milk if you have it. Grate the corn from six ears into this mixture and bake on griddles. Serve hot with butter. Canned corn may be used in winter.

Mush Waffles.—One quart of flour, one pint of corn meal mush, two eggs, a tablespoonful of butter and a little salt. Make a thin batter with sweet milk. Separate the eggs as for rice waffles; it makes them lighter.

MINING AND SCIENTIFIC PRESS.

W. B. EWER.....SENIOR EDITOR.

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Saturday Morning, July 24, 1875.

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UTILIZATION OF WATER POWER.—Mr. M. F. Bramwell in his late annual address to the Institution of Mechanical Engineers, said: "Do we, in our application of power, make as much use of wind, water and waves as we ought, remembering that their power may be transmitted to a distance? Do we resort, to any large extent, to sources of power in nature other than coal? Is it not the fact that mechanical invention has gone back in these matters rather than forward? And do we utilize that primary source of power, the heat of the sun, the current heat from year to year, making the most barren hillsides valuable, as it seems to me we might do, by planting quick growing trees, which, fostered and matured by the sun, would yield large quantities of wood to be used as fuel for domestic purposes? Are we estimating at their full value the deposits of peat, and are we not tempted to pass by this large store of fuel because its use is attended with difficulties? Is it not true that we use coal in the most grossly wasteful manner? How much of the fuel goes up the chimneys of our furnaces unconsumed, in the form of visible carbon, or in the worse, because less readily detected, form of invisible carbonic oxide?" In the face of such faults and errors, Mr. Bramwell argues that it is the duty of mechanical engineers, "by precept, practice and example, to do all that lies in their power to cause all to respect and understand the value of that which they have too long lightly treated and grossly abused."

CHINESE INVESTIGATIONS.—A Chinese Commissioner is now inspecting the coal fields of Great Britain. He has been sent out by his government to obtain information on the machinery used in raising coal, and the method generally of working collieries, with a view of applying his knowledge to the working and opening out of new collieries by the Chinese Government.

AT the Buckeye mine, on the Comstock, preparations are being made to shut down the mine for a short time until the new machinery can be placed in position ready to start up.

THE Salmon Falls (N. H.,) manufacturing company have closed their mill No. 2 for five months.

Saving Salt in Chloridizing Silver Ores.

In chloridizing silver ores, where furnace chloridization is resorted to, a large portion of the salt (chloride of sodium) which escapes decomposition in the furnace, and certain soluble chlorides which are formed in the furnace, may be recovered and used for chloridizing fresh ores, by evaporating the liquors from the stirrers in amalgamating works which are usually allowed to run to waste. In Stewart's mill in Colorado, it was found that 26,258 gallons of liquors were run off daily from the settlers, which had a specific gravity of 12° Banme, and contained per gallon 6,072 grains of soluble chlorides. There were thus lost 2,263 pounds of chlorides, chiefly chlorides of sodium and zinc, (which was found as suitable a chloridizer as pure salt), whose recovery would reduce the consumption of salt more than one-half.

A method of saving this salt has been patented by James Douglas, Jr. As ordinarily conducted, the process of chloridizing silver ores consists in roasting the sulphurous, antimonial and other compounds of silver and associated metals with common salt. The result of this roasting is that the silver, and most of the other metals connected with it, are converted, in whole or part, into chlorides, some of which chlorides are soluble in water, others not. The ore thus chloridized in the furnaces is then agitated with mercury and water in pans or barrels, by which means an amalgam of silver, gold and certain of the base metals in the ore is formed, and the chlorides soluble in water are dissolved. The water containing these chlorides in solution is at present allowed to run to waste; but from these liquors, holding as they do in solution these soluble chlorides, which may consist, besides the chlorides of zinc and other base metals, of a variable quantity of chloride of sodium which escaped decomposition in the roasting furnace, Mr. Douglas proposes to recover the salts, and to use them for the purpose of chloridizing fresh ore. This may be done either by evaporating said liquors to dryness, or, in certain cases, only until some of the chlorides have crystallized out. After the amalgamation has been effected, both the pulp and the liquor in which it is suspended, and which contain the chlorides to be recovered, may be received in sluice pits, where the insoluble matter must be allowed to settle, and whence the supernatant liquors must be drawn off to be evaporated by the waste heat of the furnace or otherwise.

The evaporating pans, if waste furnace heat be used, may be built into the floor of the furnace flue, which must be provided with doors at suitable distances, or they may be made to form the roof of the flue. The chloride of sodium and of other metals which will gather in the evaporating pans, will serve to chloridize fresh ore, and will thus economize the consumption of salt, or of any other chloride which might be used.

There may be cases in which it is desirable to crystallize out a part only of the salts in solution in the waste liquors; as, for instance, when copper is present in the furnace charge, which it is desirable to save. In such cases, if the chloride of iron bath, employed in the Hunt & Douglas patent copper process, be used to extract the copper, the evaporation must be carried to such a point that the chloride of iron shall remain in solution in the mother liquors. The solubility of chloride of iron is such that it will remain in solution when the other chlorides present shall have almost entirely crystallized out.

The Editorial Excursionists.

The excursion party arrived in San Francisco on Friday, the 16th, according to their first announcement. Good health, cheerfulness and general satisfaction prevail throughout. On Monday the editorial rooms of the PRESS were visited by Henry T. Williams, editor of the *Horticulturist* and general manager of the excursion, X. A. Willard, of the *Rural New Yorker*, Clark W. Bryan, editor and proprietor of the *Union*, Springfield, Massachusetts, B. K. Bliss, the well known seedsman of New York, with several others. Of course we had a very pleasant chat.

After leaving our office the party took a ride to the Cliff House, and in the afternoon, accompanied by the PRESS staff, visited Woodward's Gardens by invitation of the public spirited and hospitable proprietor. Extreme gratification was expressed at the exhibition there. The aquarium especially was declared to be superior to that of any Eastern city.

The rest of the week was mostly taken up with visits to Mr. Woodward's place at Oak Knoll, Napa Co., the Geysers, Vallejo, Benicia, Martinez and Mt. Diablo.

On Monday, the 26th, the party, accompanied by friends from this city and vicinity, will visit the State University, where a pleasant occasion is anticipated.

In fact, any affair could scarcely fail to be pleasant in which these cheerful, intelligent excursionists participate. In justice to our editorial guests we must say that they have not failed to bring with them the good nature and willingness to be pleased, without which the best efforts at hospitality on the part of the host are of little avail.

For ourselves we can say that besides the demands of common courtesy, which alone would induce us to strive to make this excursion in every way satisfactory to the party, we have found among them some old and highly esteemed acquaintances and have formed some pleasant new ones.

The ladies in the party seem particularly well pleased with California and all contained therein, and are quite at home here.

Perfection of Modern Workmanship.

The precision with which the modern mechanic is able to work is one of the marvels of the age. This approach to perfection is not, however, so much due to increased skill in manipulation, as to improved mechanical devices, by which the machine is made to do much that has heretofore depended upon the uncertain movements of the hand. Machine work is far more generally employed in American shops, and also carried to a much greater degree of perfection by American mechanics than by those of any other nation. A necessity brought about by the multiplicity and originality of our inventions has led to important steps in mechanical progress. The Colt's pistol and rifle, the sewing machine, the American watch and many other minor articles could never have reached their present status, unless a great progress had been made in the more extended application of machine work. The lack of such appliances is the reason why the revolver and sewing machine cannot be successfully manufactured in Europe, except as is done to a limited extent under the direction of American mechanics. The lack of such appliances is the reason why the dear labor of American workmen can successfully compete with the cheap labor of Switzerland in the manufacture of watches. The revolver, the sewing machine and the watch are made in this country on the plan technically known as "assembling"—that is, every piece of any of these articles is so accurately made that it will fit in its place in any other one of its kind or class. Such a principle cannot be applied to hand-made parts for any delicate piece of machinery.

Of course the manufacture of the tools by which such parts are made requires great accuracy of construction, and leads to most careful manipulation; and in this perhaps the English mechanic exceeds all others. Their more habitual dependence upon the hand and eye in all their finishing processes also leads the Englishman to greater skill in this direction.

An interesting and suggestive lecture was lately given by Dr. Tyndall, before the British Royal Institution, on the "Whitworth Planes, Standard Measures and Guns," in which the perfection of modern workmanship was most strikingly illustrated. The lecturer stated that Mr. Whitworth, in perfecting his machine kept steadily in view the utmost reach of mechanical veracity. His starting point was to obtain a true plane, which should serve as a *datum* line by which all untruthful work might be detected, extent of error examined and fault corrected. His success in this effort is perhaps the most marvelous instance of mechanical perfection which has ever been accomplished. He prepared two plane surfaces so absolutely true and smooth that when placed in contact considerable force was required to separate them. This adhesion was for a long time thought to be due to the exclusion of air from between their inner surfaces, and the consequent weight of the atmosphere pressing upon the outside.

Dr. Tyndall was led to doubt the correctness of the maker's theory and ventured the assertion that the marvelous perfection of the workmanship was such as to admit of the actual cohesion of the surfaces by molecular attraction! To test his theory he placed in contact two of Whitworth's planes, weighing about three pounds each, and hung them up under a glass receiver from which he exhausted the air. After obtaining as complete a vacuum as is practicable by the most perfect pump, he had the gratification of seeing that the under plane still adhered to the upper surface—thus fully proving his theory, and demonstrating the wonderful degree of mechanical perfection to which Mr. Whitworth had arrived. The experiment was afterwards repeated with the same success with a twelve pound weight attached to the lower plate!

This experiment was also performed in presence of his audience. The lecturer further explained to his hearers the construction of two measuring machines, one of which was capable of measuring and recording the one ten-thousandth part of an inch, while the other was equally effectual in determining the one-millionth part!

Several other wonderful instances of mechanical perfection were also alluded to, and the lecturer closed his remarks by paying a merited tribute to the talent and genius of Sir Joseph Whitworth, who had done so much, not only to advance the practical mechanical appliances of the age, but who had also reached out so far in advance of all others toward absolute perfection in mechanical skill.

Depression in the Iron Business.

There is at this time a very general depression in the iron business throughout Europe. The production of pig iron in Scotland during the year 1874 was less than it has been for any one of the previous twenty years. At one time there were only thirty-two furnaces in blast, out of 132 which were in existence.

In Prussia, the large steel works of Krupp have discharged about 1,000 workmen; while the Borsig manufactory of engines at Berlin—the most extensive in the country—has also been obliged to protect itself by a large dismissal of its workmen.

In Austria, Sigel's locomotive engine factory—the largest in that country—endeavored for a while to sustain itself by reducing its number of employees. About 2,000 hands were discharged, but still the orders for work were insufficient to warrant the continuance of even the small force of hands remaining, and we now hear that this establishment is to be entirely closed. Another report is that this establishment is to be closed on account of the lack of working capital; that Herr Sigel has orders for 400 locomotives for the Russian government, but that he cannot obtain the two million dollars needed for carrying out this large order. It is further said that earnest efforts are being made to have the Austrian government step in and render the needed pecuniary assistance, in order to prevent the suffering and destitution which would follow the entire closing up of these works.

In England, while we do not hear of any very extensive closing outs, there is nevertheless a very great stagnation in this branch of industry.

In the Atlantic States of our own country, a similar condition of things exists as is noted in England; so that we at least have the poor consolation of knowing that we are not alone in our misery.

California, however, may be made an exception in this regard; for our iron foundries and machine shops were never, at any former period, so busily engaged as at the present time. There is also good prospects of a still more prosperous future, for at least a year to come.

Trouble in the Black Hills.

The telegraph informs us that General Crook has ordered the release of all the captured Black Hills miners, upon their giving parole. There seems to be, however, still more trouble ahead in the Black Hills country. A letter to the Omaha *Herald*, written by its correspondent who accompanied the Commissioners sent out to treat with the Indians for the Black Hills, is to the effect that the treaty has been seriously affected by an unfortunate collision between a party of Indians and the soldiers. Great excitement prevails at the agencies. The affair, as derived from Indian sources, is as follows: Several weeks ago a horse stealing expedition, called a war party, numbering about 200 Indians, was organized by the wild-cat young bucks of the Red Cloud and Spotted Tail agencies, to go against the Poncas. They had a fight with the Poncas, stole some horses, when they encountered a party of forty soldiers from Fort Randall, at Little White river crossing, 132 miles from the Spotted Tail agency. The Indians were asked for a pass, showing their right to leave their reservations, which they could not produce, and they were informed the troops had orders to shoot any Indians off their reservations without permission. The Indians said: "We are agency men; don't want any trouble with white men," and seeing a piece of timber they ran for it, and the soldiers opened fire, killing two and wounding three. A brother of Tall Lance, who was one of the delegation to Washington recently, was among the killed. Tall Lance exhibits much grief over his brother's death. Spotted Tail has sent word to the Commissioner that there could be no treaty until the murder of his men could be explained; he at the same time advised his men to be calm and patient until the facts are learned. This outbreak, in connection with hundreds of adventurers overrunning the Indian country, may result in an outbreak at any moment. Miners who come in contact with Indians are resolute. Colonel Mills, commanding at Camp Sheridan, reports that a few days ago a party of Indian hunters came upon some miners, and at once received a volley. Luckily nobody was hurt. The Indians asked Colonel Mills to permit them to go and capture the miners. Colonel Mills told them they could not, and they replied that they could not understand why the Government burned miners' outfits and would not permit Indians to do so.

ARTISTIC IMPROVEMENTS.—Manufacturers of all kinds exhibit a decided improvement in the artistic decoration of goods produced, whether they be stoves, machinery, furniture, tools or carriages. Hereafter it may be laid down as a rule that the most highly finished and most beautiful goods in every trade will command the best market and the highest price, and that, other things being equal, the measure of their artistic value will be the measure of their commercial value.

Notices of Recent Patents.

Among the patents recently obtained through Dewey & Co.'s Scientific Press American and Foreign Patent Agency, the following are worthy of mention:

Door Bolt Attachment.—Louis Monks, San Francisco. This improvement consists in providing an ordinary bolt with a plate attachment, which will serve as a means of attaching the bolt to the door either in a temporary or permanent manner as desired The plate is attached to the end of the base plate of the bolt, which will stand at right angles to the bolt. On the inside of the plate the inventor forms one or more projections or spurs. The plate attachment can then be placed against the edge of the door frame, and the door closed upon it, so as to force the spurs into the wood of the frame and secure the bolt in position against the outer face of the door frame in the manner of using a temporary door fastener. The bolt can be shut across so as to fasten the door in the usual manner. This door bolt will be especially useful for travelers who are compelled frequently to sleep in rooms having defective door fastenings, as it can be applied in an instant, and will provide a perfectly secure fastening. Screw holes can be made through the plate and the plate screwed firmly against the edge of the door frame after the spurs have been embedded in the wood, when it is desired to employ the bolt as a permanent fastening.

Governor.—Frank M. Merrill, Marysville, Yuba county, Cal. This invention is a novel governor, which is to be employed for steam engines, water wheels, or any other machinery to which it may be necessary to impart a steady motion. The improvement consists in the employment of a pair of governor balls or weights which are caused to act upon the stem of a valve, admitting a liquid to one end or the other of a cylinder within which moves a piston. The rod of this piston connects directly with the supply valve or gate of the machine to be controlled, and thus opens or closes it as may be necessary.

Harvester Fingers.—Victor N. Collins, Nordhoff, Ventura county, Cal. This invention relates to certain novelties in harvester fingers and their relation to the finger bars, and it is an improvement on a patent granted to the same inventor, January 27th, 1874. The improvement consists in making the guard a finger so that the cover for the draper is formed in one piece with it instead of being formed separately and secured to the finger bar or formed in one piece with the latter. The keepers for the sickle may also be formed in one piece with the guard, the whole being constructed of cast metal of any kind. This construction cheapens the device and saves considerable work upon the top of the finger bar.

Windmill.—Joseph McGovern, Modesto, Stanislaus Co., Cal. This improvement is especially intended to make the mill self governing, and consists in the construction of a vertically placed vane, with two other horizontally placed vanes, one of which ordinarily holds the wheel to the wind. Any dangerous increase in the wind will act upon the vertical vane, and this by its connections will so turn the other vanes as to throw the mill more or less out of the wind. As the strength of the wind varies, the mill will regulate itself to its necessities.

Folding Table.—E. J. Marstens, Stockton, Cal. This is an improvement in that class of tables which are intended to be folded into a small compass for the purpose of transportation, and it consists in a novel manner of constructing what the inventor terms compound legs, which will by this method of bracing form a very stiff and serviceable table. These legs may be folded down upon the table and the table itself divided into two leaves, which may be turned back to back for transportation.

Connecticut Ahead.—By a telegram from Hartford, Conn., July 19th, we learn that the House of Representatives on that day passed a resolution previously passed in the Senate, establishing the first agricultural experiment station in America. The plan is to appropriate $700 quarterly to the Wesleyan University of Middletown, the money to be used in testing fertilizers and performing in the extensive laboratories of the institution those experiments so beneficial to agriculture which are successful in Germany and other parts of Europe. It is understood Prof. Atwater, in charge of the chemical department at the College, is the best agricultural chemist in the country, and as the appliances are first-rate, there is no doubt that the first agricultural experiment station in the United States will be a success. Hundreds of petitions have been presented in the Legislature asking for its establishment.

Cassiar Mines.—The news from the Cassiar mines is very encouraging; all hands are taking out big pay. The Grant company's claim was sold to some Chinese for $2,500. The prospects are much better than during the last year.

Cotton Manufactures.

This important branch of textile fabrics had its origin in India and China, the inhabitants of which have practiced the art for unknown centuries. Among ancient writers Herodotus was the first to mention this staple, which he called *tree-wool*. Cotton fabrics were imported from India in small quantities by the ancient Greeks and Romans. Spain was the first country to introduce the manufacture of the fabric into Europe, at about the 10th century. Italy and the Netherlands soon followed, but nothing was done by England in this direction until 1640. The entire annual value of the English manufactures of cotton in 1760 amounted to only one million of dollars, but a new impetus was given to the business in 1767 by the invention of the spinning-jenny by Hargraves.

The idea of printing cotton fabrics also had its origin among the Chinese. This class of goods was first introduced into England through the medium of the East India company.

THE LEAF CUTTER.

Printed cottons were first employed for window draperies and chair covers, and it is said that many an old country mansion in England has rooms still hung with these goods, the colors slightly faded by age and sunlight, but almost entirely undisturbed by periodical washings.

As the cotton manufacture developed itself in Lancashire, it became evident that a profitable trade might be established by an imitation of the Chinese printed goods, also. Accordingly print works were established, at first on a small scale, but which rapidly grew into mammoth proportions. The earlier designs were merely copies of the uncouth trees, figures, vases, birds, etc., of Chinese art. As the business began to grow a new and more English style of goods were turned out, but consisting mostly of large and showy flowers, leaves, fruits, etc., barbarous in taste, but printed in genuine fast colors capable of enduring any number of visits to the wash tub. As time passed and taste improved, the more neat and delicate modern styles were introduced, upon which improvements in style and quality have been made, until cotton goods have been brought to the beauty and excellence in which we now find them.

Carson Mint.—The following is a statement of the business of the United States Mint at Carson during June, 1875: Coinage executed, $318,993 06. The deposits were as follows: Gold, 4,100,794 ounces; value, $76,294. Silver 79,040,980 ounces; value, $91,447.47.

Leaf Cutters.

These bees are smaller than our domestic kinds, are black, with red hairs on the throat, and a white down upon the head and abdomen. They build their nests in the ground. In the engraving, a portion of earth is removed, revealing a section of two nests. It will be seen that they commence by boring down, almost perpendicularly for some inches, to form an entrance, which is enlarged into a horizontal tube or gallery. The leaves of the rose bush are always used to form the nest. The most perfect leaf is selected, and the insect, alighting upon it, cuts a piece with its mandibles, with which it flies to the nest. Ten or twelve pieces of different sizes and shapes are thus conveyed to the bottom of the excavation, where they are twisted together so that one piece folds within another, forming a kind of funnel-shaped cone. The pieces of leaves are fitted together as perfectly as though done by an expert, and retain their position. The little architect then makes a cake of honey and pollen, places it inside, lays an egg, and then proceeds to wall up the nest. A circular piece is cut out of a rose leaf again, which just fits the opening. This is pushed down till it closes the opening of the cone-shaped nest. A second and third leaf is added, and sometimes a fourth. In this manner a series of cells is constructed in one excavation, sometimes amounting to eight or ten, and when all is completed, the hole is closed up so nicely that no trace of it is left.

The different species of solitary and nest-making bees have their mandibles constructed to suit their habits; the carpenter bee to bore through wood, the mason bee to work in cement and the leaf cutter to dig in the earth.

Getting Ahead of a Railroad.—The Columbia Conduit company were recently desirous of laying a pipe for the conveyance of oil under the track of a railroad which runs a distance of about nine miles at the Allegheny river from Power's run, Pennsylvania. The company refused the privilege, thinking to secure the transportation for the road. The oil company, however, have constructed a number of tank wagons with axles and wheels which will run on the track, and they now do their transportation by rail free of toll. Their tanks hold about twenty-five barrels each and can be loaded or unloaded in two or three minutes by merely making a suitable connection and turning a faucet. This move of the conduit company demonstrates anew that "where there's a will there's a way."

Australian Awards to California Exhibitors.

The premiums awarded to California exhibitors at the late exhibition of the Agricultural Society of New South Wales arrived by the last Australian steamer. They consist of bronze and silver medals, about three inches in diameter, and weighing about seven ounces each. They have been awarded as follows: Silver medals were awarded to W. T. Garrett & Co., for brass goods; to Linforth, Kellogg & Co., for agricultural implements, and to Kimball manufacturing company for carriges. Bronze medals were awarded to Leisenfield & Co., for billiard tables; Consolidated tobacco company, for tobacco; E. K. Howee & Co., for wooden ware; Main & Winchester, for saddlery; C. C. Burr & Co., for spices; L. Lachman & Co., for wines; J. S. Barker & Co., for locks and store fittings; Edgerton, Allen & Co., for starch; Pacific saw manufacturing company, for saws, files, etc.; Geo. W. Clarke & Co., for paper hangings; Brittan, Holbrook & Co., for stoves; Littlefield, Webb & Co., for produce; Painter & Co., for type; Snow & May, for paintings; I. Landsberger, for wines; Cutting & Co., for preserves; Geo. A. Raymond, for safes; C. E. Watkins, for photographs; Kohler & Frohling, for wines. A. S. Hallidie was presented with a handsome gold medal as a recognition of the services he rendered in aiding the success of the exhibition.

As an evidence of the large benefits which must accrue to California for the interest she took in the exhibition, we may mention that in addition to the sale of goods taken down, orders for additional goods were received here several weeks ago, to the extent of $60,000 in value, while the last steamer brought an additional order for $40,000 more.

The face of the medals awarded has a neat design, representing industry, with the inscription, "Science with Practice." On the reverse appears a wreath surrounding the name of the society and the person to whom it was awarded.

Blasting Memoranda.

The following table gives the space occupied by any given quantity of powder in round holes of different sizes, from one to six inches diameter:

Diameter of the hole.	Powder contained in a 1 inch hole.	Powder contained in a 1 foot hole.	Depth of hole to contain 1 lb powder.
	oz.	lb. oz.	Inches.
One	0.1	5.0	38.19
One and one-half	0.9	11.3	17.98
Two	1.7	4.1	9.55
Two and one-half	2.6	15.4	6.11
Three	3.8	13.2	4.24
Three and one-half	5.1	13.6	3.12
Four	6.7	0.4	2.39
Four and one-half	8.5	5.8	1.89
Five	10.5	13.7	1.53

The rules for calculating the amount of powder for a given weight is that "the charges are proportional to the cubes of the lines of least resistance," that is, if from experiment we find that in a certain rock four ounces of powder is sufficient to blow out a hole where the depth of the line of least resistance from the bottom of the hole to the surface is two feet, then for one where this depth is eight feet the charge would bear the same proportion to four ounces as 2.3 does to 8.3, that is sixty-four times; it would consequently be sixteen pounds. The following table is calculated in this manner, and is for the case of moderately hard rock, such as certain kinds of limestone:

Line of least resistance.	Charge of powder. lb.	oz.
One foot	..	.00½
One and one half feet	..	1.70
Two feet	..	4.00
Two and one-half feet	..	6.25
Three feet	..	7.90
Three and one-half feet	1	5.00
Four feet	2	.00
Four and one-half feet	2	.90
Five feet	3	.15
Six feet	6	.12
Seven feet	10	.12
Eight feet	16	.00

Needed Inventions.

The *Sewing Machine Journal* gives the following list of inventions in which great improvements can be made. There is great need, it says, of these specified, and also great room for advancement. Doubtless a fortune can be made on them if properly managed:

1. A ruffler which can be set to gather a given fulness.
2. A simple embroiderer.
3. An adjustable scroll binder which will not stretch the binding.
4. A practical adjustable hemmer, from the smallest size to an inch wide.
5. A rotary shuttle sewing machine, which will not twist or untwist the thread, and which will sew with great rapidity.
6. A practical tuck folder.
7. A sewing machine which will have in its working parts the different attachments which can be thrown in gear with some working part of the machine when the attachment is required.
8. Motive power.
9. A good needle threader.
10. A close oil bottle which can be sold cheap, and used to oil the machine instead of the oil can. It must be made so that the oil can be forced out.

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Capital, Five Million Dollars.

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Persons engaged in the following business can have their Signs Painted at contract prices, for goods or articles in which they trade, viz:

Merchant Tailors,	Gents' Furnish'g G'ds,
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It is Cheaper, more durable, more Elastic, and produces a more Beautiful Finish than the best of any other Paint.
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Put up in ¼, ½, 1, 2 and 5 gallon packages, and in Barrels. Sold by the Gallon.
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For Washing and Cleaning Purposes.

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It is unequalled for cleansing Woolen Fabrics, Cutlery, Carpets or Crockery; for Scrubbing Floors, Washing Paint, Removing Grease Spots, Shampooing or Bathing.
It renders water soft, and imparts a delightful sense of coolness after washing.
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PRICE.—Per Pint Bottle, 25 cents; per quart Quart Bottle, 40 cents; per Half Gallon, 75 cents.
Also, SULPHATE OF AMMONIA for chemical purpose, fertilizing, and the preparation of artificial manures. AMMONIACAL PREPARATION for the prevention and removal of boiler scale. CRUDE AMMONIA, for general manufacturing. and PUR LIQUOR and AQUA AMMONIA for chemical and pharmaceutical purposes.
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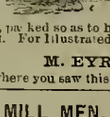
Bronze Turkeys
Gobblers, 30 to 40 pounds. Hens 15 to 20 pounds.



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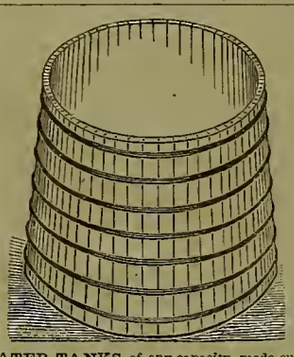

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This Explosive Compound, perfectly safe, is equal in strength to giant powder. Cost of material, only 11 to 20 cents per pound, for blasting purposes, torpedoes, shells, cannons, etc.—government use generally. It is particularly adapted for general blasting, like common black powder. Patent right for sale, either for county, State, or the whole of America. Best of references given for its practical use. Further information and the address of the inventor can be had at this office.

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One wine gallon of water contains of solid constituents 228.69 grains, in the following proportions:

Carbonic Acid (combined)	42.93
Chlorine	78.38
Sulphuric Acid	2.36
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Oxide of Iron	2.85
Lime	4.41
Magnesia	5.24
Soda	62.19
Alumina, Ammonia, Potash, Litbia, Boracic Acid, Organic Matter	27.38
Total grains	228.69

The amount of *free* carbonic acid in the water which *escapes on standing* and is not calculated in the above analysis, is equal to 383.75 grains per gallon.

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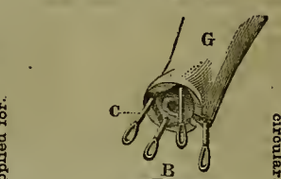

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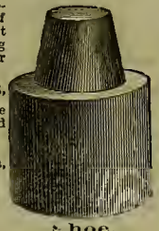

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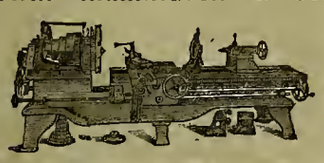

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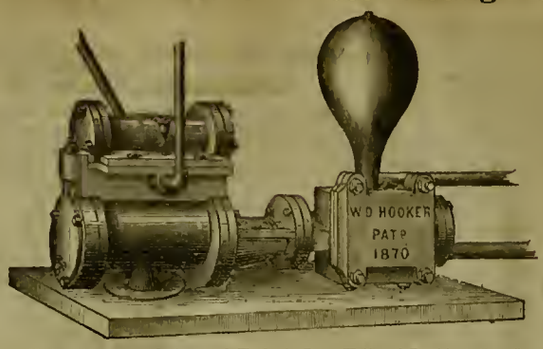

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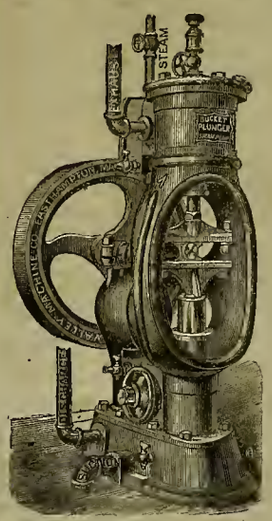

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Manufacturer of perforated sheet metals of every description, at reduced rates. Mill owners using Battery Screens extensively, can contract for large supplies at favorable rates. This is the only establishment on the Coast devoted exclusively to the manufacture of screens.

San Francisco Cordage Company.

Established 1856.

We have just added a large amount of new machinery of the latest and most improved kind, and are again prepared to fill orders for Rope of any special lengths and sizes. Constantly on hand a large stock of Manila Rope, all sizes: Tarred Manila Rope; Hay Rope; Whale Line, etc., etc.

TUBBS & CO.,
e20 611 and 613 Front street, San Francisco

WIRE ROPE

For Mining, Shipping, and General Purposes.

All kinds and sizes on hand, or made to order; guaranteed of unsurpassed quality, and manufactured of any length. FLAT ROPES, ROUND ROPES and TAPER ROPES, of IRON OR STEEL.

Patent Endless Wire Ropeway

(WIRE TRAMWAY,)

FOR THE RAPID AND ECONOMICAL TRANSPORTATION OF ORES AND OTHER MATERIAL OVER MOUNTAINOUS AND DIFFICULT ROADS.

This system has been in use for over three years, and given thorough satisfaction.

PATENT GRIP PULLEY,

For transmission of power by means of wire ropes,

WIRE.

Fencing Wire and Staples,
BALING WIRE,
SPRING WIRE,
GALVANIZED WIRE,
BROOM WIRE,
STEEL WIRE,
COPPER WIRE,
BRASS WIRE,

And Wire of all kinds, on hand or made to order.

SOLE AGENT FOR

Richard Johnson and Nephews' Celebrated Telegraph Wire.

Full stock on hand in bond, or duty paid.

Wire Cloth and Wire Netting.

FULL ASSORTMENT ON HAND FOR ALL PURPOSES, AND

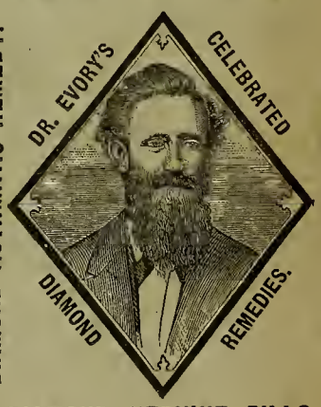
All Kinds of Goods in the Wire Line,

Send for Circulars, Etc., to

A. S. HALLIDIE,
2am 113 and 115 Pine Street, S. F.

DIAMOND CATARRH REMEDY.

DIAMOND ASTHMATIC REMEDY. DR. EVORY'S CELEBRATED DIAMOND INVIGORATOR.

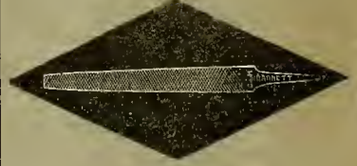


DIAMOND REMEDIES.

DIAMOND NERVINE PILLS.

CATARRH AND COLDS—Dr. Evory's Diamond Catarrh Remedy never fails; perfect cure; try it; fifty cents per bottle. Depot, 608 Market street, San Francisco, Cal., opposite Palace Hotel. Sold by all druggists.

BLACK DIAMOND FILE WORKS.



TRADE MARK

G. & H. BARNETT,

Manufacturers of Files of every Description

Nos. 39, 41 and 43 Richmond street,

Philadelphia, Pa.

Sold by all the principal hardware stores on the Pacific Coast. 18v25.1y

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THE NEVADA

QUARTZ MINING PROPERTY FOR SALE,

With a new 15-stamp mill, now running. Has its own water power, with houses, shops, etc. Government title; joins the Providence mine, on Deer Creek, Nevada City, Cal. For sale or to bond.

Address, I. S VAN WINKLE,
413 Market Street, San Francisco.

Sales at S. F. Stock Exchange.

FRIDAY, A. M., JULY 16.

100 Alpha.....20@19½
822 Andes.....4½@4¾
260 Best & Belcher.46½@46¾
54 Belcher.....28@27¾
220 Bullion.....47
40 Baltimore Con. ..43¾@44
130 Chollar.....17@17½
188 Crown Point.....29¾@30
899 Confidence.....34@35
695 Con Virginia.....30¾@30¾
1245 Celifornia.....56@55¾
190 Caledonia.....19½
150 Chellenge.....17@17¾
1060 Cosmopolitan.....50@55
100 Sego.....32¾
280 Empire Mill.....63¾@64
150 Eclipse.....38@38½
895 Gould & Curry.16½@16¾
200 Globe.....2¾@3
50 Hale & Norcross.....33½
290 Imperial.....83@83¾
365 Julia.....18@15
40 Kentuck.....14¾@14¾
80 Koseuth.....6¾@6¾
80 Keg Belcher.....37¼
840 Lady Bryan.....1½@1¾
590 Lady Wash.....1¾@1¾
85 Leviathan.....130
870 Mexican.....19½@20
100 ....do.....h 30 .20
100 ....do.....h 5 .20
920 Mint.....40 @45c
210 New York.....2¾@2¾
200 O'Connor.....2¼
605 Ophir.....47¾@47¾
112 Overman.....65@66
200 Occidental.....h 10 .35
400 Prospect.....4½
10 Pacific.....2½
275 Woodville.....2¼@2¾
105 Yellow Jacket..85@85½

AFTERNOON SESSION.

100 American Flag...h 5 .2½
130 Belmont.....3¼@3¾
110 Best & Bel.....46¾@46¾
505 Belcher.....29@30
165 Bullion.....47¾@48
365 Confidence.....23@26
340 Chief of Hill.....10c
45 Con Virginia.....3½
670 Celifornia.....56¾@56¾
615 Crown Point.....30@30¼
1590 Mansfield.....22@23c5
520 Mexican.....21@20¾
23 ....do.....b 10 .21
145 Meryland.....6½c
725 Mint.....40@42½c
60 No Belle.....2¾
100 N Carson.....3½
150 Orig Gold Hill...2¼@2¾
230 Overman.....68@67½
420 Ophir.....50¾@50
20 ....do.....b 5 .51
50 ....do.....b 5 .50¾
300 Phoenix.....2@2¼
5 Pioche.....4
125 Prussian.....2¾
210 Prospect.....4@4¾
1000 Panther.....2½
375 Pacific.....2¼@2½
520 Poorman.....4@4¼
635 Raymond & Ely...45@44
55 ....do.....h 30 .46
10 Rock Island.....2¾
300 ....do.....h 30 .3
200 So Chario!.....1
50 S R Island.....57½
700 Tiger.....7@8½c
1000 Union.....2¾
235 War Eagle.....50@55c
1755 Wells-Fargo.....15@16c

TUESDAY, A. M., JULY 20.

50 Am Flet.....3½
20 Alta.....2¼
355 Alpha.....22½@22
715 Best & Belcher..39@40¾
330 Belcher.....31½@32
25 ....do.....b 5 .32
495 Bullion.....53@54
150 Baltimore Con...43@44½
100 ....do.....b 30 .44
105 Choliar.....80@81
450 Crown Point.....34¾
469 Confidence.....23½@29
165 Con Virginia.....31@31½
75 Con G H.....43¾@44½
420 Challenge.....38½@38¾
830 Caledonia.....20@20½
10 ....do.....h 5 .50
1965 California.....59¾@60
100 ....do.....h 10 .60
400 ....do.....h 5 .60
100 Dayton.....1½@1¾
115 Eclipse.....43
380 Empire Mill.....7¾@7¾
495 Gould & Curry.18¾@18¾
130 Hale & Nor.....14@14
1150 Imperial.....10@10½
20 ....do.....b 3..11¼
660 Julia.....16
130 Justice.....12½
295 Kentuck.....16@16¾
50 Knicker.....4
795 Lady Bryan.....1½@2
600 Mexican.....20¾@21
100 ....do.....h 30 .21¼@21½
100 ....do.....h 10 .20
590 New York.....2¾@2¾
270 Occidental.....3¼
475 Ophir.....50@51½
210 Overmen.....67½@68¾
100 ....do.....h 5 .68
215 Savage.....114@105
760 S Nevada.....15
420 S Hill.....11
50 Seg Belcher.....38@101
130 Succor.....17¾
1020 Union.....2@2¼
100 ....do.....h 30 .7¾
100 ....do.....h 5 .8
340 Utah.....11@11¾
355 Woodville.....2¼@2½
195 Y Jacket.....34@33½

AFTERNOON SESSION.

1690 Andes.....4¾@5
200 Alpha.....2¾
135 Belmont.....3¾@3½
70 Bullion.....50½..5
100 ....do.....h 5 .50
1 Best & B.....51¾@52
830 Cosmopolitan.....67½@70
150 Caledonia.....24¾@25
110 Confidence.....37¾
1970 California.....61½@62
30 Con Virginia.....3 9
250 Eureka Con.....56 @58½
110 Empire I.....37½
500 Florida.....1¾
2310 Gila.....5¼@5
100 G Chariot.....2
405 Gould & Curry...18¾@19
15 Illinois Con.....5
640 Jackson.....17½@2
770 Jeffer-on.....4¾@4¾
35 K Con.....2¾
200 Kossuth.....2¾
20 Leopard.....17¾
755 Lady Wash.....2@1¾
20 Leviathan.....75c
150 Mahogany.....1¾@1¾
1000 Meuefield.....22½
280 Meadow Valley..6¾@7¼
535 Mexicen.....21¾@21¾
100 Mint.....40c
130 Mary an!.....7c
20 North Belle.....28
690 Niagara.....87½@83c
16-5 Ophir.....47¾@5
170 Overman.....69@10
500 Phoenix.....2¼@2¾
165 Pioche W Ex.....4
169 Prnesian.....2¾
300 Poorman.....3½
420 Pecifio.....2¼@2½
200 Prospect.....4¾
635 Raymond & Ely..50@49¾
45 ....do.....b 5..50@51
70 Rye Patch.....1½
40 S Cheriot.....75c
100 S Nourston.....b 5..5
50 S R Island.....87½
150 Savage.....120@117
185 Utah.....12@11½
875 War Eagle.....50@87½
10 Hale & Nor.....4¾
270 Mexican.....21¾@22
100 Wehfoss.....62½c
200 Whitman.....2½
1500 Ward.....2¼@2¾
850 Welle-Fargo.....16@15

WEDNESDAY A. M. JULY 21.

450 Alpha.....22@23
815 B & Belcher.....49¾@50
100 ....do.....b 5..50
190 Bullion.....48¾@49
170 Belcher.....31@40½
440 Baltimore Con.....4½
215 Chollar.....80@79½
205 Confidence.....28@29
875 Crown Point.....32½@33
205 Con Virginie.....31@32½
2315 Celifornia.....62@61
670 Caledonia.....25@25½
885 Empire Mill.....7¾@7¾
1230 Gould & Curry...19@18¾
3950 Gould & Curry...19@18¾
137 ....do.....h 30..18
280 Hale & Noroross..42@41
1785 Imperial.....10¾@11¼
40 Justice.....12½@12¾
140 Julie.....16¾@16½
105 Kentuck.....15¾@15¾
150 Knickerhocker...3⅞@3¾
1145 Lady Bryen.....1¾
715 Mexican.....20½@21
2325 Ophir.....53½@52½
525 Overman.....63½@68¾
350 Savege.....118½@115
885 S Nevada.....15½
100 ....do.....h 30..18
20 Seg Belcher.....100
10 Succor.....1½
405 Utah.....11¾@11½
410 Union Con.....1¾@2
165 Yellow Jecket.....90@91

SALES OF LAST WEEK AND THIS COMPARED.

THURSDAY, A. M., JULY 15.

215 Alpha.....19¾@20
400 Best & Belcher.....47@48
190 Bullion.....48¾@49
260 Bullion.....47¾@48
345 Baltimore Con.....4½
80 Chollar.....74@75
435 Celedonia.....19½@20½
830 Crown Point.....30@31½
170 Confidence.....34@35
2485 California.....56¾@57½
150 Challenge.....61@62½
365 Con Virginia.....30¾@30¾
450 Mahogany.....1¾
1590 Mansfield.....22@23c5
50 Eclipse.....38½
375 Empire.....6¾@
1050 Gould & Curry.16½@16¾
500 Gl he.....87½c
180 Hale & Norcross.38 @39
400 Imperial.....9¾@9¾
10 Juetice.....11½
110 Julia.....15@15¾
70 Kentuck.....15
240 Knickerbocker...3¾@3¾
1710 Lady Bryan.....1½
1115 Mexicen.....20¾@20¾
590 New York.....2¾@2¾
1395 Ophir.....48¾@49
1990 Overman.....68@68½
235 Occidental.....3½@3¾
450 Rock Island.....2⅞@3
175 Savege.....100@10
660 Sierra Nevada..14¾@15½
650 S Hill.....10¾@11
40 Seg Belcher.....95@96
33 Trench.....12@15c
200 Union Con.....7½@7¾
400 Utah.....2¾@2¾
240 Yellow Jacket...50@55c

AFTERNOON SESSION.

70 American Flag..2¼@2⅝
2100 Andes.....4¾@4¾
40 Belmont.....3¾
100 Bullion.....48¾
60 Cosmopolitan.....55c
770 Eureke Con.....54¾@58
1330 Empire.....53c
83 Gould & Curry16¾@16¾
800 Golden Chariot..2¾@3
30 Illinois Con.....4½
200 Kossuth.....2
130 Leoperd.....18@18¾
2238 Mexicen.....20½@22
50 Maryland.....75c
210 Mint.....35½@40c
1540 Mahogany.....1¾@2
1100 Mansfield.....25c
130 Meedow Valley.....6¾
50 Negera.....70c
560 Ophir.....48¾@48¾
45 Overman.....65@66
300 O G Hill.....2¾@2¾
1090 Phoenix.....2¾@2¾
350 Panther.....1½@1¾
100 Poorman.....4½
100 Raymond & Ely....52½
170 Rye Patch.....1¾
70 South Charlot.....1@1¾
250 War Eagle.....50¾
700 Wells Fargo.....12½@15c

THURSDAY, A. M., JULY 22.

340 Alphe.....19¾@20¾
10 Am Flat.....3½
200 Best & Belcher...45½@46
710 Belcher.....28@29
240 Bullion.....48½
1136 Crown Point.....31@31¾
115 Chollar.....80
240 Caledonia.....22@23½
100 Con Gold Hill.....3¾
95 Con Virginia.....31½@31⅝
920 Celifornia.....59¾@60¾
1575 Challenge.....71@69
295 Dayton.....1¾
10 Eclipse.....9¾
335 Empire Mill.....7@7¾
365 Gould & Curry.18½@18¾
1040 Globe.....2¾@3
110 Hele & Norcross.39½@41
1155 Imperial.....10¾@11¼
385 Justice.....12½@130
350 Julia.....16¾@17
200 Kentuck.....15@15¾
90 Knickerhooker.....3¾
535 Lady Bryan.....1½@1¾
580 Mexican.....20¾@20¾
825 New York.....2¾
1000 Ophir.....51@52
200 Overman.....67@67¾
30 Occidental.....3½
520 Rock Island.....2⅝@3
165 Savage.....112@115
1030 Sierra Nevada...14¾@15¾
80 S Hill.....10@10¾
90 Seg Belcher.....92@95
280 Succor.....1¾
120 Union Con.....7¾@8
200 Utah.....11½@12
300 Woodville.....2¾
225 Yellow Jacket....86@87

AFTERNOON SESSION.

100 Am Flag.....2
300 Andes.....4¾@4¾
100 Belmont.....3¾
100 Chief of Hill.....40@50c
350 Cosmopolitan .....60@55c
300 California .....60¾@59¾
9 Caledonia.....23
100 Empire Con.....57½@56
100 Empire.....50c
1250 Florida.....2@2¾
245 Gila.....4¾
300 Golden Chariot.....1¾@2
60 Illinois Con.....4¾
700 Jackson .....2@1¾
70 Jefferson.....4½
210 K K Con.....6@5½
200 Kosuth.....2¾
20 Leviethan.....6½@6¾c
580 Meadow Valley...6¾@6¾c
700 Mansfield .....25@24c
100 Mehogany.....1¾
170 Nine.....3¾@3¾c
600 Mexican .....20¾@21
400 Niagara.....h 30..75@87½c
425 Ophir.....51
850 O G Hill.....2¾@2¾
10 Prussian.....4¾@4¾
50 Pioche W 2
400 Prussian.....2½
100 Panther 1½
750 Poorman.....3¾@3¾
1200 Pioche.....4½
990 Pacific.....2½
580 Prospect.....4¾@4
260 Raymond & Ely....49@43
10 Savage.....115
100 S R Island.....3
70 South Chariot.....87½c
500 Tiger.....75c
1000 Ward.....2¾@2½
900 Wells-Fargo.....15@14c
100 Webfoot.....63½c

MINING SHAREHOLDERS' DIRECTORY.

Compiled every Thursday from Advertisements in the Mining and Scientific Press and other S. F. Journals.]

ASSESSMENTS.—STOCKS ON THE LIST OF THE BOARDS.

Company.	*Location.*	*No.*	*Amt. Levied.*	*Deling'nt.*	*Sale.*	*Secretary.*	*Place of Business.*
Baltimore Cons M Co	Washoe	9	1 00	June 30	Aug 3	Aug 23	C A Sankey	331 Montgomery st
Buckeye G & S M Co	Washoe	14	25	July 1	Aug 7	Aug 26	C A Sankey	330 Montgomery st
Caledonia S M Co	Washoe	13	3 00	July 7	Aug 11	Aug 31	R Wegener	414 California st
Cheriot Mill & M Co	San Diego Co	Cal	4	25	June 24	July 27	F Swift	419 California st
Cherry Creek M & M Co	Nevada	4	50	July 15	Aug 19	Sept 14	D F Verdenal	409 California st
Condor M Co	Ely District	4	50	July 9	Aug 16	Sept 7	G T Grimes	240 Montgomery st
Dacton G & S M Co	Washoe	8	1 00	June 8	July 15	Aug 5	W E Dean	419 California st
El Dorado South Cons M Co	Nevada	6	1 00	July 6	Aug 11	Aug 31	W Willie	419 California st
Empire M Co	Idaho	10	50	July 7	Aug 12	Sept 1	W Willis	419 California st
Eureka M & S Co	Washoe	5	6	June 1	July 9	July 31	A C Ryce	308 California st
Florida S M Co	Washoe	2	75	June 15	July 20	Aug 10	L Hermann	330 Pine st
Golden Fleece G & S M Co	Washoe	9	10	June 16	July 16	Aug 16	J P Moore	320 California st
Ida Ellmore M Co	Idaho	18	1 00	July 20	Aug 27	Sept 18	C S Higgins	402 Montgomery st
Imperial S M Co	Washoe	22	1 00	June 29	Aug 3	Aug 20	W E Dean	419 California st
Justice M Co	Washoe	15	3 00	June 19	July 19	Aug 19	Jas Kennedy	Merchants' Ex
Kossuth M Co	Washoe	4	1 00	June 12	July 15	Aug 21	E P Stone	419 California st
Lady Bryan M Co	Washoe	8	50	July 9	Aug 12	Sept 3	F Swift	419 California st
Leviathan M Co	Washoe	1	50	May 29	July 6	July 28	F E Luty	507 Montgomery st
Mahogany G & S M Co	Idaho	16	2 00	July 15	Aug 21	Sept 11	C B Higgins	402 Montgomery st
Nevada G & S M Co	Washoe	2	25	June 3	July 8	July 27	Joseph Maguire	419 California st
New Kentuck Cons M Co	Washoe	14	50	June 22	July 27	Aug 16	H C Kibbe	419 California st
New York M Co	Washoe	5	50	June 22	July 27	Aug 16	H C Kibbe	419 California st
North Bloomfield G M Co	Cal	38	1 00	June 16	July 26	Aug 13	Thos Derby	320 California st
Original Gold Hill M Co	Washoe	3	50	June 4	July 9	July 28	W M Helman	401 California st
Overman S M Co	Washoe	32	3 00	June 25	July 30	Aug 19	R Wegener	414 California st
Pioche W Ex	Washoe	8	25	July 2	Aug 6	Aug 25	S Phillips	408 California st
Pioobe West Ex M Co		8	2 00	July 12	Aug 18	Sept 10	T L Kimball	409 California st
Savage M Co	Washoe	19	5 00	June 24	July 28	Aug 16	F B Holmes	419 California st
Silver Cord M Co	Idaho	10	1 00	July 20	Aug 28	Sept 20	C S Higgins	402 Montgomery st
Silver Hill M Co	Washoe	6	2 00	June 8	July 14	Aug 4	W E Dean	419 California st
South Chariot M Co	Idaho	14	75	June 10	July 13	Aug 4	F Swift	419 California st
Utah S M Co	Wa hoe	10	2 00	June 7	July 9	July 30	W E Dean	419 California st
War Eagle M Co	Idaho	10	1 00	June 30	Aug 5	Aug 25	L Kaplan	Merchants' Ex
Ward Beecher Cone M & M Co	Nevada	5	50	July 14	Aug 25	Sept 22	D A Jennings	401 California st
Wells Fargo M Co	Washoe	2	10	June 23	July 26	Aug 13	O H Bogart	402 Montgomery st
Woodville Cone M Co	Washoe	2	60	June 25	July 29	Aug 18	W M Helmeun	401 California st
Woodville G & S M Co	Washoe	10	60	June 25	July 29	Aug 18	W M Helmann	309 California st

OTHER COMPANIES—NOT ON THE LISTS OF THE BOARDS.

Bandereta M & M Co	Cal	1	25	Jonc 17	July 17	Aug 2	J W Tripp	408 Californie st
Black Hawk Coal M Co	Cal	1	5	June 23	July 30	Aug 16	H A Powell	520 Montgomery st
Blue Jacket M Co			90	July 9	Aug 11	Aug 28	C J Eeton	72½ Merket st
Cescede Blue Gravel M Co	Cal	3	10	July 20	Aug 26	Sept 13	J M Buffington	311 California st
Champion Cons M & S Co	Nevada	1	1 00	May 7	July 6	July 24	J M Buffington	311 California st
Edith Q M Co	Cal	4	25	June 3	July 19	Aug 11	Wm Stuert	113 Leideedorff st
Emme Hil Cone M Co	Utah	2	50	June 14	July 9	Aug 19	L C Fowler	302 Montgomery st
Fresno Q M Co	Fresno Co	Cal	2	25	June 14	July 24	R Wegener	414 California st
Gold Mountain M Co	Amedor Co	Cal	4	25	July 1	Aug 7	W A Knapp	116 Leide dorff st
Gold Run M Co	Washoe		12	15	June 5	July 12	C C Parker	6 Market st
Green Valley Blue Gravel M Co	Cal		4	30	July 7	Aug 9	Aug 27	A D Carpenter	605 Clay st
Hartford M Co	Washoe		3	30	June 26	July 28	Aug 14	E F Stone	419 California st
Heho S M Co	Inyo Co	Cal	1	10	June 4	July 3	July 24	Daniel Buck	331 Montgomery st
Jackson M Co	Eureka	Nevada	7	50	June 25	July 29	Aug 21	E P Stone	419 California st
Lady Washington M Co	Washoe		4	50	June 16	July 20	Aug 9	H C Kibbe	419 California st
Los Prietos M Co	Cal		3	25	June 2	July 9	July 31	S H Smith	6 Montgomery Av
Mieers Dream S M Co	White Pine	Nev	2	40	June 21	July 31	Aug 19	W F R S Hindler	Cor Cal & Spring
Miesori Q M Co	Cal		2	50	June 22	July 26	Aug 24	F H Rogers	330 Pine st
Morning Star G & S M Co	Cal		23	1 00	June 21	July 14	Aug 14	O H Bogart	402 Montgomery st
Mosquito Hydreulic M Co	Cal		2	31½	June 28	July 31	Aug 19	C S Healy	Merchants' Ex
Mountain View Cone M Co	Nevada		1	50	June 24	July 29	Aug 16	C S Healy	419 California st
Mount Savage M Co	Utah		2	10	June 12	July 26	Aug 17	D F Verdenal	409 California st
Omegna Talp Mountain M Co	Cal		6	9	June 8	July 13	Aug 2	Davis Wilder	Merchants' Ex
Pilleans M Co	Grass Valley	Cal	5	2 00	July 30	July 9	Aug 17	G P Thurston	316 California st
Silver Sprout M Co	Cal			5	July 3	Aug 10	Sept 1	T B Wingard	318 California st
Table Mountain Alpha M Co	Cal		7	10	June 5	July 18	Aug 2	Leander Leavitt	401 California st
Tolmen & Miller M & M Co	Cal		2	30	July 14	Aug 16	Sept 6	O H Bogart	402 Montgomery st
Umpire Tunnel & M Co	Utah		4	5	May 20	July 1	Aug 2	Wm Small	531 California st
Virginia Gravel M Co	Cal		1	1 00	June 23	Sept 11	Sept 14	T Derby	229 California st
Victoria & Imperiel Tun'l & M Co	Utah		5	10	July 8	Aug 12	S pt 2	W H Watson	302 Montgomery st
Woodside M & M Co	Cel		2	25	July 17	Aug 17	Seot 2	J Glassman	335 Montgomery st
Wyoming G M Co	Neveda Co	Cal	7	35	July 13	Aug 17	Sept 4	J M Buffington	311 California st

MEETINGS TO BE HELD.

Name of Co.	Location.	Secretary.	Office in S. F.	Meeting.	Date.
American Flat M Co	Washoe	C A Sankey	331 Montgomery st	Annual	Aug 4
Caledonia S M Co	Washoe	Called by Trustees	414 California st	Special	Aug 18
Dayton G & S M Co	Washoe	W E Dean	419 Californie st	Annual	July 29
Great Eastern Quickeilver M Co	Cel	H H Pearson	432 Montgomery st	Special	Aug 3
Hahoe M Co	Neveda	W A M Van Bokkelen	419 Californie st	Annual	Aug 11
Julie G & S M Co	Washoe	Celled by Trustees	419 California st	Special	Aug 23
Kelsey G & S M Co	Cal	Called by Trustees	331 Montgomery st	Special	July 26
Lake M Co	Cal	B F Livermore	523 Market st	Annual	Aug 2
New York Hill M Co	Cal	Called by Trustees	401 California st	Special	July 29
Phil Sheridan G & S M Co	Nevada	W R Townesnd	310 Pine st	Annuel	July 26
Potosi M & Smelting Co	Nevada	J Hardy	408 California st	Annual	Aug 2
Savage M Co	Washoe	Called by Trustees	419 California st	Special	Aug 17
South Comstock M Co	Washoe	J M Buffington	311 Californie st	Annual	Aug 16
South Overman M Co	Washoe	D Wilder	Merchante' Ex	Annual	July 24
Sutro M Co	Washoe	G W R King	434 California st	Annual	Aug 2
Tyler M Co	Nevada	C D Squire Cor Montgomery & Cal ete		Annual	July 26
William shekspeare G M Co	Cal	W R Townesnd	10 Webb st	Annual	July 27

LATEST DIVIDENDS (within three months)—MINING INCORPORATIONS.

Name of Co.	Location.	Secretary.	Office in S. F.	Amount.	Payable.
Black Bear Quartz	Cal	W L Oliver	25		July 19
Virginia M Co	Washoe	Chas H Fish	401 California st	10 00	July 19
Empire G M Co	Sierra Co	Cal C Colliechon		2 Dividends—$5 Each	July 6
Empire M Co	Nevada Co	Cal D A Jennings	401 California st	50	June 15
Eureka Consolideted M Co	Nev	W W Traylor	419 California st	2 00	July 6
Excelsior M & M Co		Frank Swift	419 California st	1 00	April 10
Gila S M Co	Nevada	W Aug Knapp	116 Leideedorff st	25	July 15
Jefferson S M Co		C A Sankey	331 Montgomery st	50	May 15
Leopard M Co		R H Brown		50	July 15
Manhattan S MCo	Nevada	Chas S Neal	419 California st	1 00	Juno 15
Northern Belle M & M Co		W Willie	419 California st	1 00	July 15
Onede M Co		L Kaplan	Merchants' Ex	50	July 23

The Mining Share Market.

The last week closed with symptoms of a revivel in the stock market, hnt the traneactone have, during the present week, hardly jnstified such encouragement, thongh several of the leeding stocke heve steadily, advanced. The gradnal eesing of the money markst in the Eaet which is dependent on the improved aepect of commerciel affairs, will undouhtedly have an effect npon our mining stocks to the extent of caning the pnblio to feel more hopefnl of the near future of the businsse prospects of the whole country, end pnt faith in ventures which mnst bring a goodly return.

Prospecte elong the Cometock appeer to he unu-nally bright. The ore developments on the 1400-ft level of the Celifornia are eeid to far exceed former expectations. The Sierra Nevada is rnnning two drifts on the 700-ft level, one north and ons eonth in entirely virgin ground, which ars liahle almost any day to make valuable ore developments, end the Utah on the north end has just got its new and powerful machinery ready for a thorough and rapid devel pment of the lower levele; while on the south end, the Overman has started her pnmps at the 1000-ft station, and will undonbtedly have her shaft drained in a day or two more, ready to resnme ths development of the fins ore prospects opened on the lower levels a few months since. The yield of the Consolidated Virginie is reported as already $100,000 in excess of that of last month.

The newly elected Board of Trustees of the Savege company hae celled a meeting of the stockholdsrs for ths 17th of August, prox., to teks into consideration ths proposition to increas ths capi'al stock of the compeny to $11,200,000. The Trnstees of the Caledonia company heve aleo celled a special meeting to decide upon the feasibility of inoreasing the capital stock from $2,000,000 to $10,000,000. On Augnst 23d next, the stockholders of the Julia will mest to take aotion on a like propoeition of inorsasing the etock from $3,000,000 to $11,000,000.

LEATHER.

[WHOLESALE.]

WEDNESDAY M., July 21, 1875.

City Tanned Leather, ₰ lb		26@29
Santa Cruz Leather, ₰ lb		26@28
Country Leather, ₰ lb		24@28
Stockton Leather, ₰ lb		24@2 9
Jodot, 8 Kil., per doz		$50 00@ 58 00
Jodot, 11 to 19 Kil., per doz		68 00@ 79 00
Jodot 14 to 19 Kil., per doz		82 00@84 00
Jodot, second choice. 11 to 16 Kil. ₰ doz		57 00@ 74 00
Cornellian, 12 to 16 Ko		57 00@ 67 00
Cornellian Females, 12 to 13		63 00@ 67 00
Cornellian Females, 14 to 16 Kil		71 00@ 76 50
Simon Ullmo Females, 12 to 13, Kil		60 00@ 63 00
Simon Ulmo Femelee, 14 to 15, Kil		70 00@ 72 00
Simon Ulmo Femalee, 16 to 17, Kil		73 00@75 00
Simon, 13 Kil. ₰ doz		63 00@ 68 00
Simon, 20 Kil. ₰ doz		65 00@ 67 00
Simon, 24 Kil. ₰ doz		72 00@ 74 00
Rohert Calf, 7 and 9 Kil		35 00@ 40 00
French Kips, ₰ lb		1 00@ 1 35
California Kip, ₰ doz		40 00@ 60 00
French Sheep, all colors, ₰ doz		8 00@ 15 00
Eastern Calf for Backe, ₰ lb		1 00@ 1 25
Sheep Roans for Topping, all colors, ₰ doz		9 00@ 13 00
Sheep Roans for Linings, ₰ doz		5 50@ 10 50
California Roans & Sheep Linings		4 50@ 5 50
Best Jodot Calf Boot Legs, ₰ pair		5 00@ 5 25
Good Freuch Calf Boot Legs, ₰ pair		4 00@ 4 75
French Calf Boot Legs, ₰ pair		4 00@ —
Harness Leather, ₰ lb		33@ 37
Fair Bridle Leather, ₰ doz		48 00@ 72 —
Skirting Leather, ₰ lb		33@ 37½
Welt Leather, ₰ doz		30 00@ 50 00
Buff Leather, ₰ foot		17@ ½
Wax Sids Leather, ₰ foot		17@ —

METALS.

[WHOLESALE.]

WEDNESDAY M., July 21, 1875.

American Pig Iron, ₰ ton	38 00	@ 39 00
Scotch Pig Iron, ₰ ton	40 00	@ 44 00
White Pig, ₰ ton	— —	@ 38 00
Oregon Pig, ₰ ton	— —	@ 29 00
Refined Bar, bad assortment, ₰ lb	— —	@ — 3½
Refined Bar, good assortment, ₰ lb	— —	@ — 4
Boiler, No. 1 to 4	— —	@ — 5½
Plate, No. 5 to 9	— —	@ — 5½
Sheet. No. 10 to 14	— —	@ — 5¾
Sheet. No. 18 to 20	— —	@ — 5¾
Sheet. No. 22 to 24	— —	@ — 6
Sheet, No. 26 to 23	— —	@ — 6¼
Horse Shoes, per keg	7 50	@ 8 00
Nail Rod	— 10	@ — —
Norway Iron	— 9	@ — —
Rolled Iron	— 6	@ — —
Other Irons for Blacksmiths, Miners, etc.	— —	@ — 4½
COPPER.—		
Braziers'	— 35	@ — —
Copper Tin'd	— 37½	@ — —
O'Neil's Pat	— 37½	@ — 40
Sheathing, ₰ lb	— 24	@ — 40
Sheathing, Yellow	— —	@ — 25
Sheathing, Old Yellow	— —	@ — 12½
Composition Nails	— 24	@ — —
Composition Bolts	— 24	@ — —
STEEL.—English Cast, ₰ lb	— 20	@ — 25
Anderson & Woode' American Cast	— —	@ — 16½
Drill	— —	@ — 16½
Tire Bar	— 18	@ — 22
Plow Steel	— 9	@ — 10
TIN PLATES.—		
10x14 I C Charcoal	11 50	@ 12 00
10x14 I X Charcoal	13 50	@ 14 00
Roofing Plate I C Charcoal	10 50	@ 11 00
Benca Tin	— 23	@ — 30
Australian	— 25	@ — 30
ZINC.—By the Cask	— —	@ — 11
Zinc, Sheet 7x3 ft No 7 to 10 ₰ lb	— —	@ — 11
do do 7x3 ft, No 11 to 14	— —	@ — 11½
do do 8x4 ft, No 8 to 10	— —	@ — 11½
do do 8x1 ft., No 11 to 10	— —	@ — 12
NAILS Assorted sizes	— —	@ 4 00
QUICKSILVER, cash	— —	@ — 70

Gold, Legal Tenders, Exchange, Etc.

[Corrected Weekly by CHARLES SUTRO & CO.]

SAN FRANCISCO, July 21, 3 P. M.

LEGAL TENDERS in S. F., 11 A. M., 88½ to 89¼.
Gold in N. Y., 112⅞

GOLD BARS, 890. SILVER BARS 6½ and 7¼ per cent. discount.

EXCHANGE on N. Y., ¾ per cent. premium for gold; on London bankers, 4.8; Commercial, 4.9½; Paris, 5.17½ francs per dollar; Mexican dollars, one and two per cent. discount.

LONDON — Consols, 93 to 93⅛; Bonds, 102½
QUICKSILVER in S. F., by the flask, per lb, 70c.

PATENTS & INVENTIONS.

A Weekly List of U. S. Patents Issued to Pacific Coast Inventors.

FROM OFFICIAL REPORTS FOR THE MINING AND SCIENTIFIC PRESS, DEWEY & CO., PUBLISHERS AND U. S. AND FOREIGN PATENT AGENTS.]

By Special Dispatch, Dated Washington, D. C., July 20th, 1875.

FOR WEEK ENDING JULY 6TH, 1875.

QUARTZ MORTAR.—August W. Anderson, Lyon Co., Nev.

FURNACE FOR BURNING STRAW.—James R. King, Modesto, Cal.

VEHICLE SPRING.—Frank F. Doland and Francis Scherb, Sacramento, Cal.

BALING PRESS.—Hervey L. Pike, Seattle, W. T.

VINEYARD PLOW.—Milton Ross, San Jose, Cal.

HARVESTER.—J. B. Webster and Wm. A. Dorr, Stockton, Cal., and M. McClenathan, Merced, Cal.

MORTISING MACHINE.—John Berry, San Francisco, Cal.

PROCESS OF PREPARING OR TANNING SKINS.—Emanuel Manasse, Naps, Cal.

CONSTRUCTION OF DAMS.—Wm. Schmolze, San Francisco, Cal.

TRADEMARKS.

FOR TEA.—Macondray & Co., San Francisco, Cal.

FLY CATCHER.—Chas. F. Burks, Fresno, Cal.

New Incorporations.

The following companies have filed certificates of incorporation in the County Clerk's Office at San Francisco:

FORLORN HOPE GOLD QUARTZ M. CO.—July 15. Location: Rough and Ready district, Nevada county. Capital, $300,000. Directors—Guilford Bullard, James Keegan, P. Butler, R. W. Tifft and C. C. Dubsin. The principal place of business will be in Smartsville, Yuba county.

MORSE AND EVANS G. M. Co.—July 15. Location: Columns district, Tuolumne county. Capital, $3,000,000. Directors—L. N. Daugherty, R. Meacham, J. W. Shew, A. K. Grim and B. W. Mudgs.

NEVADA HYDRAULIC M. Co.—July 16. Location: Nevada county, Cal. Capital, $1,000,000. Directors—J. Peart, John S. Colgrove, Walter E. Sell, Charles T. Bridgs and Alvinza Hayward.

HAYWARD CONS. S. M. Co.—July 16. Location: State of Nevada. Capital, $10,000,000. Directors—J. J. Holmes, J. M. Winslow, George K. Glunyss, A. A. Hickox and P. Lyman.

EMIGRANT S. M. Co. July 16. Location: Inyo County, Cal. Capital, $5,000,000. Directors—J. R. Brink, Daniel Buck, B. J. Lee, J. F. Freeman and B. W. Hudgo.

EMPIRE CONS. GOLD AND SILVER M. & M. Co., OF OAKLAND.—July 19. Location: State of Nevada. Capital, $6,000,000. Directors—Elijah Case, Dr. Henry H. James, J. F. Havens, Henry S. Smith and M. McDonnell.

GREAT EASTERN CONS. G. & S. M. & M. Co., OF OAKLAND, having the same directors, etc., as the company last mentioned.

CONCORDIA LUCA G. & S. M. Co.—July 19. Location: Nevada. Trustees—J. T. Hill, W. E. Hall, N. Larco, A. Hestres, E. Caldwell. Capital stock, $10,000,000.

ANGLO-FRENCH GENERAL M. Co. OF THE PACIFIC STATES.—July 21. Objects: To develop, improve, work, buy and sell gold, silver and other mines, and to transact a general mining business on the Pacific Coast. The directors are E. Derbec, Thomas Gnineau, Edd. C. Hinkson, George Callahan and Guy W. Cole. Capital stock, $10,000,000, divided into 100,000 shares. The certificate states that the sum actually subscribed is $5,000,000.

Meetings and Elections.

BEST & BELCHER M. Co.—Trustees, Robert Sherwood (President), Ed. Barron (Vice President), W. S. O'Brien, J. C. Flood and George Congdon; Superintendent, J. G. Fair; Secretary, Wm. Willis.

OROLLAS-POTOSI M. Co.—A. K. P. Harmon (President), J. D. Fry (Vice President), Charles L. Weller, James H. Dobinson, Wm. Norris, H. C. Kibbe and Alpheus Bull. I. L. Requa was re-appointed Superintendent and W. E. Dean, Secretary.

YELLOW JACKET M. Co.—T. G. Taylor (President), H. W. Hazleton (Vice President), F. A. Tritle, D. L. Bliss and T. B. Storer, trustees. The Bank of California was elected Treasurer; George W. Hopkins, Secretary and T. G. Taylor, Superintendent.

"THE LEAVES * * * WERE FOR THE HEALING OF THE NATIONS."

In the modest little plant found growing by the roadside and known as Smart Weed, or Water Pepper, reside medicinal properties of more than ordinary value. In Dr. Pierce's Compound Extract of Smart Weed, those wonderful properties are combined with other vegetable extracts of acknowledged virtues in such a manner as to make it a most efficacious remedy for Colic, Cramps, Summer Complaint, Diarrhœa, Dysentery, Cholera and Cholera Morbus. A celebrated medical author says; "A friend of mine had an only child dangerously ill with Summer Complaint. He had employed a great variety of the usual means for relief, but all appeared unavailing. The child was finally given Smart Weed which was entirely successful. It arrested the vomiting and purging in a short time, and without the aid of other medicine entirely restored the little patient." Dr. Pierces Extract of Smart Weed is sold by all druggists.—*Com.*

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Nevada and California Processes of Silver and Gold Extraction, for general use, and especially for the Mining Public of California and Nevada, with full explanations and directions for all metallurgical operations connected with silver and gold from a preliminary examination of the ore to the final casting of the ingot. Also, a description of the general metallurgy of silver ores. 1864.

As its title indicates, this work gives a wide range of information, applicable to all vein miners and workers in precious metals, affording hints and assistance of exceeding value to both the moderately informed and the most expert operator.

Price, $5 in cloth; $6 in leather—coin.

BY OTHER AUTHORS.

The Quartz Operator's Hand-Book; by P. M. Randall. 1871. Revised and Enlarged Edition. Cloth bound, 175 pages. Price, $2.

Sulphurets: What They Are, How Concentrated, How Assayed, and How Worked; with a Chapter on the Blow-Pipe Assay of Minerals. By Wm. M. Barstow, M.D.; 1867; cloth bound, 114 pages. Printed and sold by DEWEY & Co. Price, $1; postage free. The best written work, and most complete work on the subject treated.

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[ESTABLISHED IN SAN FRANCISCO, 1850.]

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UNITED STATES

Mineral Land Laws, Revised Statutes,

And Instructions and Forms Under the Same.

We have just issued a pamphlet containing the general mineral land laws of the United States, with instructions of the Commissioner of the Land Office. The contents of this pamphlet comprise all of the Government laws with relation to mineral lands of interest to the mining community, as follows: Mining Statute of May 10th, 1872, with Instructions by the Commissioner of the Land Office; Mining Statute of July 26th, 1866; Mining Statute of July 9th, 1870. Forms required under Mining Act of May 10th, 1872, as follows: Notice of Location; Request for Survey; Application for Patent; Proof of Posting Notice and Diagram of the Claim; Proof that Plat and Notice remained Posted on Claim during Time of Publication; Registers' Certificate of Posting Notice for Sixty Days; Agreement of Publisher; Proof of Publication; Affidavit of $500 Improvements; Statement and Charge of Fees; Proof of Ownership and Possession in Case of Loss or Destruction of Mining Records; Affidavit of Citizenship; Certificate that no Suit is Pending; Power of Attorney; Protest and Adverse Claim; Non-Mineral Affidavit; Proof that no Known Veins Exist in a Placer Claim, etc. There is also given the U. S. Coal Land Law and Regulations thereunder. The work comprises thirty pages, and will be sold, post-free, for 50 cents. It should be in the hands of every one having any mining interests. DEWEY & CO.,

Publishers of MINING AND SCIENTIFIC PRESS, S. F.

N. B.—We have also added to the above publication the REVISED STATUTES OF THE UNITED STATES, so far as relates to Mining Laws.

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Price, post paid, $1.

OAMPO, SAN DIEGO CO., CAL., July 3d, 1874.

MESSRS. DEWEY & CO.—*Gentlemen:* To-day I received the patent and other papers of my animal trap, that you so successfully worked through the patent office for me, for which please accept my best wishes. The chances are that I will have another application for you to make for me before long. I am well satisfied with your manner of doing business, and I think inventors of this coast stand in their own light when they do not put their business into your hands.

I remain yours truly, A. M. GASS.

Mining and Other Companies.

Bandereta Mill and Mining Company—

Location of principal place of business, San Francisco, Cal. Location of works, Coulterville Mining District, Mariposa County, Cal.

NOTICE.—There are delinquent upon the following described stock, on account of assessment, No. 1, levied on the 17th day of June, 1875, the several amounts set opposite the names of the respective shareholders, as follows:

Names.	No. Certificate.	No. Shares.	Amount.
Apps, Wm	11	100	$ 25 00
Adam, Thos	33	100	25 00
Bolander, Cathsrins	22	100	25 00
Delaney, E J	9	500	125 00
Donovan, M J	13	100	25 00
Fitzgerald, Lawrence	44	100	25 00
Fitzgerald, Lawrence	55	50	12 50
Kelly, Wm H	31	50	12 50
Mitchell, J C	28	100	25 00
McGill, Jas	21	100	25 00
Reese, Margaret	29	25	6 25
Ray, A P	30	50	12 50
Taylor, D W	41	1000	250 00
Taylor, D W	55	1000	250 00
Taylor, D W	55	500	125 00
Wynants, Peter	3	1000	250 00
Wynants, Petcr	51	1000	250 00
Wynants, Peter	52	500	125 00
Welsh, Thos J	12	100	25 00
White, D H	25	100	25 00

And in accordance with law, and an order of the Board of Directors, made on the 17th day of June, 1875, so many shares of each parcel of said stock as may be necessary, will be sold at public auction, at the office of the company, room 15, 408 California street, San Francisco, Cal., on the 2d day of August, 1875, at the hour of 2 o'clock P. M., of said day, to pay said delinquent assessment thereon, together with costs of advertising and expenses of sale.

J. W. TRIPP, Secretary.

Office, Room 16, No. 408 California street, San Francisco, Cal.

Eagle Mine and Mill Company—Location

of works, Lander county, State of Nevada. Location of principal place of business, San Francisco, California.

Notice is hereby given, that at a meeting of the Directors, held on the tenth (10th) day of July, 1875, an assessment, No. 1, of fifty (50) cents per share was levied upon the capital stock of the corporation, payable immediately, in United States gold coin, to the Secretary, at the office of the company, room 8, No. 533 Kearny street, San Francisco, California.

Any stock upon which this assessment shall remain unpaid on Monday, the sixteenth day of August, 1875, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on the 5th day of September, 1875, to pay the delinquent assessment, together with costs of advertising and expenses of sale.

H. L. BYRNE, Secretary.

Office—Room No. 8, 533 Kearny street, San Francisco, California.

Electric Mining Company—Principal place

of business, San Francisco, State of California. Location of works, Lincoln Mining District, Butte County, State of California.

Notice is hereby given, that at a regular meeting of the Board of Directors, held on the 22d day of June, 1875, an assessment of Five cents per share was levied upon the capital stock of the corporation, payable immediately, in United States gold coin, to the Secretary, at the office of the company, in San Francisco, Cal.

Any stock upon which this assessment shall remain unpaid on the 26th day of July, 1875, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Monday, the 16th day of August, 1875, to pay the delinquent assessment, together with costs of advertising and expenses of sale.

A. B. PAUL, Secretary.

Office, No. 318 California street, San Francisco, California. Room No. 13.

Gold Mountain Mining Company—Principal

place of business, San Francisco, Cal. Location of works, Lower Rancheria, Amador County, Cal.

Notice is hereby given, that at a meeting of the Board of Directors, held on the 1st day of July, 1875, an assessment (No. 4) of twenty-five cents per share was levied upon the capital stock of the corporation, payable immediately, in United States gold and silver coin, to the Secretary, at the office, No. 116 Leidesdorff street, San Francisco, Cal.

Any stock upon which this assessment shall remain unpaid on the 7th day of August, 1875, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Monday, the 23d day of August, 1875, to pay the delinquent assessment, together with costs of advertising and expenses of sale.

W. A. KNAPP, Secretary.

Office—116 Leidesdorff street, San Francisco, Cal.

Morning Star Gold and Silver Mining

Company. Location of principal place of business, San Francisco, California. Location of works, Great Mogul District, Alpine County, State of California.

Notice is hereby given, that at a meeting of the Board of Directors, held on the 21st day of June, 1875, an assessment, No. 25, of one dollar (1.00) per share was levied upon the capital stock of the corporation, payable immediately, in United States gold coin, to the Secretary, at the office of the company, room 1, No. 402 Montgomery street, San Francisco, California.

Any stock upon which this assessment shall remain unpaid on the 21th day of July, A. D., 1875, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Saturday, the 14th day of August, 1875, to pay the delinquent assessment, together with costs of advertising and expenses of sale. By order of the Board of Directors.

G. H. BOGART, Secretary.

Office, room 1, No. 402 Montgomery street, San Francisco, California.

Silver Sprout Mining Company—Principal

place of business, San Francisco, State of California. Location of works, Kearsarge Mining District, Inyo County, California.

Notice is hereby given, that at a meeting of the Board of Directors, held on the third day of July, 1875, an assessment of five cents per share was levied upon the capital stock of the corporation, payable immediately in United States gold coin, to the Secretary at the office of the company in San Francisco.

Any stock upon which this assessment shall remain unpaid on the tenth day of August, 1875, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Wednesday, the 1st (first) day of September, 1875, to pay the delinquent assessment, together with costs of advertising and expenses of sale. T. B. WINGARD, Secretary.

Office—No. 318 California street, San Francisco, (Room No. 13.)

Tolman and Miller Mill and Mining Company.

Location of principal place of business, San Francisco, California. Location of works, West Point, Calaveras County, California.

Notice is hereby given, that at a meeting of the Board of Directors, held on the 14th day of July, 1875, an assessment, No. 2, of thirty (30) cents per share was levied upon the capital stock of the corporation, payable immediately, in United States gold coin, to the Secretary, at the office of the company, room 1, No. 402 Montgomery street, San Francisco, California.

Any stock upon which this assessment shall remain unpaid on the 16th day of August, 1875, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Monday, the 6th day of September, 1875, to pay the delinquent assessment, together with costs of advertising and expenses of sale. By order of the Board of Directors.

O. H. BOGART, Secretary.

Office, room 1, No. 402 Montgomery street, San Francisco, California.

Umpire Tunnel and Mining Company—

Location of principal place of business, San Francisco, Cal.

NOTICE.—There are delinquent upon the following described stock, on account of assessment levied on the 20th day of May, 1875, the several amounts set opposite the names of the respective shareholders as follows:

Names.	No. Certificate.	No. Shares.	Amount.
Beal, W A, Trustee	213	100	$5 00
Beal, W A, Trustee	262	30	1 50
Beal, W A, Trustes	265	10	50
Beal, W A, Trustee	266	11	55
Beal, W A, Trustes	277	10	50
Beal, W A, Trustee	278	10	50
Beal, W A, Trustee	279	10	50
Beal, W A, Trustes	300	100	5 00
Beal, W A	201	50	2 50
Bromley, T A	222	100	5 00
Bromley, T A	223	100	5 00
Bromley, T A	224	100	5 00
Buffington, J M	321	350	17 50
Butler, Wm	196	400	20 00
Butler, Wm	197	800	40 00
Butler, Wm	198	1300	65 00
Cochran, J T	301	100	5 00
Davis, W W	22	500	25 00
Davis, W W	23	50	2 50
Davis, W W	24	50	2 50
Davis, W W	25	50	2 50
Davis, W W	26	50	2 50
Davis, W W	155	1500	75 00
Davis, W W	156	100	5 00
Davis, W W	157	100	5 00
Davis, W W	158	100	5 00
Davis, W W	159	100	5 00
Davis, W W	312	100	5 00
Davis, W W, Trustee	302	1000	50 00
Davis, W W, Trustee	304	500	25 00
Davis, W W, Trustee	305	500	25 00
Davis, W W, Trustee	306	710	35 50
Dunseth, J D	201	130	6 50
Eakins, P A	4	10	50
Eakins, P A, Trustee	288	40	2 00
Eakins, P A, Trustee	296	50	2 50
Edgerly, Samuel	60	20	1 00
Edgerly, Samuel	59	20	1 00
Edgerly, Samuel	66	20	1 00
Edgerly, Samuel	68	20	1 00
Edgerly, Samuel	75	10	50
Edgerly, Samuel	82	10	50
Edgerly, Samuel	91	50	2 50
Edgerly, Samuel	237	100	5 00
Edgerly, Samuel	238	100	5 00
Edgerly, Samuel	239	100	5 00
Edgerly, Samuel	240	100	5 00
Edgerly, Samuel	241	100	5 00
Edgerly, Samuel	255	100	5 00
Edgerly, Samuel	256	100	5 00
Edgerly, Samuel, Trustee	281	50	2 50
Finch, J W	226	100	5 00
Finch, J W	227	100	5 00
Finch, J W	228	100	5 00
Finch, J W	229	100	5 00
Finch, J W	230	100	5 00
Finch, J W	231	100	5 00
Finch, J W	232	100	5 00
Finch, J W	233	100	5 00
Finch, J W	234	100	5 00
Finch, J W	235	100	5 00
Flood, F L	327	40	2 00
Gains, H	257	40	2 00
Gamar, J B	324	1000	50 00
McPhetridge, E	284	250	12 50
Moodie, G W	207	300	15 00
Newman, G W	335	186	9 30
Smith, J P	308	100	5 00
Smith, J P	309	100	5 00
Smith, J P	310	100	5 00
Smith, J P	311	100	5 00
Smith, J P	325	500	25 00
Smith, J P	326	500	25 00
Squier, David	208	60	3 00
Van Honten, J, Trustee	138	100	5 00
Van Honten, J, Trustee	190	20	1 00

And in accordance with law, and an order of the Board of Directors, made on the 20th day of May, 1875, so many shares of each parcel of said stock as may be necessary, will be sold at public auction, at the office of the company, room 1, No. 531 California street, San Francisco, Cal., on the 2d day of August, 1875, at the hour of one o'clock P. M., of said day, to pay said delinquent assessment thereon, together with costs of advertising and expenses of sale.

WM. SMALL, Secretary.

Office—Room 1, No. 531 California street, San Francisco, California.

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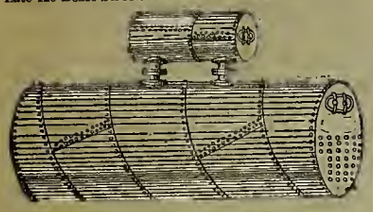
San Francisco Boiler Works,

N. W. Cor. Harrison and Main.
Late 125 Beale Street.....SAN FRANCISCO.



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CAPITAL.....$1,000,000.

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Manufacturers of Steam Engines, Quartz and Flour Mill Machinery, Steam Boilers (Marine, Locomotive and Stationary), Marine Engines (High and Low Pressure). All kinds of light and heavy Castings at lowest prices. Cams and Tappets, with chilled faces, guaranteed 40 per cent. more durable than ordinary iron.

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Wm. Norris, Wm. H. Taylor, J. B. Haggin,
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LEWIS R. MEAD.....Secretary
24v17-qy

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MANUFACTURERS OF
STEAM ENGINES,
Quartz, Flour and Saw Mills,
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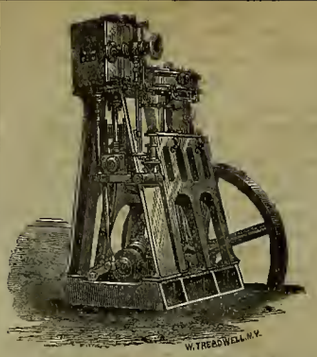

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Every Variety of Shafting,
Embracing ALL SIZES of
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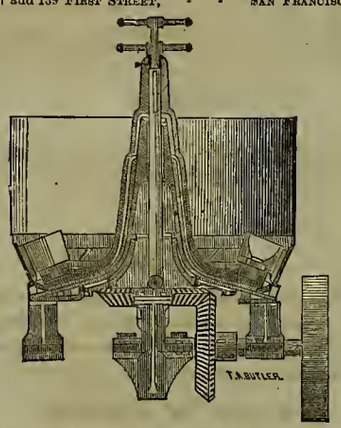

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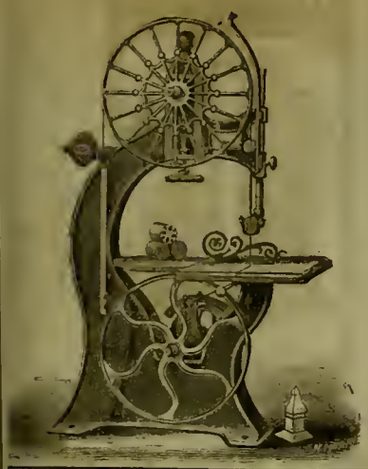

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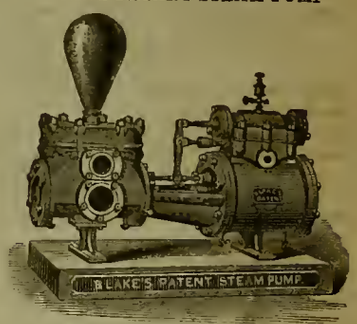

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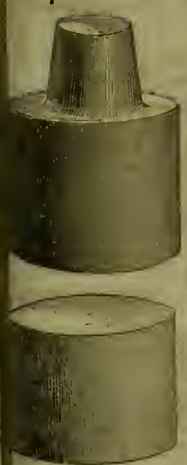

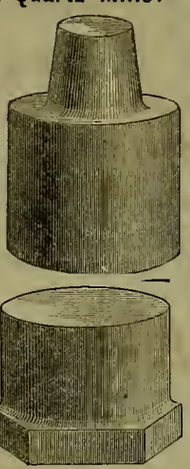

[PATENTED MAY 26TH, 1874.]

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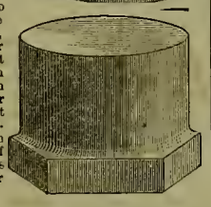
To Supts. of Quartz Mills and Mining Men generally:

We take pleasure in stating that owing to the rapid increase in our orders, our Pittsburg Manufacturers have been compelled to add largely to their works—a new gas furnace and heavier trip hammer—and are thus enabled to reduce the cost of steel and at the same time produce SHOES AND DIES superior to any yet manufactured. We have consequently reduced the price to 16 cents per pound and solicit a trial order, guaranteeing that you will find them at least 10 per cent. cheaper than the best iron. There are no STEEL SHOES AND DIES made excepting under our patent and sold at this office, or by our authorized agents, though certain Eastern manufacturers advertise STEEL SHOES AND DIES which are only cast iron hardened by the addition of a composition. They will not out-wear two sets of common iron, though called steel. They are very brittle and are not capable of being tempered, flying from under the hammer like cast iron. Our STEEL SHOES AND DIES are in use in many of the largest mills on the Pacific Coast, and all who have tried them pronounce them cheaper and far superior to iron in every respect, even at the old price of 20 cents per pound. Their advantages over iron are cheapness on first cost, increased crushing capacity, time saved in changing and in setting tappets, increased value of amalgam by absence of iron dust and chippings, and a saving of 75 per cent. in freight. It takes 50 days to fill orders from the manufactory East. Price 16 cents per pound shipped at San Francisco. Terms liberal.



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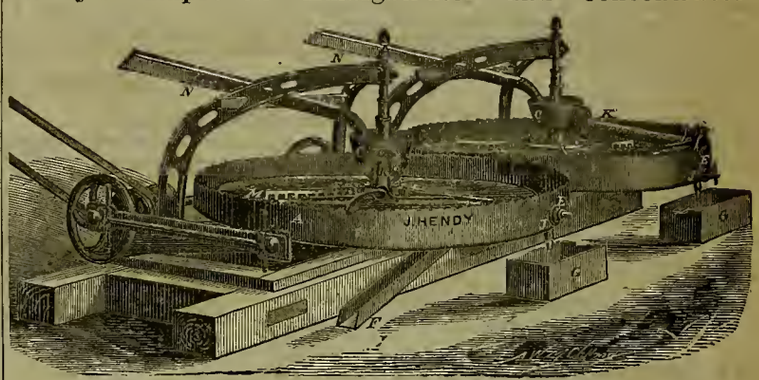

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I have been familiar with the workings of your Concentretors for four years past; have run them myself in the North Ster Mine, Grass Valley; am familiar with their practical workings on the Empire Mine, Grass Valley; St. Patrick, Placer Co.; St. Lawrence, El Dorado Co.; Oake and Reese, Mariposa Co., and most cheerfully give you this testimonial. For further information you are at liberty to refer to,

Youre respectfully,

JAS. H. CROSSMAN, M. E.

409 California street, or Cosmopolitan Hotel.

SAN FRANCISCO, February 10, 1874.

OFFICE SUPERINTENDENT OF KEYSTONE CON. M. CO., AMADOR, AMADOR COUNTY.

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OFFICE SUMNER MINE, KERNVILLE, April 27, 1874.

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For description send for Circuler.

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Address, L. W. COE,

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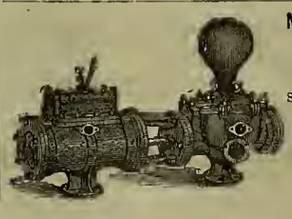

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Our Agents.

OUR FRIENDS can do much in aid of our paper and the cause of practical knowledge and science, by assisting Agents in their labors of canvassing, by lending their influence and encouraging favors. We intend to send none but worthy men.

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B. W. CROWELL—California.
A. O. CHAMPION—Tulare, Fresno and Inyo Counties.
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SUTTER CREEK, February 26th, 1875.

MESSRS. DEWEY & CO.—I have received my Letters Patent through your agency. And, for your promptness, accept my thanks. Yours, S. N. KNIGHT.

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DIVIDEND NOTICE.

California Savings and Loan Society,

512 California Street. The Directors have declared a Dividend of Nine and Six-tenths (9 6-10) per cent. per annum on Term Deposits, and Eight (8) per cent. per annum on Ordinary Deposits, for the half year ending on the 30th of June, 1875, free from Federal Tax, and payable on and after Tuesday, 6th of July, 1875. By order. D. B. CHISHOLM, Secretary.

DIVIDEND NOTICE.

San Francisco Savings Union—532

California Street, corner Webb. For the Half Year ending with June 30th, 1875, a Dividend has been declared at the rate of Nine (9) per cent. per annum on Term Deposits, and Seven and One-half (7½) per cent. on Ordinary Deposits, free of Federal Tax, payable on and after July 12th, 1875. By order.

LOVELL WHITE, Cashier.

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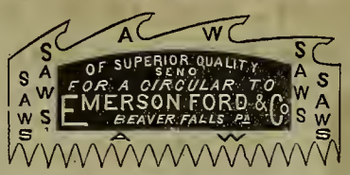
WM. MCCRINDLE, Manager, 22 & 24 Fremont St., S. F.
m6-m2

TO LUMBERMEN OF THE PACIFIC.



We were awarded the $100.00 *Gold Prize*, First Prize *Silver Medal* in the Great National Sawing Contest, had at Cincinnati, September, 1874, and *First Prize Silver Medal* for the *Best Cross-Cut Saw;* two First Prize Medals for the *Best Saw Swage* and *Cross-Cut Saw Attachment;* also the First Premium in the Great Sawing Match at the Provincial Fair, in Canada, and several First Premiums in State and County Fairs wherever any Celebrated Damascus Tempered Saws have been tested. Emerson's Patent Planer Toothed Saws for General Work. Emerson's Patent Clipper Toothed Saws for heavy feed, and our Solid Toothed Saws of all descriptions, AT GREATLY REDUCED PRICES, and sold UNDER FULL WARRANTEE. We cannot afford to make a poor saw. *Only seven days by mail from San Francisco.* Send your address on postal card for illustrated circular and price list.

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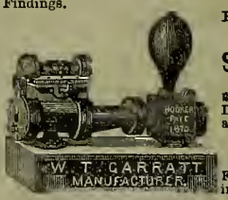

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MINING AND SCIENTIFIC PRESS.

An Illustrated Journal of Mining, Popular Science and General News.

BY DEWEY & CO., Patent Solicitors.

SAN FRANCISCO, SATURDAY, JULY 31, 1875.

VOLUME XXX Number 5.

The Coming Exhibition.

Exhibitors at the coming Mechanics' Institote Fair are prepsring their articles, aud some of the heavy goods, machinery, etc., will be moved into the hnilding next week. From information derived from Mr. Cnlver, Secretary, and Mr. Gillmore, General Superintendent, we should judge that the exhibition will far surpass anytbing of the kind yet held in Sau Francisco.

The fair will open Angust 17th, at 11 A. M., and the oration will be delivered hy Hon. J. W. Shaw. It is stated that the applications for space exceed the exhibiting space ahout 20 per cent., notwithstending an enlargement of 20,000 feet has heen made. The machinery department will occnpy the whole of the easterly winge, and will he full of moving machinery and mechanical displays. The line of shsfting has been extended 120 feet. A steam engine of 120 horse-power is heing built by Prescott, Scott & Co., to rnn the machinery, the use of which engine will he given free.

Several exhibitors of mining drills will have them in actual operation, so that miners can see them working and jndge of their comperative merits. The Cornell Watch Co. will have a shop and show the *modus operandi* of watch making. They will also put in a heavy die press and strike off medals. An expert in glass blowing and spinning will also he at the exhibition.

The art gallery will he under the superintendence of Mr. Benoni Irving, than whom a better eelection could not have been made. All onr local artists will contribnte, and many valnable pictures and worke of art belonging to public spirited citizens will he on exhibition. This department will be complete in detail and general arrangements. The art gallery is heing retinted and refitted. The department will he under the special care of Messrs. Scott Tidhall, P. Mezzera, S. M. Brookes, D. Bneh and E. Deeken, and will be exceedingly attractive.

The horticnltnral department is under the immediate eoperintendence of Chas. Schnmann, who is busy completing the same from the designs of Mr. Hammond Hall. The garden will he a heautiful and attractive feature, with its lswns, flower heds, rockeries, rnstic work and fountains. There will he an excellent display of the flowers and fruits of California. A fine display of ferns will also be made. The detsils of the work are being pushed ahead vigoronsly.

Mr. Wilcox, the contractor for the enlargement and alteration of the hnilding, will he through on Satnrdey, and exhibitors will begin to fit up their stends on Monday. The Locating Committee have been husy allotting space, and will prohahly rejoice when they complete the job.

The msnagers have concluded this year to publish a catalogue themselves, which will contain no advertisements, and will he neat and modest in appearance. The restaurant will be kept hy Mr. Hepburn, a well known caterer. A feature added to the exhibition this year will be the reception room, where visitors can rest in qniet, away from the noise and hustle of the crowd, and where there will be attendants to take care of hats, cloaks, etc., of the ladies, free of charge.

SILVER COINAGE.—The Direotor of Mints, now on thie coest busily preparing the mints in thie city and Carson for an increased eilver coinage, eays, in a letter from Careon, dated Jnly 16th: "The hydraulic presses and other machinery sent ont here last year have been placed in position, and will more than donble the coinage capacity of the Careon mint, and it is estimated that with the necessary coinege of gold there csn be coined half dollers and dimes. The snpply of trade dollars will prohably be sufficient until Septemher 1st. In the meantime, I hope to he able to arrange for the coinage of divicionary silver coins at the two mints at San Francieco and Carson, at the rate of from $1,200,000 to $1,500,000 per month." It ie estimated that the amount of fractional silver turned out from the coinage minte within the next six months will he at least $4,000,000.

Geological Formations in Monument Park, Colorado.

There is a certain degree of obscurity ahout the geology of the district from the source of Plum creek to the Arkansas in Colorado. The modern appearance of the group of coarse sandstones and conglomerates, ahove the true cretaceous beds and their position with reference to the granites, ioduces the belief that they helonged to the miocene period, and in Hayden's third annual report of 1869 he gave them the name of the Mouument creek gronp. For a distance of from fifteen to twenty miles they

COLUMNS IN MONUMENT PARK, COLORADO.

appesr to jut up against the base of the mountains, with an inclination of not more than fifteen degrees et the highest, and usually not more than three to five degrees. For example, Prof. Hayden ssye that the red sandstones at the north ends lie on the sides of the granite

Tertiary Columns in Monument Park.

foothills at an angle of seventy to eighty degrees and suddenly disappeer under the nearly horizontal beds of coarse quartzose sandstones. It is out of the sandstones that meteoric agencies have carved the remarkahle forme which have given names to the little streams and localities in this region.

There is one locality in the valley of Monument creek, called Monument Park, from the great number of columns which are standing thickly over the surface, each one surmounted with a cap of harder material. The shaft of the column is usually thick at the hase, rising np ten or twenty feet, taporing to the cap, composed of a coarse aggregate of quartz grains, small pohhles, all water worn, very loosely held together with rather coarse sand cement. The cap is a deep rust color, composed of sand cemented with oxide of iron and hy its greater hardness has resisted more effectually the eroding agencies. Professor Hayden does not helieve that all the effects now seen were accomplished by the ordinary atmospheric agencies at present in operation in the region referred to, although the air, rain and snow may have done much to give the monuments their present form. The greater part of the erosion must date hack into the past, at least to the post pliocene period.

It is very probable that water had much to do with the formation of these monuments at a time when there was a far greater supply in the locality then at present. The entire surface of the country must have been on a level with these caps at least, and probably much higher. The caps themselves are nothing more than concretions, mostly rounded and flattened, while intervening materials have been slowly worn out and carried away.

IDAHO MINES.—The Wagontown mines, Idaho, are improving, and the prospects are very favorable in that quarter. There have been several shipments of splendid ore made from the Henrietta mine to be worked at the Humboldt reduction works at Winnemucca. The Pauper has also made several shipments of rich ore to the same place. The new hoisting works on Oro Fino are going up rapidly, and with a large force of men will be in full operation by August 1st. Illinois Central and Golden Chariot are also putting up new works. The South Mountain Consolidated mining company at South mountain are putting in a new engine on the Bay State mine, and flattering reports continue to he received from that camp.

THE new combination shaft on the Chollar-Potosi, etc., is going steadily ahead at the rate of three feet per day, the rock in the bottom still bleeting out finely. Arrengements for the erection of the new hoisting works building and machinery are still advancing as rapidly as the nature of the work will admit.

The Belcher air shaft is finished down to the 1200-ft level.

San Francisco and the Mines.

The effect of the remarkable development of mineral wealth on the Comstock during the past year, which is only now beginning to be understood, has been most wonderful and unmistakable on the growth of San Francisco. Within the past few years this city has experienced its most substantial period of prosperity, and it now boasts of a ratio of increase in population and business surpassed hy no city in the world. The late wonderful developments have demonstrated beyond a doubt that the mineral field which looks to this city mainly for its supplies, and which is principally owned here, is almost limitless in extent and value. Let not our capitalists then hegrudge the money spent in mining enterprise. Although much that has gone out is still "bread upon the waters" not yet returned, San Francisco will hedge up her main source of wealth and prosperity when she draws her purse strings on the great leading interests of the State.

Mining is not all adventure, nor is adventure, judiciously pisned, an altogether forbidden thing in the counting house or even in the bankers' closet. Very close calculations can be made in mining entorprises on quite slight and inexpensive trials, where experience and calm judgment are allowed to control. The miners of this coast have now acquired a degree of experience, which, if rightly applied, may enable them to carry on their work intelligently, and, where integrity prevails, there is little risk of loss. Capital ought easily he secured where good evidence can he given that it will he judiciously expended and honestly guarded. Let honesty, patience and perseverance he directed by indomitable Anglo-Saxon will, and we may remove mountains and uncover wealth which will make the name of California blaze again.

The mountains look to the city for capital, and the city looks to the mountains for the profit on that capital. If the capital is withheld there is no profit for either party. The benefits which have resulted hy investments in the mines during the pest few years ought to be incentive enough to our city capitalists to induce them to invest still further. If they will turn their attention nearer home, moreover, they will benefit their own State as well as our neighbors.

Most of the very elegant and attractive buildings now being erected in San Francisco are being put up hy mining capitalists with money made from mining ventures. This fact alone shows the benefits the mines confer on this city. Yet there are many here who decry mining ventures on all occasions—perhaps because they themselves have been unlucky. Still, as long as there are mines to work there will be found men to work them and capitalists to invest in them; and those who do not take the risk should not begrudge the profit made hy those who make the venture.

THE Ophir mine, which has been shut down, will not again be ready to resume the usual work under four or five weeks time. In the meantime the new incline hoisting engines will be finished up ready for steady work, the new and powerful pumping engine will he ready to start up, 300 ft of the shaft retimbered, and the new hoisting works building will be completed; so that when everything is again in readiness to resume full operations, the Ophir will possess a hoisting works and machinery for hoisting and pumping second in capacity to none on the line of the Comstock.

YELLOW JACKET MINE.—The annual report of the Secretary of this mine shows cash on hand July 1st, 1875, $40,858.44; amount received from assessments during the year, $360,000; all other sources, $7,348.30; total, $408,206.83. Disbursements for the year, $339,553.75; balance on hand, July 1st, 1874, $68,653.08.

The coinage for the fiscal year at the mints at Philadelphia, San Francisco and Carson, will approximate as follows: Gold, $34,000,000; trade dollars, $6,000,000; subsidiary silver coin, $5,000,000; minor coinage, $250,000,

CORRESPONDENCE.

South Mountain District.

EDITORS PRESS:—Having never seen anything concerning our camp in yonr valuabls paper, ws take ths liberty to forwsrd you a few items. South mountsin is located in Owyhee county, Idaho, one hundred and eighty miles north of Winnemucca and twenty-five miles south of Silver City.

Active operations were commenced here in the month of August, 1874, by the South Mountain Consolidated silver mining oompany. They built two furnaces for smslting the ores and made one run last wintsr. They havs had one furnace rnnning for the past two aod a half montbs, and it is ths report that they made expenses and cleared $20,000. The company own a large number of mines, and the most prominent of these are the Bay State, Golconda and Crown Point, all of which show fine bodies of ore, and it is claimed they havs ore enough in sight for a twelve months' run. The ores of this camp are far better than the majority of base metal camps on this coast, being rich in silver, averaging from $100 to $500 a ton and it is not uncommon to find $1,000 ore. The bullion of the S. M. C. M. Co. goes from $350 to $650 a ton in silver, thus making lead smelting a very profitable business here.

What we want here now is *more capital*, for there is a large number of outside mines that can he bought very cheap, for the owners have not the desired capital for working them, and theso minee all have an abundance of *good ore*, and some of them are well prospected. The people here would like to see another company come in here, and wonld do all in their power to help them start. A custom smelting works wonld do well, as the most of the mines have from five to fifty tons of ore on their dumps, and the owners would take out more if they could dispose of it.

We have all the facilities here for lead smelting: Water in abundance, wood at five dollars a cord, coal twenty-five cents a hushel, and sny quautity of ore, *and good ore*.

To conclude, I will say that moneyed men of San Francisco cannot find a better place to invest than here. They would be certain by competent management to make money. I certainly think, from what I have seen in the different lead camps on the coast, that $50,000 invested in minee and building a fnroace here would clear itself and all expenses in three monthe. "SMELTER."

South Monntain, Idaho, July 15, 1875.

Goods for Exhibition.

The *Iron Age* makes the report that a mowing machine manufaoturer iutends to spend $10,000 ou a single machine, to be exhibited at the Centennial, a text for some good advice to intending exhibitors generally. The advice is, that the msnufacturers shall exhibit the best goods they can make every dsy in the week in their own shops. "Nickel plated etoves with gold trimmiugs, carpenters' tools with pearl handles, sawa with etched blades, and similar fancy articles might be well enough in their proper places, but they should not be shown among the legitimate products of our foundries or tool shops. * * * * If visitors look at mowing machines, they want to see machines with which it would be possible to cut grass; if they look at stovee, they want to see stoves in which it is possible to make a satisfactory fire; if at tools, they wsnt to see practical tools with which a mechanic can work." The *Iron Age* does not depreciate all attempts at decorative art iu the maunfacture of articles intended solely for use, but properly recommends that after the article has been perfected the artist shall be called in to give grace to curvee and beauty to the whole form. "He may then stop content if the object be one of utility only. Excessive ornamentation is always ugly, and ornamentation out of place is barbaric."

DECOLORIZING PROPERTY OF OZONE.—One of the most striking properties of ozone, says M. A. Boilot is ite bleaching power. The effects ascribed to chlorine are really due to ozone. Ozone employed directly acts ae au oxydizing agent laying hold of the hydrogen of the subetance with which it is in contact, whence reenlts bleaching, if the body is colored. On allowing the chlorine to act upon any animal or vegetable matter, it deoomposee a certain quantity of water and eeizes its hydrogen, forming hydrochloric acid. The oxygeu set free by this reaction is trausformed into ozoue, which, in its turo, lays hold of hydrogen preseut in organic matter.

INDUSTRIAL ENTERPRISE IN TURKEY.—Two iudustrial uudertakinge are reported iu a letter to the *Bassiret* to have been set on foot at Tirnovo, in Bulgaria. One ie a blacking manufactory, the other a soap manufactory. It ie something to know that enterprise is not quite extiuct in Turkey. As the *Levant Herald* says: "These undertakings will thiive unless some over-zealous governor takes it into his head to tax all the profits out of them on bebalf of the government.".

Sound Castings.

To obtain good and sound oastings, in all casss, and under all circumstances, is ths chief engrossing cars of all founders. There are of course many established rules and forms of procedure gathered from ths experience of msny years, that generally serve the founder to a sufficient extent to obtain good csstings, as a rule, and to make "wasters" the exception.

If thoronghly practical msn were to add a precise knowledge of what may be supposed to he taking place, in and out of ths mold, the proportion of bad castings would he much rsduced. It is not only the csstings which—broken or blown in ths molds—cannot possibly hs used, that ought to be included under the head of unsound castings. There are, throughout the whole range of castings, delivered appsrently sound and complete from the foundry, a considerable portion in which it is only a question of time as to how long they will hold together. It is notorious that the greater proportion of break-downs in fly-wheels, castings in motion, or castings under pressure, ars occasioned by some inherent defect or liability to hreak in the casting itself, sincs the broken seotion ie frequently of much more than the requisite area to resist any possible etrain that can have occured. These are the unsound castings of which we wonld warn both purchasers and producers.

Aa to the unsoundness of castings produced by blow-holes or scnm, this is usually patent to the eye of the foonder, at least, though not alwaye to that of the customer, after being puttied up, and can be tested by the blows of a small hammer upon any snrface whose soundness may be suspected.

The tendency to form blow holes is well understood among founders and may be caused in two ways: either hy the imprisonment of the air originally contained in the mold, or by the generation of steam or gases from the sides of the mold and oore. It is surprising how little power of reasoning from cause to effect there is as a rule among practical men, to whom hoth the cause and the effect may be perfectly plain and pateut.

Given a case where a casting is produced covered in places with blow holee, the causes of the effects may he accurately defined. In the first place these blow holes are produced by the presence of a gaseous body displacing the metal. There are then two possibilities—either this gas is the legitimate air which has not been allowed to escape, or it is a further accumulation of steam or gae generated from the mold; neither of these poesibilities ehould have existed. In the first place, any possible air pocket in the mold should be thoroughly ventilated hy an escape air hole, and whilst the metal is being poured at one runner, the air ehould be allowed to escape elsewhere. In the second place the mold and cores should be so thoronghly dry as to prevent the formation of steam; and fnrther, their compoeition should beso carefully selected as to preclude the employment of materiale liable to burn or to generate much gas. The ventilation from the cores should be especially looked to, as they are generally found to become damp after running the metal, even when thoroughly dried. In the case of large castings a great deal depends on the open and porous nature of the mold hed.

If, then, the following points are always rigidly looked to, there should bo little fear at any time of a porous or air-blown casting. 1. That whilat the metal is heing poured at any runner, there should be free egress for the imprisoned air through snother exit. 2. That all pockets or high portions of the mold ehould have separate additional air escape. 3. That the mold and ccre be thoronghly dry, to prevent the evolution of steam as much as possible. 4. That the materials forming the mold and core should be already burnt, so as not to give off gases with readinese on contact with the molten metal. 5. That where the casting is long and has a double eurface, one above the other, an infinitely better casting may more readily be obtained by casting the aame with its length considerably inclined from the horizontal, and pour ou to the lower face firet, or placed vertically and run with a head. A very frequent canse of the generation of an excessive quantity of gas in a mold is the mixture of too much coal dust and slack in the mold, and nsing the sand too wet for facility in molding.—*Iron*.

"WHERE did the ore in tho iron mountains come from?" We may as well ask where did the turpentine, rosin and tar in the pine tree come from? Can the chemist detect it in the eoil from which the tree drawe its food, or in the air that surrounds it? The duty of the finite mind is to study effects, not primal causes. You may eetimate the tons of iron ores in the iron monntains, or tons of ooal in the coal basins, or amount of oree in the lead, copper and zinc fields, and may fuse these in the future and tell the etatus of the coming populations; you may estimate the number of barrels of tar and gallons of turpentine in the pine flora of a State—yet, the origin of the slippery atoms of the iron and turpentine refuse to be located.

THE MAGNETIC CURVES.—Rev. G. H. Hopkine gives the following method for fixing the curves which steel filings take when under the action of a bar magnet. The filings, having been prepared so as to be nearly the same size as possible, and that eize very minute, are poured into a mortar, and a small quantity of finely powdered resin ie added: these are stired together until the two substances are completely mixed, and then, considerable pressnre being exerted npon they are rubbed.

Tanning Buckskin.

Farmers, minsrs and others ars often at a loss for a good recipe for tanning the skins of small animals which may come in their way, and which might be advantageonsly utilized with a very little labor.

Kid Leather

Is usually made of sheep and lamb skins. The flesh side is costed with a paste of thick lime water, and rolled up until the wool can be removed, when the skins are subjected to the hran bath. Whsn taken from it and thoroughly cleansed, they are put into what is called the "white bath," composed of, say, one pound of alum to one gallon of water and about one-fourth pouod of sslt. This solntion is made boiling hot, and the skins passed throngh it succesively; after which they are immersed and left in it for ten minutes. A paste is then made by gradually adding to this solution (and constant stirring) one and one-fourth pounds wheat flour for each gallon of the solution. gently heated; and subsequently the yolks of five sggs, and then iucorporating the whole thoroughly. The ekins are put into this paste, and left twenty-four houre; after which they are hung on poles and left to dry for a week or more, as may bs necessary. They are then softened by heing drawn acroes a "etaking iron"—ths edge of a shovel will answer—and may be polished with a smooth flat iron, carefully heated and managed in the same way as that used by a laundress. They will become soft and as white ae snow. Color can he imparted with dyestuffs as may he desired. If the skins are wanted for mats, robes or furs, omit the liming and branning, and proceed at once to the alum and paste bath.

The above procese is oalled "tawing." A simple method for robea and mats is merely a solution of alum and salt; but the drawing of dampness is a eerious objection to it. Of course in all processee where salt ie used, there will be dampness to some extent.

Buckskin.

The American Indians, in tanning buckskin, use braine: that is they exercise their own brains by taking the hrains of animals, and placing them with the skins in a large earthen pot and heating them to about niuety-five degreee; which converts the moistened brain into a kind of lather and makes the skins olean and pliable. After being rung out they are stretched by means of thongs, and constantly rnbbed with a smooth etone eo as to expel the water and fat.

Tanning and curring leather partakes more of the arts and sciences than most people are willing to allow. While it is a very disagreeable trade to most persons, it presents a large field for the chemist, and if any pereon wishes to know more about he had better learn the trade.

Yet almost any person can very successfully do all ahove deecribed. Very often a farmer would willingly go to the trouble, if he only knew how, to tan a nice skin for housings for his horses, or robes for hie cutter, or for glovee and mittens. By boiling oak leaves a decoction may be made strong enough to tau ekins for that purpose. When the decoction becomes weak, renew it; but always first ecrape off all fat and adhering flesh.

Boye often tan ground hog skins for whip lashes with "soft soap."

ANOTHER STEAM HORSE.—Mr. Fortin Hermann, says *Les Mondes*, is testiug a machine which is moved by articulated feet which are euccessively planted upon. the ground. Two feet act from the front body aod two from the rear, being pressed downward by steam, which besides, in a horizontal engine, oscillates rods which, acting upon the feet, cause the apparatus to drag itself along. From experimeuts cited, it appears that the feet, when shod with rubber and charged with a weight of 2.2 lbs. per 0.4 inch, indicated an adhesion equal to 0.75 of the weight of the motive machino. The apparatus travels at the rate of from 4 to 4.8 milee per hour; and hy a new arrangement, in which one pair of feet trot while the other pair amble, it is expected to run at the rate of twelve milee. It will ascend grades of one in ten with qnite heavy loads.

CHEMICAL ENERGY OF FLAMES.—Experiments have been recently made hy MM. Riche and Bondy to determine the relative chemical "light strength" of various flames. They arrange the flames studied by them in the following series, the weakest being put first, and the nnmbers representing it the relative chemical energy: Drummond light, 3; zinc burning in oxygen, 4; magnesium lamp, 5; flame of nitrous gas in sulphide of carbon vapor, 6; currsut of uitrons gas directed to carbon burning in a veesel, 6–7; current of oxygen, 7; current of oxygen directed to sulphur burning in a vessel, 8. Thus it appears that the flame of eulphur in oxygen is remarkable for its ohemical energy, and is therefore well suited for photographio purposes.

A PHILOSOPHER once said it was wiser to put on shoes than to seek for a land covered with leather. The street pavement question is aa old as the cities of the Tigris valley, but in London they are about to try to settle it by India rutber wheel tiree. The rubber manufacturers declare themselves able now, by improved processes, to afford a tire cheaper than iron, of longer wear, and, in every other respect, of couree, much better. Indeed, in Berlin, now under the Empire, a faster city than London, the experiment is a complete success.

The Universal Diffusion of Heat the End of all End.

Prof. Balfonr Stewart recently delivered a very interesting lectnrs in Manchestsr, England, on the "Energies of Light and Heat." The lecturer explained ths two great laws of thermo-dynamics, one of which determines the quantity of mechanical snergy necessary to produce one degree of heat, and the other, ths law according to which heat may be convertsd into work.

This latter law showed that no work could be ohtained ont of heat unless we had a fall of heat from a highsr to a lower degrse, just as we could get no work out of water unlsss it fell from a higher to a lower level. Upon this principle the uses of the boiler and condenser in a eteam engine were explained, and in ths work done by the globe, it was shown that ths heat passed from a great hoiler in the shape of ths equator to condensers in the shape of the poles. Our winds wsre due to the paseing, in obedience to this principle, of the heat from the equator to the poles. Whils all work, as in the boring of a cannon or in friction, could be ohanged into hsat, all heat could not be changed into work. According to this principle of the universs, the universal diffusion of heat would ultimately bs ths fate of all energy.

While ths prinoipls of the conversion of energy was quite trne, there was also another principle equally true, called the dissipation of energy. That was, as it were, the great communist of the world. It tended to distribute itself equally in suoh a way that no work could be got ont of it, and would ultimately bring the visible universe to an end, at least, so far as available energy was concerned. Heat denoted two kinds of energy, namely, absorbed heat and radiant light and heat. Hot hodies parted with their heat to cold bodies by three processes—oonduction, oonvention and radiation.

IN respect to the working of the St. John del Rey silver mine in Brazil, owned by English capitalists, *Herapath's Journal* observes that a large part of the profitable result obtained is dne to the reduced expenditnre in re-opening the mine upon improved mining principles, aud providing it with improved machinery.

HALF YEAR.

Year.	Produce.	Cost.	Profit.
1875.....	£144,076	£ 60,834	£83,241
1866.....	204,717	124,278	80,429

It will be seen that profits for the past year are ae much as they were for 1866, although the yield in 1866 was £204,717, while that of 1875 was only £144,076.

SALT WATEN IOE.—When the sea freezes, there remaine in the cells or pores of the ice a very strong orine, so that water obtained from melting eea ice is unpalatable. But if the ice is drifted on the shore eo that the brine by its greater specifio gravity may drain off, ae it oan through the intercommunioatione of the oells, water obtained by melting it is fresh. Such is the opinion of Dr. John Rae derived from experience in eeveral long journoys to the Arctic coast.

CARELESSNESS.—Professor Able, in a recent lecture at the Royal Institution, London, gave some instancee of the recklessness of miners in the use of explosives. They have been known to open a gunpowder barrel with a crowbar or a stone, or even with a red-hot poker; dynamite is apt to freeze, and is taken to bed over night by the workman who is to nee it in the morning, or put in the oven while he eats his breakfast.

COVERING COTTON WITH SILK.—A method of covering ootton with silk has been devised by A. Mnller. The silk is dissolved in hydrochlorio acid, or an ammoniacal solution of copper or nickel. Water is added until the solution begins to cloud, when the cotton, previously mordanted, is immersed in it for a few minutes. When taken out it will be found to he plated with silk.

NEW PROPERTY OF GLYCERINE.—R. Godeffroy, on examining a chemically pure glycerine, found that when heated to 302° Fah. it took fire, and burnt with a eteady, hlne, non-luminous flame, without diffusing any odor or leaving a residue. The glycerine had the specifio gravity 1.2609. This property enables glyoerine of lower specific gravity to be burnt hy means of a lamp wick.

THE coal mines of Bellingham hay are doing well, and the new discovery on the Nooksack is said to be a success. The farmers up that way and on the Semiahmoo are joyous over their crops this year. They will soon commence harvesting, and there will be a great demand for harvest hands.

THE Seattle *Dispatch* says: Mr. Ireland and other prospectore have found a very rich gold and silver lead on one of the tribntaries of the Skykomish. Everybody up the river hae a slight attack of quartz fever in oousequence. Thia quartz is supposed to be qnite rich and the lead is extensive.

A BEE MANY THOUSAND YEARS OLD.—The English papers annonnce the discovery of a bee in a fragment of milletone grit, and what adds materially to the discovery ie the report that it was living when found, but unfortunately the slab fell into the hands of a rustic—a boy, who, when he broke the atone and saw the bee slowing reviving, instantly dispatched him.

Mechanical Progress.

Abrasion and Wear of Metals.

The United States board to test iron, steel, etc., appointed hy the President of the United States, has asenmed, ae a part of its work, the investigation of the methods and effects of abrasion and wear of metals in engineering and mechanical operations. The committee announce thst they would he plessed to receive from any reliable source such precise data and such information as wonld cnable the secretary to compilo a statomeut of the mode of deformation, tbe rapidity of abrasiou and the laws governing wear iu any important typical or exceptional cases.

The executive officers of all lines of railway may render valuahlo aid by furnishing statements of the wear of rails per ton of transportation, speoifying with care the original woight, the make and the character of tho rail, the total amount of transportation, the length of time occupied, and stating whether the rail finally broko or wus removed. Specimens of rails remarkable either for endnrance or lack of this qnality, if aent to the committee, will he of use in assisting the determiuution of the chemical and otber properties which most affect the value of the material nndor the etated conditione of use. Similar statistics and information in regard to the wear of whecls, axlee and other parts of rolling stock and machinery will he equally valnahls. Engineers having in any instance noted and accurstely recorded such data, are requested to transmit to this committee copies of their memoranda. The wear of jonrnals nnder heavy loads, or at high velocities, as well ae under ordinary conditions, is an important branch of thie subjeot. Wheu possible it ia desired that the dimensions of the journal, the maximnm, the minimum and the mean weight snstained, and the velocity of rubbing or number of revolutions per minute shonld he given. The natnre of the lubricant ia an essential element, and its composition ahonld he stated, the method and frequency of application and the quantity nsed sbould be given. When known, or readily ascertained, the coefficient of friction should be given. It should aleo be noted whether heating occurs, and under what circnmstances of pressure and velocity of rubbing surfacee. Peculiar instances of the hebavior, or nnneual expedients in the management of, bearings, if described accurately and concisely, will be accepted, with thanks.

Tbe wear of tools, under the various conditions of workshop practice, is another subject of inveetigation. Weigbing the toole carefully hsfore and after nee, and weighing the amount of metal removed will, perhaps, he found the most accurate method of determining the rate of abraeion. The area of surface finished, and the area of the surface cut by the tool ehould he accurately ascertained and stated.

The description of the tool, its shape, method of operation, the kind of metal used in the tool, the temper adopted, the character of tbe metal cut by it, the velocity of the tool, and where the peculiarities of behavior were noted, a careful statement of them should he given. This information will still be more valuable if the tool itself and specimens of the chips produced by it are furniehed. The power required to drive the tool can sometimes be readily determined, and such information is of value.

Prof. R. H. Thurston, of the Stevens Institute of Technology, Hoboken, N. J., is chairman, and will receive any communications.

Aiding Mechanical Helps.—There is an indirect benefit accruing to employers from "strikes," which is too little considered by either employere or employed. Every strike operates as a atimulue of the inventive faculty. Puddlers' atrikes and the interference of the nnion in the eternal economy of mills are compelling the adoption of mechanical puddling, not that any system is perfect yet, but some method will and must be fonnd that will take the plaoe of nncertain and capricious puddlers. The same is trne of nail feeders. No more sensitive, touchy olass of operatives live than nail feeders. They have fairly compelled mill owners to take off tbeir hats and say "hy your leave" in regard to their own property, but the late etrike at Wheeling has determined the mannfacturers to hsve a feeder they can depend npon. The Gould self-feeder at the La Belle factory is running regularly and successfully; is cntting abont six kegs of four penny nails per day, that being two kegs more than is neually cut in that length of time by hand-fed machines.

Steel vs. Inon Rails.—The *Railroad Gazette*, of New York, puhlishee a cut repreeenting the wear on a steel rail, laid down in 1865, on the eingle maiu track in Clark etreet, Chioago, already alluded to in these columne, where nearly all the trains of the Chicago, Rock Island and Pacific and the Lake Shore and Michigan Southern railroads passed over it, aud where engines were conetantly shifting. Iron raile in eimilar positions were renewed as often as once in six monthe, the steel rail having outworn sixteen of the iron rails. The steel rail was gradually worn down on one aide, but there waa no splintering, aa in iron rails.

Pure Iron.

It ie a popular notion that the purest iron is the best, wberess pure iron is too soft to be usefnl in the arts. It is snbject to ahrasion almost as easily as lead, and will yield so readily to the forces which iron is expected to resist that it is practically worthless. Therefore, it should be remembered that if by mixture such un artiole ls not obtaiued as may be wanted, the falt does not lie so much with the impurity of the iron as to the extent or proportion the impnrities may be introduced.

Another radical error prevails, iu tho helief that a process cau be adopted by which a good iron of commerce can be made directly from the ore, without the intermediate stages of being pigged, mucked, and piled or bloomed.

Does not every analytic chemist know that trequently two substances of auy entirely dissimilar nature iu their structural organization are exactly alike in their chemical constituents? —"one food and the other poison." Thue, sugar will nonish and build up the fatty tissue of the human system, wbile fusel oil will dissolve and destroy it. Yet hoth theee substances yield the same constituente in anslysis.

With these facts hefore ns, we are forced to the conclusion that the operative force and resistive power of a material of whatever kind dooe not depend eo much npon the nature of its elements as upon its molecular structure, which adapts it to certain purposes joet iu proportion as the porosity of that structure fits it for the action of surrounding influencee.

Tbns, the English procese of making first quality east-steel insists upon having the ingot in store twelve months before it is perfectly seasoned for first-rate merchant bar.

And thue the different preliminary processes in making wrought iron insiet npon time as well as manipulation to briug ahout that perfection so much admired in the iron of commerce.

Is it strange, then, that it is found difficult to produce a good iron direct from the ore by one operation? We thiuk not, and would like to hear from some of our practical readers on the subject.—*Cleveland Review.*

The New Carbonic Acid Motive Power.—Dr. H. Beirs, of Groeningen, has latcly written an exhuustive article on liquid carhonic acid as the successor of steam, in which he says: "For many years I have, with the collaboratiou of my brotber, who is director of the Netherlsnds' soda mannfactory at Amsterdam, considered the qusetion, 'How to tranepose heat into mechamical power more advantageously than it ie done in onr common steam and other enginea?' It occurred to me to make an experiment to see what degree the tenoion of the carhonic acid given off by *natrium bicarbonate* wonld amonnt to when heated in a close space. Wo were eurprieed and much gratified to find that when natrium carbonate in a dry pnlverized etate, or in watery solntion, is heated in a closed space, a part of the carbonic acid ie given off and condensed in a non-heated portion of that epace, so that, at a temperature of 3,000 or 4,000 C., liquid carbonic acid can be distilled out of thie salt with a tension of from fifty to sixty atmospheres."

Wire Rope for Conveying Power.—The use of u light endless wire rope running around grooved whesls at a high epeed hae proved a very useful method of transmitting power over long distances. The whole power even of a large wheel or engine can he thus led at pleasure up hill or down, across rivers or valleys, and in any direction. The rope need not be larger than an inch in diameter, even for very heavy work, ae the velocity of motion is very great while the tension of the rope is slight. The rope is mounted npon grooved pulleys or wbeels of large diameter in the samc way that ordinary helts are used, and the distance across which one span of the rope may reach ie from 300 to 500 feet. In case tbe total distance to be passed over ie greater than this, a second eimilar rope is used, extending on beyond the firet, and the third, or uutil the fartheet point is reached, even though it may be one or two miles from the starting poiut.

Steel castings are coming more and more iu uee every day, for a great many purposes. Many very heavy eteel caetings are now being made, which have taken the place of forged and cast iron; euch ae railroad frogs, engine cranks, croesheads, conneoting rods, eccentrice, hearings, cog wheels and other articles of heavy machinery, ae well as a great variety of emaller articlee used in the erection of steam engiues and other machines. They are epecially adapted to plowsharee, points, etc., from the fact that they can be heated and drawn out as wrought iron, and tempered to any degree of hardness and highly poliehed.

Street Railway Switches.—George T. Jacobs, of Waehington, D. C., bas invented an improved device for oporating etreet-railway switches, consieting of an adjustable and reverehle cam carried on tbe lower end of the operating ehaft ; said ehaft being provided with a steadying wheel, which traverses the track rail when the device ie in operation. The cam atrikes projecting luga on the switch point to properly ehift it.

Scientific Progress.

Uses and Properties of Salicylic Acid.

The *Scientific American* gives the following facts in regard to this new and important antiaeptic:

Salioylic acid is prepared from the oil of wintorgreen, the latter obtained from the *Gualtheria procumbens*, a trailiug plant common all over this country and widely know as tbe wintergreen, tea berry, partridge berry and deer herry, by boiling the oil for a few minntes with a solution of caustic potash; in this operation wood spirit is liherated, and on tbe addition of an acid ealicylic acid is procipitated. Tbus obtained, the cost of the substance has heen high. Although its existence has been familiar to chemists, tbrough its little or no utilization, it, in common with a very large uumber of other organic componnde, has boeu hut elightly known ontside of tbe laboratorioe. At the present time, however, .there is a prospect of the acid coming into wide general employment through the recent discovery of M. Kolbe, Professor of Chemietry at the Leipsic Univereity, that it can be fabricated from carbolio acid, which discovery has been already pnt in practice on a large scale by M. Van Heyden of Dresden.

M. Kolbe has found that, while salicylic acid can be produced from carbolic acid, it, on decomposition hy heat, regenerates tbe latter, and, further, it partakes, in common with carbolic acid, of the power of killing the inferior organisme which determine the phenomena of fermentation and of putrefaotion.

Salicylic acid is in fact a powerful antiseptic, and, from ite harmlessness and freedom trom odor and taste, sppears to he more valuable, iu a coneiderable degree, thau carbolio acid. Its properties are well showu in the following brief summary of M. Kolhe'e experiments: Beer yeast, which, ae is well known, determines the alcoholic fermentation of sugar, is totally inert on a solution of glncose to which one one-thousandth part of sulicylic acid has been added. Ground mnstard, when treated with tepid water, yields a strong piquant odor of mustard, hut becomes completely odorless if a emall portion of the acid he previously added. The acid also hinders emnlsin, or the ferment of sweet almonds, from acting on the amygdalin and trausformiug it into essence of bitter almonds.

A very small quantity of salicylic acid retards conaiderahly the spontaneous coagulation of milk. A quart of heer containing 15.4 grains of the acid and exposed to the air does not become sour, nor does the least vestige of the oryptogamic vegetation peculiar to spoiled beer ehow itself. Egga plunged for one hour in a solntion of the acid, and in no manner treated otherwise, were found perfectly fresh after three months' exposnre to the atmosphere. Meat powdered over with tbe eubstance ie prevented from spoiling for weeks. To prepare for nse, the meat is merely washed to disengage the acid, as the savor of the latter ie very slight and hy no means dissgreoable. This is a remarkably valuahle property, and one which will doubtless find profitable utilization in trausporting heef from Texas to the Northern States, or from Australia and South America to Europe.

Dr. Thiersch, of Leipsic, hss inveetigated the uses of ealicylic acid as applied to surgical dressings. When placed upon cancerous sores and ulcers in a powdered state, it hindere the putrid odor and produces no inflammatory symptoms. The impregnation of tow dressings and of bandages with the substance ie found to be attended with excellent results, though it is curious here to remark that the acid is absorbed and afterwards fouud in the urine. The application of the acid to treating contagious maladies, such as typhoid fever and cholera, has as yet not been made the subject of experiment; hut now that the propertiee of the substance have brought it prominently before the scientific world, there is little doubt hnt that the most extended investigatione into them will shortly follow. It ie already in uee in the eurgical wards of Roosevelt Hospital in New York City, as a dressing for wonuds, nlcere, otc., in the proportion of one drachm to sixty-two aud a half fluid ounces of water.

A Monster Steam Hammer.—According to a German paper the eteel works of Frederiok Krupp, of Eseen, are about to receive a very important addition to their maohinery. The largest steam hammer in uee at these works at the present time ie one capable of working a maes of steel fifty tons in weight, and erected at a coet of 2,800,000 francs. It ie now in contemplation to huild a new eteel hammer capahle of heating np a maes of steel of double the weight—viz., 100 tons. The new machine, it ie estimated, will cost 5,000,000 francs, and will he the moet powerful in the world, and it may be expected that the eize and weight of the German artillery will be enormously increaeed, as the new steam hammer will permit the working up of larger masses of metal than up to the preeent time hae been thought to be poseible by ecientific engineere.

The nnmber of persons who have arrivsd in thie State during the six months ending June 30th, has been 56,915, and the departures 27,818, leaving the State an actual gain 39,097 in population in six months.

The Oxy-Sulphur Light.

Oue of our exchangos gives the following acconut of the newly diecovered oxy-sulphur light and the method of making it:

We had a small eheet iron retort of the usual conical form. The delivery tube we loosely plagged to act as a safety valve, if necessary, and in the lid we drilled a hole and screwed four inchoe of quarter inch hrase tube. Through a hole in tbe side of this was inserted a piece of mnch smaller tube, closed by hammering the end, and having the closing pierced by a fine hole. By this arrangement we had the larger tube in communication with the retort and in the center of that tube, and rising a little higher than the level of ite mouth, a smallor tube coming oat at the side and long enough to euable a ruhber tube to be attached —an arrangement, in fact, very mnch like the ordinary form of blow throngh oxy-hydrogen hurner. A quantity of salphur was placed iu the retort, aud sufficient heat applied to raiee tbo temperature to ahout 725° Fah., the point at which it vaporizes. The end of tbe smaller tnbe was attachod to the oxygen bag—one containing four cuhio feet—snd a fourteen pouud weight applied, which was found amply. eufficient. When the vapor of aulphnr made ite appearance, the oxygen wae turned on, and the reeult was a steady flame of abont two inches iu length, and of such intensity that, although we had not an opportunity then of tryiug it, we are sure a emall statuette could have bsen photographed hy it in a few seconde. The product of comhustion—eulphurous acid—may easily he got rid of if there be in the room a suitable cbimney; hnt even without that, there ia no difficulty in readering it so harmless tbat the operation may be carried on in a drawing room.

Dana on Darwinism.—Professor Dana, of Yale, is not a Darwiuian, or he is not in full sympathy with Darwin'a views. He says: "Tbere is no qucstion, *first*, that geological timo has heen of vast length; *second*, that there is an historioal order in the rocks of the globe, and that the process of tbe world's creation may be, to a large extent, read in the rooks; und *third*, that there bas been a system of progrese in the earth'e living species from the eimpler forms of earlier time to man. But, while adopting these conclnsions in eommon with all geologists, I have no faith in the Darwinian echeme of deriving man through gradual development upward from the monkey, or of evolving a system of life through 'natural selection.' I deplore the misuse of science in tbe support of materialistic views, not uncommon among those who adopt the Darwinian hypothesis. At the same time I grieve, for the eake of the bible and religion, that the discussions relating to scientific views aud men should he so often interspersed with abusive epithets, and so often presented by those who are ignorant of the sciences they are attempting to set right."

Change of Color in Animals.—Certain animals possesa the power of changing their color at will, or according to the circumstances in which they are placed. This is convincingly ehown in some rscent experiments made hy M. Pouchet, a French investigator. He chose as his subject the *Palæmon serratus*, a species of prawn or crub. These prawns, when brought ashore hy the fishermen, have a rose or dark lily color; but if they are put into porcelsin vessels with black or white hottoms, they will assume colors wholly unlike. Those in the white dish bscome yellowish, almoet colorless, as if they had just ehed their skin; those in tbe dark colored dish aseume a browuish red hue. If they are ohanged, the pale into the black vessel, and vice versa, they again alter their color, in corrsspondence with their snrroundings. The change of a pale one to a dark tint was more rspid than the reverse. Thus, under favorable circumstances, a yellow, red, or rose-colored *Palæmon* oan be created.

A Lady Lecturer on Chemistry.—Scotland bas produced something of an anomaly in the person of a lndy lecturer on chemistry. Miss Charlotte Napier lately gave a lecture on chemietry, in connection with the Blackfriars Ueeful Information Society of Aherdeen. There was quite a full attendance, and the lectnre was illuetrated by a variety of experiments, pronounced of a highly interesting and inetructive character, wae lietened to with the closest attention, and an enthnsiastic vote of thanks wae voted to the lecturer at the oloee. Miss Napier is quite a young lady, a native of Aherdeen. Sbe studied chemietry at Edinhurgh, under the direction of Mr. Falconer King, with tho view of assisting her father ae an agricultural chemist.

A Parasite in the House Fly.—Profeesor Leidy reports the ohservation of a thread worm in the prohosois of the common house fly. The parasite is from a line to the tenth of an inch in leugth. From one to three were found, on an average, in one fly out of five. Mr. H. J. Carter first diecovered the parasite in tbe houee fly of Iudia, and deecribed it under the name of *Filaria muscæ*. From two to twenty were found by the observer in one fly out of three. Dr. Diesing hss referred the paraeite to a new genns, with the name *Habronema muscæ*. It has heen suggested by Mr. Carter that it may be the sonroe of the Guinea worm (*Filaria medinensis*) in man.

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120 Am Flat.....3¼@3⅜
380 Best & Belcher.48½@48¾
275 Belcher.....28@28½
40 ....do.....h 10..29⅛
125 Bullion.....47½@48
50 Baltimore Con.....7⅛
10 Chollar.....17
445 Crown Point..30½@30⅝
890 Confidence.....2½@2¾
50 ....do.....s 10..2⅜
110 Con Virginia.....21½@22
1180 California.....60@61
60 Caledonia.....23@23½
535 Challenge.....7⅞
50 Dayton.....4⅝
110 Eureka Mill.....6⅞
60 Eclipse.....5¾
180 Gould & Curry.18⅝@18¾
4400 Globe.....8⅞
10 Hale & Norcross.....11
1925 Imperial.....10@10⅛
70 Justice.....13⅝
210 Julia.....16½@17
100 ....do.....b 30..17⅛
160 Kentuck.....15⅜
380 Lady Bryan.....1⅝
1240 Mexican.....19⅜@19⅝
70 New York.....3⅜
600 Ophir.....49@49⅜
300 ....do.....s 5..49⅝
480 Overman.....6⅝@6⅞
110 Occidental.....3⅜
100 Phil Sheridan.....75c
600 Rock Island.....3@3⅛
25 Savage.....11¾@12
Sierra Nevada.15¾@15⅞
35 Seg. Belcher.....9¾
140 S Hill.....10⅜@11
320 Union.....17¾@17⅞
200 Utah.....2@2⅛
100 ....do.....b 10..11
1100 Woodville.....2
35 Yellow Jacket.....86⅜

AFTERNOON SESSION.

100 American Flag.....2
820 Andes.....4⅝
50 ....do.....b 5..4⅝
100 Belmont.....33½@34
600 Best & Bel.....49½@49¾
50 ....do.....b 30..50
100 Cherry Creek.....1⅞
400 Cosmopolitan.....60c
750 Confidence.....24@24⅝
110 Con Virginia.....32½@33
1150 Florida.....2⅝@3
255 Gila.....4½@5
660 Golden Chariot..1⅝@1⅞
520 Gould & Curry....18¾@19
745 Imperial.....10⅛
200 Illinois Central.....5
390 Jackson.....1⅞
25 Jefferson.....4⅜
10 Justice.....13⅝
25 K K Con.....6
200 Kossuth.....2
120 Leopard.....17@17¼
147 Lady Wash.....2@1¾
150 Leviathan.....75c
140 Meadow Valley.....15@16
1580 Mansfield.....45@50
110 Mahogany.....1⅝@1¾
100 Niagara.....75c
50 Overman.....69
100 ....do.....h 30..70
560 Ophir.....51½@51¾
200 Phoenix.....2¾
25 Panther.....1¾
1650 Pauper.....2¾c
100 Pacific.....3
610 Poorman.....3⅜
270 Prospect.....4¼@4½
160 Raymond & Ely.....48
50 ....do.....b 5..48
300 South Chariot..75@87½
200 S Mountain.....4
50 S R Island.....1
250 War Eagle.....50c
1290 Wells-Fargo.....15c
600 Ward.....2¾@3

SATURDAY, A. M., JULY 24.

200 Alta.....2¾@2¾
315 Alpha.....2½@2⅝
150 Baltimore Con.....6¾
785 Best & Bel.....50@51
250 Belcher.....29@29¼
770 Bullion.....53@53⅝
20 ....do.....b 5..53
1180 California.....61½@62
300 Caledonia.....23@26
80 Chollar.....78¾@79
215 Confidence.....26@25¾
325 Crown Point.....32@32¼
50 ....do.....h 30..32¼
325 Con Virginia.....32⅜@32⅞
120 Con G H.....3⅜
550 Challenge.....7⅝@7¾
90 Empire Mill.....7⅜
10 Eclipse.....5
155 Eureka Con.....58
570 Gould & Curry.19¼@19⅞
2250 Globe.....1
90 Hale & Nor.....42@44
655 Imperial.....10¾@11
50 ....do.....h 5..10⅞
865 Julia.....19@17
30 Just ce.....142
60 Kentuck.....15¼@15⅝
620 Lady Bryan.....1⅞@1¾
25 Meadow Valley.....6
50 New York.....3⅜@3⅝
1030 Ophir.....52¾@53
30 ....do.....b 10..52½
850 Overman.....7@7¼
100 ....do.....b 5..7⅛
950 Rock Island.....3
180 Ray & Ely.....47
775 Silver Hill.....11@11¼
290 Savage.....11⅝@11⅞
1285 Sierra Nevada..15⅞@16
500 ....do.....h 30..16
20 Seg Belcher.....95
180 Union.....17⅝@18
95 ....do.....h 5..6
245 Utah.....12
440 Woodville.....2@2⅜
60 ....do.....h 60..2⅜
20 Yellow Jacket.....90

MONDAY, A. M., JULY 25.

200 Alta.....2⅜
115 American Flat..3⅞@3½
210 Alpha.....2⅛@2⅜
820 Best & Bel.....52¼@52
215 Belcher.....29½@29¾
50 ....do.....b 5..29¾
650 Bullion.....55@54
50 ....do.....b 30..55
240 Bal Con.....4@4½
110 Challenge.....7⅝@7
225 Caledonia.....23½@24
1740 California.....62@62¼
200 ....do.....h 5..62
200 Confidence.....25¼@24½
10 ....do.....b 30..24
300 Con Virginia.....33@33⅜
35 C G Hill.....3½
665 Crown Point.....33@33⅜
30 Chollar.....80@79½
650 Dayton.....4⅜@5¼
80 Eclipse.....5
290 Empire Mill.....7¼@7⅜
5 Exchequer.....200
450 Globe.....1⅝
595 Gould & C.....19¼@19⅜
90 Hale & Nor.....44½@44
465 Imperial.....10¼@10⅞
130 Justice.....14⅜@15
410 Julia.....22½@23⅜
99 Knickerbocker.....4@3⅞
80 Kentuck.....15
2710 Lady Bryan.....1⅝
120 Mexican.....21½@20⅝
50 New York.....3⅜@3⅝
2660 Ophir.....53½@53⅝
90 ....do.....b 30..54⅜
730 Overman.....7¼@7⅝
120 Occidental.....3½
700 Rock Island.....3@3⅛
145 Savage.....12@12⅛
30 Seg Belcher.....10@9⅞
1200 Sierra Nevada....16@15⅞
120 ....do.....h 5..16
805 Silver Hill.....10¾@11⅛
345 Union Con.....8@8¼
250 Utah.....12
610 Woodville.....2¼@2⅜
105 Y Jacket.....9@8¾

AFTERNOON SESSION.

350 Alps.....10c
25 Am Flag.....2
1860 Andes.....4⅞@4¾
300 ....do.....h 30..4⅞
800 ....do.....h 30..5
250 Cosmopolitan.....60c
100 Chief of Hill.....56c
25 Cherry Creek.....1⅛
160 Con Va.....32⅝
740 California.....61@62¼
200 ....do.....b 5..61¼@61⅜
200 Eureka Con.....58
350 El Dorado South.....90c
150 Empire I.....37½c
150 Florida.....2½
875 Gila.....5@5¼
190 Golden Chariot...1¾@1⅞
350 Illinois Con.....6
150 Jackson.....2@2¼
600 Jefferson .....4¼@4½
1200 Kossuth.....2⅜
100 Leopard.....17½
145 Mexican.....20¼@20⅞
100 Mint.....40c
500 Niagara.....15c
115 Overman.....73¾@73½
150 Ophir.....52@52¼
150 Phoenix.....2¼
990 Pauper.....30c
275 Prospect.....4½
305 Poorman.....4
1400 Raymond & Ely..49@50
50 Rye Patch.....1½
50 St Patrick.....1½
160 So Chariot.....75c
300 S Mountain.....3
350 Island.....16
300 S Nevada.....16
20 ....do.....h 5..16
220 Tiger.....79c
100 War Eagle.....50c
400 Wells-Fargo.....38c
250 Whitman.....2¼

TUESDAY, A. M., JULY 27.

100 Am Flat.....3⅛
100 Alta.....2¾
100 ....do.....b 10..2
155 Alpha.....19½@20
400 Best & Belcher..50@49½
20 ....do.....b 30..50¼
250 Belcher.....29¾@29¼
270 Bullion.....53½@54
270 Baltimore Con.....8
30 Chollar.....18@18½
315 Crown Point..32¼@32⅜
50 ....do.....b 5..32½
300 Confidence.....24
50 ....do.....b 10..24
120 Con Virginia.....32⅞@33
510 Challenge.....6½@6¾
250 Caledonia.....23@24
1140 California.....62@62¼
250 ....do.....h 5..61
100 Dayton.....5@5¼
60 Empire Mill.....6⅞
100 Gould & Curry.18½@18¾
20 ....do.....h 10..18¾
1390 Globe.....1⅛@1
85 Hale & Nor.....42@41
1120 Imperial.....10¾@10⅞
1120 Julia.....23@23¾
1100 Justice.....14¾@15
360 Kentuck.....15@15⅝
10 Knicker.....3¼
870 Lady Bryan.....1⅛
315 Mexican.....20½@20¾
145 New York.....3¼@3⅜
120 Occidental.....3¼
7625 Ophir.....51¾@51½
50 ....do.....s 5..51½
50 Overman.....7½@7⅝
300 Rock Island.....3¼@3⅜
95 Savage.....12¼@12½
695 S Nevada.....16@17
160 Succor.....1⅝
50 S Hill.....11@11½
105 Tyler.....90@85
440 Union.....8@7⅞
200 ....do.....h 30..8
1130 Utah.....13@14
350 Woodville.....3@3¼
200 ....do.....h 30..3¼
73 Y Jacket.....95@87

AFTERNOON SESSION.

900 Andes.....4⅜@4⅝
100 ....do.....b 5..5
100 ....do.....s 10..4⅞
1100 Best & B.....49@49¾
100 ....do.....b 5..49½
100 ....do.....h 10..49½
725 Cosmopolitan.....60@55c
1145 California.....61@60
50 Chief of Hill.....50c
45 Con Virginia.....32⅞
65 Eureka Con.....57
20 Empire I.....35c
100 El Dorado South.....50c
540 Florida.....2½
810 Gila.....5@4⅞
700 G Chariot.....1¾@1½
500 Golden Fleece.....2½
5 Illinois Cen.....6
1010 Jackson.....2½
1080 Jefferson.....4½@5
200 Justice.....15⅛
10 K K Con.....6
1000 Kossuth.....2⅝
550 Leopard.....14@15
770 Lady Wash.....2@2½
310 Lady Bryan.....1⅝
100 Leviathan.....75c
10 Mahogany.....1½
1300 Mansfield.....2¼@2⅜
225 ....do.....b 5..2½
200 Meadow Valley..6¼@6⅜
250 Niagara.....15@15c
560 Ophir.....50½@51
20 Overman.....73
100 Phoenix.....2
20 Panther.....h 30..1¾
200 Pauper.....25c
10 Poorman.....4¼
300 Prospect.....4½
290 Raymond & Ely....49@48
50 S Chariot.....87½c
150 S Mountain.....3
300 S R Island.....3
60 Savage.....121
30 S Nevada.....16¼
45 Wells-Fargo 35c

WEDNESDAY A. M. JULY 28.

295 Alpha.....22@21¾
20 ....do.....b 5..22¼
1410 B & Belcher.....51@52
100 ....do.....h 30..52¾
230 Bullion.....52¾@54
235 Belcher.....29@29¼
275 Baltimors Con.....4@4¾
138 Chollar.....82@84
320 Challenge.....6¾
50 ....do.....b 5..6¾
1755 Crown Point.....33¼@33
25 ....do.....s 30..33
30 Con Virginia.....32⅞
10 ....do.....b 10..33⅛
905 California.....61@61¼
410 Caledonia.....25½@26
280 Dayton.....5@5½
10 Empire Mill.....7¼
130 Globe.....1
145 Gould & Curry.....18¼
125 Hale & Norcross..45@47
1455 Imperial.....10@9⅞
10 Justice.....14⅞
565 Julia.....23@22¾
105 ....do.....s 10..22½
105 Kentuck.....15¾@15¾
625 Lady Bryan.....1½
100 ....do.....b 30..1⅝
265 Mexican.....20¾@20¼
50 ....do.....h 30..20⅜
1120 Ophir.....51⅞@53¼
50 ....do.....b 5..52
225 Overman.....7⅜@7½
600 Rock Island.....3⅛@3⅜
195 Savage.....12¾@12⅞
205 S Nevada.....18¾@17
10 Seg Belcher.....9
340 Silver Hill.....11¼@11⅜
1905 Utah.....16@14
1500 Union Con.....8@8⅛
85 Yellow Jacket.....89

AFTERNOON SESSION.

150 Amazon.....75@87½c
50 American Flag.....2
2265 Andes.....4⅞@4¾
850 Belmont.....3¼
250 Cosmopolitan.....55c
350 Empire I.....37½c
260 Eureka Con.....56¼@56¾
200 Europa.....2
600 Florida.....2
740 Gila.....4½@5
100 ....do.....h 10..5
255 G Chariot.....2@1¾
800 Illinois Cen.....6

SALES OF LAST WEEK AND THIS COMPARED.

THURSDAY, A. M., JULY 22

340 Alpha.....19½@20½
10 Am Flat.....3¼
640 Best & Belcher...48½@49
710 Belcher.....28@29
240 Bullion.....48½
1136 Crown Point.....31@31¼
115 Chollar.....17@18
450 Confidence.....24½@25
240 Caledonia.....22@23½
100 Con Gold Hill.....3¾
95 Con Virginia.....31⅞@32
920 California.....58½@60¾
1725 Ophir.....52@53
295 Dayton.....4½
10 Eclipse.....9¼
335 Empire Mill.....7@7¼
565 Gould & Curry.18¾@19¼
1900 Gilpin Con.....1¾@2
110 Hale & Norcross.39½@41
1155 Imperial.....10½@11¼
585 Justice.....12¾@13⅛
310 Julia.....16¾@17
350 Island.....15¾@15⅞
90 Knickerbocker.....3¼
535 Lady Bryan.....1½@1⅝
780 Mexican.....20¼@20¾
525 New York.....2⅞
385 Overman.....6⅞@7
200 Overman.....67@67¼
30 Occidental.....2¾
520 Rock Island.....2⅞@3
165 Savage.....11¾@11⅞
570 Silver Nevada...15@15⅝
80 S Hill.....10@10⅛
90 Seg Belcher.....92@90
280 Succor.....1¼
120 Union Con.....7½@7¾
200 Utah.....11½@12
300 Woodville.....2½
225 Yellow Jacket..86@87

AFTERNOON SESSION.

100 Am Flag.....2
300 Andes.....4¾@4⅝
150 Belmont.....3¼
100 Chief of Hill.....49@50
350 Cosmopolitan .....60@55c
300 California .....60¾@59¾
90 Caledonia.....23
100 Eureka Con .....57½@58
1220 Empire.....50c
1250 Florida.....2@2¼
245 Gila.....4¾
300 Golden Chariot....1¾@2
50 Illinois Cen.....6
700 Jackson.....2@1¾
70 Jefferson.....4½
270 K K Con.....6@5¾
200 Kossuth.....2½
50 Leopard.....17
450 Leviathan.....65½@62
560 Meadow Valley...6½@6¾
700 Mansfield .....25¼@24
100 Mahogany.....1½
170 Mint.....38@30c
600 Mexican.....20½@20¾
400 Niagara.....h 30..75@87½c
425 Ophir.....51
850 O G Hill.....2@2¼
40 Oroche.....4¼@4½
50 Pioche.....3¼
400 Prussian.....3½
100 Panther.....1½
750 Poorman.....3¼@3⅜
2000 Pauper.....25c
290 Pacific.....90@85
580 Prospect.....4½@4
260 Raymond & Ely....49@43
10 Savage.....115
100 S R Island.....87½c
70 South Chariot.....87½
500 Tiger.....75c
1000 Ward.....2¾@2½
900 Wells-Fargo.....15@14c
100 Wehfoot.....63½c

THURSDAY, A. M., JULY 29.

310 Alpha.....20¾@21
970 Best & Belcher...52¾@53
1000 Belcher Con.....40¼
435 Belcher .....29@29¾
85 Bullion.....50½
735 Chollar.....80@85
330 Caledonia.....23@23½
1725 Crown Point.....33@33½
170 Confidence 27
2430 California.....62¾@63
100 Daney.....1
5 Exchequer.....40c
440 Empire.....1@7⅝
840 Imperial.....9¾@10
10 Justice.....14@
660 Julia.....21@22
285 Kentuck.....15¾@15¾
125 Grown Point.....1¾@2
2160 Lady Bryan.....1⅜@1½
2135 Mexican.....21¾@22
2435 Ophir.....54¼@56
640 Overman.....7@8
1765 Savage.....13¾@13⅝
1085 Sierra Nevada..19@20¼
470 S Hill.....10¾@11¼
10 Seg Belcher.....93
1725 Union Con.....8@8¾
385 Utah.....16@15¾
155 Yellow Jacket.....85@86

AFTERNOON SESSION.

100 Alta.....2¾
100 Am Flat.....3⅜@3¼
2100 Andes.....4¾@4⅝
130 Belmont.....3¼@3¾
680 Challenge.....6½@6⅝
500 Dayton.....4¾@5
180 Eureka Con....55¾@56¾
40 Florida.....2¾
90 Gila.....4¾@5
480 Golden Chariot...1¾@1¾
250 Illinois Ceu.....6
140 Jackson.....2¼@2¾
745 Jefferson.....4¼@4½
500 Kossuth.....2¼@2¾
100 K K Con.....6
400 Leopard.....15¾@17
140 Lady Washington.....2
70 Meadow Valley...6¾@6¾
700 Mansfield.....15c@90c
40 Mahogany.....75c
550 Mint.....49@90c
140 New York.....3¼@3⅜
500 O G Hill.....2½
20 Pioche.....3¼
200 Phil Sher.....1¼@1¾
225 Poorman.....4@4¼
50 Panther.....1¾
100 Prussian.....3½
150 Raymond & Ely..46¼@47
100 Rye Patch.....1¾
840 Rock Island.....3⅞@4
459 S Mountain.....3¾
100 S R Island.....3
100 South Chariot.....78c
30 St Patrick.....1½
50 Tyler.....15c
480 Tiger.....62½@75c
1500 Wells-Fargo.....40@39c
535 Woodville.....3@3¼

The Mining Share Market.

Although stock matters were pretty dull during the first part of the week, they are beginning to "pick up" a little at the latter end. The market has strengthened materially, and appearances indicate that the advance is from legitimate causes, as lesding brokere are buying largely on orders from their customers. It is stated that the orders from the country, from over the mountaine, and from the outeide public generally, are more numerous than they have been at any time since last spring. On Wedneeday and Thureday there was some little excitement, stocke heing run up a little. It was thought that the hull tactics were instigated by the heavy ringe, which had reason to fear that the market might tumhle with a disastrous crash in consequence of the nneettled condition of financial affaire in the Eaet, growing out of the heavy hanking enepensione, and hy huoying the msrket and giving it a fictitions appearance of etrength the immediate danger would he averted, and the market eettle back to its natural groovee after the crisie should have paesed. Most of the stocks showed a slight advance on Wednesday over Tueeday's quotations. The prices for different stocke for each day during the paet week will be eeen hy referring to our stock sales.

NEW DIGGINGS.—A correepondent of the Yreka *Union*, of July 24th, sends the following items from the South fork of Salmon: Thos Hand, Williams & Co. (Hand and Williams are lately from Oro Fino) have etruck good pay dirt, which paye from $8 to $10 to the hand. The claime are hill claims or on the eecond hench of the river. They are working to a great disadvantage now, in fact, only prospecting the ground. Theee claims are extensive and will last for years. The owners are only juet getting into pay dirt, and will do muoh hetter when the claims are better fixed for working.

MINING STOCKHOLDERS' DIRECTORY.

Compiled every Thursday from Advertisements in the Mining and Scientific Press and other S. F. Journals.]

ASSESSMENTS.—STOCKS ON THE LIST OF THE BOARDS.

Company.	*Location.*	*No. Amt.*	*Levied.*	*Delinq'nt.*	*Sale.*	*Secretary.*	*Place of Business.*
Baltimore Cons M Co	Washoe	9 1 00	June 30	Aug 3	Aug 23	C A Sankey	331 Montgomery st
Buckeye G & S M Co	Washoe	14 25	July 1	Aug 7	Aug 26	C A Sankey	330 Montgomery st
Caledonia S M Co	Washoe	13 3·00	July 7	Aug 11	Aug 31	R Wegener	414 California st
Chariot Mill & M Co	San Diego Co	Cal 4 25	June 24	July 27	Aug 17	F Swift	419 California st
Cherry Creek M & M Co	Nevada	4 50	July 15	Aug 19	Sept 14	D F Verdenal	408 California st
Condor M Co	Ely District	4 50	July 9	Aug 16	Sept 7	G T Grimes	240 Montgomery st
Dayton G & S.M Co	Washoe	8 1 00	June 8	July 15	Aug 5	W E Dean	419 California st
El Dorado South Cons M Co	Nevada	6 1 00	July 6	Aug 11	Aug 31	W Willis	419 California st
Empire M Co	Idaho	10 50	July 7	Aug 12	Sept 1	W Willis	419 California st
Eureka M & S Co	Washoe	5 6	June 1	July 9	July 31	A C Ryce	308 California st
Europa M Co	Washoe	4 25	July 23	Aug 27	Sept 14	R B Noyes	419 California st
Florida S M Co	Washoe	2 75	June 15	July 20	Aug 10	L Hemmann	330 Pine st
Golden Fleece G & S M Co	Washoe	9 10	June 16	July 16	Aug 16	J P Moore	320 California st
Ida Elmore M Co	Idaho	18 1 00	July 20	Aug 27	Sept 18	C B Higgins	402 Montgomery st
Imperial S M Co	Washoe	22 1 00	June 29	Aug 3	Aug 20	W E Dean	419 California st
Justice M Co	Washoe	15 3 00	June 19	July 19	Aug 19	Jaw Kennedy	Merchants' Ex
Kossuth M Co	Washoe	4 1 00	June 12	July 15	Aug 21	E F Stone	419 California st
Lady Bryan M Co	Washoe	8 50	July 9	Aug 12	Sept 3	F Swift	419 California st
Mahogany G & S M Co	Idaho	16 2 00	July 15	Aug 21	Sept 11	C B Higgins	402 Montgomery st
New York Cons M Co	Washoe	14 50	June 22	July 27	Aug 16	H C Kibbe	419 California st
New York M Co	Washoe	5 50	June 22	July 27	Aug 16	H C Kibbe	419 California st
North Bloomfield G M Co	Cal	38 1 00	June 16	July 26	Aug 13	Thos Derby	320 California st
Overman S M Co	Washoe	32 3 00	June 25	July 30	Aug 19	R Wegener	414 California st
Pauper M Co	Idaho	5 30	July 24	Aug 30	Sept 23	W F Bogart	402 Montgomery st
Pioche M Co	Washoe	8 25	July 2	Aug 6	Aug 23	S Phillips	408 California st
Pioche West Ex M Co		8 2 00	July 12	Aug 18	Sept 10	T L Kimball	409 California st
Savage M Co	Washoe	19 5 00	June 24	July 28	Aug 16	F B Holmes	419 California st
Silver Cord M Co	Idaho	10 1 00	July 20	Aug 28	Sept 20	C B Higgins	402 Montgomery st
Silver Hill M Co	Washoe	6 2 00	June 8	July 14	Aug 4	W E Dean	419 California st
South Chariot M Co	Idaho	14 75	June 10	July 13	Aug 4	F Swift	419 California st
War Eagle M Co	Idaho	10 1 00	June 30	Aug 5	Aug 25	L Kaplan	Merchants' Ex
Ward Beecher Cons M & M Co	Nevada	5 50	July 14	Aug 25	Sept 22	D A Jennings	401 California st
Wells Fargo M Co	Washoe	2 10	June 23	July 26	Aug 13	O H Bogart	402 Montgomery st
Woodville Cons M Co	Washoe	2 60	June 25	July 29	Aug 18	W M Helmann	401 California st
Woodville G & S M Co	Washoe	10 60	June 25	July 29	Aug 18	W M Helmann	309 California st

OTHER COMPANIES—NOT ON THE LISTS OF THE BOARDS.

Bandereta M & M Co	Cal	1	25	June 17	July 17	Aug 2	J W Tripp	408 California st
Black Hawk Coal M Co	Cal	1	5	June 23	July 30	Aug 16	H A Powell	520 Montgomery st
Blue Jacket M Co			90	July 9	Aug 11	Aug 28	C J Eaton	724½ Market st
Cascade Bine Gravel M Co	Cal	3	10	July 20	Aug 25	Sept 13	J M Buffington	311 California st
Edith Q M Co	Cal	4	25	June 3	July 19	Aug 11	Wm Stnert	113 Leidesdorff st
Emma Hill Cons M Co	Utah	2	50	June 14	July 19	Aug 19	I C Fowler	302 Montgomery st
Fresno Q M Co	Fresno Co	Cal	2	25	June 14	July 24	Aug 14	R Wegener	414 California st
Gold Mountain M Cn	Amador Co	Cal	4	25	July 1	Aug 7	Aug 23	W A Knapp	116 Leidesdorff st
Green Valley Blue Gravel M Co	Cal	4	30	July 7	Aug 9	Aug 27	A D Carpenter	605 Clay st
Hartford M Co	Washoe	3	30	June 26	July 28	Aug 14	E F Stone	419 California st
Jackson M Cn	Eureka	Nevada	7	50	June 25	July 29	Aug 19	H C Kibbe	419 California st
Lake Washington M Co	Washoe	4	50	June 16	July 20	Aug 9	H C Kibbe	419 California st
Los Prietos M Cn	Cal	3	25	June 2	July 9	July 31	S H Smith	6 Montgomery Av
Misers Dream S M Co	White Pine	Nev	2	40	June 21	July 31	Aug 19	W F R S Hindler	Cor Cal & Spring
Missouri Q M Co	Cal	2	50	June 22	July 26	Aug 24	F H Rogers	330 Pine st
Morning Star G & S M Co	Cal	25	1 00	June 21	July 21	Aug 14	O H Bogart	402 Montgomery st
Mosquito Hydraulic M Co	Cal	2	3 1½	June 28	July 31	Aug 19	C S Healy	Merchants' Ex
Mountain View Cons M Co	Nevada	1	50	June 24	July 29	Aug 16	C S Healy	419 California st
Mount Savage M Co	Utah	2	10	June 12	July 26	Aug 17	D F Verdenal	408 California st
Omega Table Mountain M Co	Cal	6	5	June 8	July 13	Aug 2	David Wilder	Merchants' Ex
Omega Table Mt M Co	Cal	7	5	July 27	Aug 31	Sept 20	D Wilder	Merchants' Ex
Nelson M Co	Cal	6	1 00	July 23	Aug 28	Sept 13	Geo P Thurston	315 California st
Silver Sprout M Co	Cal		5	July 3	Aug 10	Sept 1	T B Wingard	318 California st
Table Mountain Alpha M Co	Cal	7	10	June 5	July 18	Aug 2	Leander Leavitt	401 California st
Tolman & Miller M & M Co	Cal	2	30	July 14	Aug 16	Sept 6	O H Bogart	402 Montgomery st
Umpire Tunnel & M Co	Utah	4	5	May 20	July 1	Aug 2	Wm Small	531 California st
Union Gravel M Co	Cal	11	1 00	July 16	Aug 23	Sept 13	T Derby	320 California st
Victoria & Imperial Tun'l & M Co	Utah	5	10	July 8	Aug 12	Sept 2	W H Watson	302 Montgomery st
West Point G & S M Co	Cal	1	10	July 23	Aug 24	Sept 13	J O'Connel	400 Montgomery st
Woodside M & M Co	Cal	2	25	July 17	Aug 17	Sept 2	J Glassman	335 Montgomery st
Wyoming G M Co	Nevada	Co	Cal	7	35	July 13	Aug 17	Sept 4	J M Buffington	311 California st

MEETINGS TO BE HELD.

Name of Co.	Location.	Secretary.	Office in S. F.	Meeting.	Date.
American Flat M Co	Washoe	C A Sankey	331 Montgomery st	Annual	Aug 4
Caledonia S M Co	Washoe	Called by Trustees	414 California st	Special	Aug 18
Carrie Hale Hydraulic M Co	Cal	F W Van Reynegom	531 Californiats	Annual	Aug 14
Cons Gold Hill Quartz M Co	Nevada	R Wegener	414 California st	Annual	Aug 3
Europa M Co	Washoe	R B Noyes	419 California st	Annual	Aug 4
Great Eastern Quicksilver M Co	Cal	I H Pearson	432 Montgomery st	Special	Aug 3
Hamilton M Co	Nevada	W A M Van Bokkelen	419 California st	Annual	Aug 11
Julia G & S M Co	Washoe	Called by Trnstees	419 California st	Special	Aug 23
Lake M Co	Cal	H P Livermore	529 Market st	Annual	Aug 4
Monitor-Belmont M Co	Nevada	W W Hopkins	411½ California st	Annual	Aug 2
New York Hill M Co	Cal	Called by Trnstees	409 California st	Special	July 29
Nevada M Co	Nevada	Called by Trnstees	419 California st	Special	Aug 24
Occidental M Co	Cal	A K Durbrok	438 California st	Annual	Aug 12
Oceanic Quicksilver M Co	Cal	O G Funk	438 California st	Annual	Aug 7
Potosi M & Smelting Co	Nevada	J Hardy	409 California st	Annual	Aug 2
Raymond M Co	Washoe	Called by Trustees	419 California st	Special	Aug 17
South Comstock M Co	Washoe	J M Buffington	311 California st	Annual	Aug 16
Sutro M Co	Washoe	G W R King	434 California st	Annual	Aug 2

LATEST DIVIDENDS (within three months)—MINING INCORPORATIONS.

Name of Co.	Location.	Secretary.	Office in S. F.	Amount.	Payable.
Black Bear Quartz	Cal	W L Cliver		25	July 19
Cons Virginia M Co	Washoe	Ohas H Fish	401 California st	10 00	July12
Empire G M Co	Sierra Co	Cal C Collischon		2 Dividends—$5 Each	July 8
Empire M Co	Nevada Co	Cal D A Jennings	401 California st	50	July 6
Eureka Consolidated M Cn	Nev	W W Taylor	419 California st	2 00	July 6
Excelsior M & M Co		Frank Swift	419 California st	1 00	April 10
Oila S M Co	Nevada	W Ang Knapp	116 Leidesdorff st	25	July 15
Jefferson S M Co		O A Sankey	331 Montgomery st	50	May 15
Leopard M Co		R H Brown		50	July 15
Manhattan S MCo	Nevada	Ohas S Neal	419 California st	1 00	June 15
Northern Belle M & M Co		W Willis	419 California st	1 00	July 15
Oneida M Co		L Kaplan	Merchants' Ex	50	July 23

METALS.

[WHOLESALE.]

WEDNESADAY M., July 28, 1875.

American Pig Iron, ℔ ton	38 00	@	39 00
Scotch Pig Iron, ℔ ton	40 00	@	44 00
White Pig, ℔ ton	— —	@	38 00
Oregon Pig, ℔ ton	— —	@	38 00
Refined Bar, bad assortment, ℔ ℔	— —	@	— 3½
Refined Bar, good assortment, ℔ ℔	— —	@	— 4
Boiler, No. 1 to 4	— —	@	— 5¼
Plate, No. 5 to 9	— —	@	— 5½
Sheet, No. 10 to 14	— —	@	— 5¾
Sheet, No. 16 to 20	— 5¾	@	— —
Sheet, No. 22 to 24	— 6¼	@	— —
Sheet, No. 26 to 28	— 6½	@	— —
Horse Shoes, per keg	7 50	@	8 00
Nail Rod	— —	@	— —
Norway Iron	— 9	@	— —
Rolled Iron	— 6	@	— —
Other Irons for Blacksmiths, Miners, etc.	— —	@	— 4½
COPPER.—			
Braziers'	— 35	@	— —
Copper Tin'd	— 37½	@	— —
O'Niel's Pat	— 24	@	— 30
Sheathing, ℔	— 24	@	— 40
Sheathing, Yellow	— —	@	— 25
Sheathing, Old Yellow	— —	@	— 12½
Composition Nails	— 24	@	— —
Composition Bolts	— —	@	— —
STEEL.—Cast, English Cast, ℔ ℔	— 20	@	— 25
Anderson & Woods' American Cast	— —	@	— 16½
Drill	— —	@	— 16½
Fist Bar	— 18	@	— 22
Plow Steel	— 9	@	— 10
TIN PLATES.—			
10x14 I C Charcoal	11 50	@	12 00
10x14 I X Charcoal	13 50	@	14 00
Roofing Plate I C Charcoal	10 50	@	11 00
Banca Tin	— 25	@	— 30
Australian	— 25	@	— 30
ZINC.—By the Cask	— —	@	— 11
Zinc, Sheet 7x3 ft, No 7 to 10 ℔ ℔	— —	@	— 11
do do 7x3 ft, No 11 to 14	— —	@	— 11½
do do 8x4 ft, No 8 to 10	— —	@	— 12
do do 8x1 ft, No 11 to 10	— —	@	— 12
NAILS Assorted sizes	— —	@	4 10
QUICKSILVER, per ℔	— —	@	— 70

Gold, Legal Tenders, Exchange, Etc.

[Corrected Weekly by CHARLES SUTRO & CO.]

SAN FRANCISCO, July 28, 3 P. M.

LEGAL TENDERS in S. F., 11 A. M., 87¾ to 88¾.
GOLD in N. Y., 114⅛
GOLD BARS, 890. SILVER BARS, 6½ and 7½ per cent. discount.
EXCHANGE on N.Y., 60-100 per cent. premium for gold; on London bankers, 49; Commercial, 49¼; Paris, five francs per dollar; Mexican dollars, two and three per cent. discount.
LONDON — Consols, 93 to 93⅛; Bonds, 102¼
QUICKSILVER in S. F., by the flask, per ℔, 70c.

LEATHER.

[WHOLESALE.]

WEDNESADAY M., July 28, 1875.

City Tanned Leather, ℔ ℔			26@29
Santa Cruz Leather, ℔ ℔			26@28
Country Leather, ℔ ℔			24@29
Stockton Leather, ℔ ℔			25@28
Jodnt, 8 Kil., per doz			$50 00@ 54 00
Jodot, 11 to 13 Kil., per doz			68 00@ 79 00
Jodot 14 to 19 Kil., per doz			82 00@ 96 00
Jodot, second choice, 11 to 16 Kil. ℔ doz			57 00@ 74 00
Cornellian, 12 to 16 Ko			57 00@ 67 00
Cornellian Females, 12 to 13			63 00@ 67 00
Cornellian Females, 14 to 15			71 00@ 76 50
Simon Ullmo Females, 12 to 13, Kil			60 00@ 63 00
Simon Ullmo Females, 14 to 15, Kil			70 00@ 72 00
Simon Ullmo Females, 16 to 17, Kil			73 00@75 00
Simon, 18 Kil., ℔ doz			61 00@ 63 00
Simon, 20 Kil., ℔ doz			65 00@ 67 00
Simon, 24 Kil. ℔ doz			72 00@ 74 00
Robert Calf, 7 and 9 Kil			35 00@ 40 00
French Kips, ℔ ℔			1 00@ 1 15
California Kip, ℔ doz			40 00@ 50 00
French Sheep, all colors, ℔ doz			9 00@ 11 00

MINING SUMMARY.

THE following is mostly condensed from journals published in the interior.in proximity to the mines mentioned

California.

ALPINE.

FLINT COMPANY.—Alpine *Chronicle*, July 17: Under this name a company has been organized at Detroit, Mich., for the prosecution of a mining enterprise at Monitor. Mr. Eldredge, of Detroit, has arrived at Monitor to superintend the company's business. A shaft will be sunk to a depth of 500 ft on a claim recently purchased by the company. Work will be commenced on Monday next.

AMADOR.

CRUSHING.—Amador *Dispatch*, July 24: The Volunteer mill commenced operating five stamps last Tuesday morning. The other five stamps will be put in operation as soon as circumstances will justify it. The rock now being crushed looks to be very rich, but what per cent. of the recions metal it will yield is not yet known.

BUTTE.

SAGAMORE.—Oroville *Mercury*, July 23: Mr. Vail, of Forhestown, showed us a let of rock taken from the Sagamore ledge that is now being worked, that was full of gold. He informed us that it would run as high as $1,000 to the ton, and that they had some 50 tons of it already out with a good ledge before them. They are now running both mills, the five stamp and the ten stamp, and are doing as well as they could expect. The company have paid up every debt, have the two mills, have just ordered a Paul's process which cost $5,000 and have paid for it, and now have money in the treasury. Not a cent has been expended that did not come ont of their mins. The controlling interest is owned hy a few men at Forbestown, who have worked hard, but are now on the surs road to wealth. They will work on with the present machinery until they get fands snough ahead to build a large mill, and then if the rock continues to pay as well as at present they will build additional works.

NEW PIPE FOR DUTCH HILL MINES.—The North Fork mining company have purchased another pipe for their hydranlic mines at Dutch hill, which will be laid alongside of the present one. The pipe will be shipped there this fall, and will be laid early in the spring.

COLUSA.

FINE ORE.—Colusa *Sun*, July 24: John F. Fouts brought in this week a fine specimen of cinnabar, from the Bedford mine, located on Big Stony creek, near Fouts' springs. He says the company have plenty of it.

CALAVERAS.

UPPER COUNTRY GLEANINGS. — Calaveras *Chronicle*, July 24: The result of 61 tons of ore from the Lewis & Farchild mine, near Leavitt's ranch, was increased by the blanket washing to $2,791.39, or nearly $46 per ton, instead of $2,670 as stated in last week's issne. The previous crushing of surface ore from the shaft yielded $1,526—abent $30 per ton—proving that the ore is not alone stronger in depth (2½ ft at 70 ft deep) bnt that it is also gaining in richness. Working expenses have been merely nominal so far, and to judge by the extensive oropping of the pay ore, 700 linear ft, will continue so for a long time. This lode can he easily traced for nearly 2 miles. Conrse, 35 deg. west of north; dip, 55 deg. east. Slate constitntes the footwall; laminated marble, apparently, the hanging wall. The old Valentine, which afforded pleasant quarters to ground squirrels and wood rats for years, is jast now the object of tender solicitude to several San Francisco parties who all claim to be the legal owners. San Bruno continues to yield very healthy looking ore and plenty of it. A shaft hss been commenced by contractors on the Ashland, first south extension of the Lewis & Fairchild mine. The lode here orops boldly again for some distance, exposing low grade ore 2½ ft in width.

TUNNEL COMMENCED.—Emerson, proprietor of the Happy Valley hydranlic, has commenced running the hedrock tunnel necessary for the proper working of his claim. He will have it completed and everything ready for piping with the advent of the deluge, which every miner confidently calculates upon next fall.

INYO.

AFFAIRS AT PANAMINT.—Panamint *News*, July 21: The hearts of Panaminters, which had become somewhat despondent of late, were made glad on last Tuesday by the arrival of Senator Stewart, S. L. Jones (brother of the Senator) and Duff Green. They had been in the camp but a few hours when an order was given to their foremen to set seventy or eighty miners to work in the mines. About fifty were all that could be found here at present, many of those discharged but a short time ago having gone ont prospecting here and in neighboring districts. Word has been sent over to Darwin, and undoubtedly a number will respond in a few days. In an interview with Senator Stewart and S. L. Jones we learn that it is their intention of concentrating their forces for a vigorous prosecution of work upon the Wyoming and Hemlock mines. A shaft 1000 ft deep will be sunk on the Wyoming, and if the ledge holds out as strong and rich at that level as it now is at the 300-ft level, a tunnel will be started, about on a level with the mill, to tap the ledge about 300 feet helow the croppings. With a Burleigh drill this tunnel can hs run within a period of four or five months, and, when completed will greatly facilitate the working of the mins. It will do away with the necessity for the tramway, ths packing of water over a long trail to the top of the mountain, and the workmen, instead of living upon the top of the mountain, where it is cold and unpleasant in winter, can enjoy themselves in comfortable cabins in town. S. L. Jones, who is Superintendent of the Crown Point mine, Nevada—and probably the best practical miner on the coast—was very enthusiastic over our mining prospects, after a thorough examination of the mines. He says that we have a much better showing than had Virginia City at the same period after her discovery. He thinks Panamint will soon rank next to Virginia City as a wealthy and prosperous camp.

MONTEREY.

QUICKSILVER.—Monterey *Democrat*, July 24: Most of our readers are aware that rich deposits of quicksilver exist in the northern part of San Luis Obispo county, among which the Oceanic mine, not far from Cambria, is the most noted.

The distance from the quarter indicated to the San Antonio country being, in a direct line, inconsiderable, and the mountain trsot intervening being identical in external figure and formation, it might he presumed that whatever minerals were found in the one would be discovered in the other. Acting on this presumption, this mountain range below San Antonio and in our county, called the "Santa Lucia range," has been diligently prospected, and we now report, as resulting therefrom, what promiss to be valuable quicksilver mines, and to add largely to the importance of the district in which they are located.

H. C. Dodge and others, residsnt at Jolon and in its vicinity, are now opening a mine, located between San Antonio and the coast, that affords a fine prospect. They have driven into the mountain two tunnels, one one hundred feet and the other fiftesn feet, finding "kidneys" of the metal that are almost pure, and a ledge, or vein, thirty feet wide, which will yield at least three per cent. In the vicinity wood and water are plenty, and, at small expense, roads will give an outlet to the sea or to San Antonio. The sandstone formations that accompany the cinnabar are the same as at the Oceanic mine, with which there is evidently a direct geologic connection.

This district, as has long been known, contains gold, and in quantity sufficient to pay whenever there is water enough to use the rocker. It is "placer" gold or drift gold—that is to say, as far as we are informed, quartz ledges containing the precious stuff have not been found. If the quicksilver mines prove valuable the gold diggings will, doubtless, receive their share of attention.

NEVADA.

HOWARD HILL MINE.—Grass Valley *Union*, July 25: Accepting the invitation of President Becker and Superintendent, Capt. White, quite a delegation of the business gentlemen of Grass Valley visited, Friday, the Howard Hill company's grounds and works to witness the formal "starting up" of the company's mill. The mill, as a whole, is one of the most compact and economically arranged structures of the kind it has ever been our fortune to visit. The batteries are in perfect condition—the stamps, which weigh 1,000 pounds each, dropping at the rate of 70 times per minute. This rapidity of motion insures the reduction of about 30 tons of ore for the 24 hours. It is thought it will not be difficult to keep the mill well supplied, as the mine makes a liberal exhibit of ore. At the 3d level the ledge is opened up for 150 ft, with an average of 6 ft in width. The ledge in the lowest, or 400-ft level, exceeds expectation both as to size and superior character of the ore. The energetic and skillful superintendent is pushing forward the most thorough development of this valuable property; and it is his openly expressed opinion, emphatically sustained by his sub-officers and intelligent employees generally, that within 6 months the Howard Hill will take first rank as a dividend paying gold mine. This assurance is based upon the fact that the ledge is a very large one—the ore is cheaply raised, is easy of reduction and of full average quality, with every reasonable prospect of future improvement. At the hoisting works we found the same characteristic neatness, order and efficiency. We observed a large supply of fael on hand and 8 or 10 teams adding to the quantity.

SANTA BARBARA.

THE LOS PRIETOS MINES.—Santa Barbara *Index*, July 17: The first run of ore from these mines in the new furnace proves that they are rich. The furnace was defective in draft and in other particulars unsuited to the peculiarly rich ore of these mines. Work is going on upon a furnace of a different character which it is expected will be much better adapted to the treatment of these ores. The construction of the furnace already tried will be materially changed. Every well known mine of cinnabar has had to undergo many experiments before the best mode of treatment was discovered. They all differ in character, and require a different treatment. The development of the Los Prietos mines goes right along, and every preparation is making for thorough exploration and for the treatment of the ores in the most successful manner that mind, money, experience and labor can bring to the work. The Los Prietos mines, of Santa Barbara county, now take their place in the catalogne of the great quicksilver mines of the world.

Nevada.

WASHOE DISTRICT.

YELLOW JACKET.—Gold Hill *News*, July 22: The flow of water on the 1840-ft level is yet too strong to allow of the resumption of work in that portion of the mins. The south winze, below the 1740-ft level, is down 102 feet, with a slight seepage of water coming in. The face of the southeast cross-cut on the samo lovel is in soft porphyry and quartz.

CHOLLAR POTOSI.—Sinking the main incline below the 1350-ft station at the old works goes steadily forward, the bottom still in hard blasting ground. The 1350-ft station is completed, and a drift in a distance of 35 feet, the face in hard blasting porphyry. The extraction of ors from the old upper workings has been temporarily suspended for the present on account of inability to get it hauled from the damp as fast as it is extracted.

CONSOLIDATED VIRGINIA.—Daily yield, 600 tons of ore. No important changes in any of the ore-producing levels during the week. The mills are all running steadily as usual. The ore-bresats are being extended to the southward on the 1500-ft level, the ore still retaining its usual rich quality. Cross-cuts east and west, on the 1550-ft level, are being made in the ore body immediately under winze No. 1. The ore in the face of both these drifts is of exceeding richness. The hullion product still shows a strong increase over that of last month. Everything in and about the mine is working finely, and there seems only prosperity and success ahead.

BELCHER.—The usual amount of ore is extracted daily, and the ore breasts throughout the entire mine show but little, if any, change. No ore has yet been extracted from the openings on the 1500-ft level. The extraction of ore from this portion of the mine will be commenced as soon as the north drift on the 1500-ft level has made connections with the Crown Point mine for ventilation purposes; this drift has yet only about 25 feet to run.

ORIGINAL GOLD HILL.—The development of the fine ore body in the south mine, by means of the two cross-cuts into it, goes ahead well, and an important showing is being made.

NEVADA.—Cross-cutting is discontinued, and the drift is now following the main lead itself. Good streaks of ore are found which give good assays, but still better ore is expected to be developed.

OPHIR.—The usual amount of ore has been extracted daily, for the past week, until this morning, when the whole of the ore extraction and prospecting on the lower levels of the mine was stopped, and the works shut down, for the purpose of repairing the main shaft.

CALEDONIA.—Sinking the old incline shaft will be suspended to-morrow for a day or two, for the purpose of putting in a new hoisting cable. Sinking the new shaft is rapidly advancing downward, the rock blasting out finely, the flow of water still continuing strong. The erection of the new building is about completed. The erection of the heavy hoisting and pumping machinery is going steadily forward.

UTAH.—The shaft is cleaned and thoroughly timbered to the bottom, ready to resame sinking. The drifts and cross-cuts on the 400-ft level have been cleaned out and repaired, ready to resume full operations. The new pumping and other machinery is working with satisfaction, and arrangements are being rapidly completed for lowering a powerful 10-ton sinking pump as fast as the shaft is sunk.

CALIFORNIA.—The north drift on the 1550-ft level is again being driven forward, the face still in rich ore. This drift has been advanced 25 feet. On the 1500-ft level cross-cuts Nos. 5 and 6 are being pushed ahead, the face of both still in good ore. The new mill is being pushed to completion with all the energy possible.

UNION CONSOLIDATED.—Work on the 1300-ft level is stopped for the present, on account of repairs to the Ophir shaft.

IOWA.—Sinking the shaft is making good headway, the rock in the bottom being a little tough and hard, but not enough so to impede the headway of work. It is down 365 ft. A short drift has been run westward to the ledge, which at that point is solid quartz, is large, well defined and of a very encouraging nature. The ore assays from $8 to $15 per ton.

BULLION.—The incline shaft at the old works has been cleaned out for 80 ft below the commencement of the incline, which carries the workmen nearly through the worst of the work, so that it will not take long now to reach the 1400-ft level.

DAYTON.—The erection of the hoisting engines is so far advanced that it is now confidently expected that everything will be in readiness to start up by the first of next month.

SIERRA NEVADA.—There is but little change in the material encountered by either the north or south drifts on the 700-ft level of the old shaft during the week; both are making good progress.

NIAGARA.—Sinking the main incline shaft is making splendid progress, 25 ft having been added to its depth since our last report. The ore vein is showing finely, and it will not be long now before a sufficient depth will be attained for the opening of the first level, for a better development of the ore vein. The new hoisting machinery is working with the utmost perfection.

IMPERIAL-EMPIRE.—Preparations for opening out the ore body lying between the 1850 and 2000-ft levels are making steady and rapid progress.

CROWN POINT.—Daily yield of ore, 500 tons. The mills are all running, and there is little or no change apparent in the ore producing sections since our last visit. Prospecting the 1600-ft level has produced no important results. The main east prospecting drift on the 1700-ft level is steadily advancing toward the ore vein, the heat being intense and the progress slow.

GLOBE CONS.—Prospecting on the 250-ft level still continues with unabated vigor. The flow of water at the 200-ft station continues stronger than the pumps are able to manage.

LEO.—Sinking the winze below the main tunnel level, following the pitch of the ledge, is 182 ft deep to-day. The ground continues to work well. The ledge is running pretty flat, and is showing great strength. The whole bottom of the winzs is now in a heavy clay wall; the clay is of a dark blue color, and carries seams and bunches of quartz of the Comstock character. The prospects continue promising.

COSMOPOLITAN.—The mine is now in good working trim, and considerable ore is being extracted from the stopes, which are looking exceedingly well. The ledge in the face of the main tunnel northward, shows great improvement the last few days, over half of it being ore of more than average richness. It is being taken out for milling, and the Hope mill will be started up in about a week.

AMAZON.—The winze below the first station level has reached a depth of 20 ft, at which depth the assays show a decided improvement in the character of the ore vein.

GOULD & CURRY.—Cutting out and repairing the rotten timbers at the point where the recent cave occurred is going steadily forward, although, many of the timbers being very rotten, great care has to be exercised in the work.

JULIA.—Driving the main south drift on the 1000-ft level is making steady progress, the face in soft working ground. Sinking the main shaft is being crowded with all the energy possible.

LADY WASHINGTON. — The pump-bob and other portions of the massive new machinery are being placed in position. Next week the old machinery will be started up to pump out the 260 ft of water now in the shaft, preparatory to putting in the large new pump.

LADY BRYAN.—Sinking the shaft is going ahead rapidly. The face of the west cross-cut on the 380-ft level is still in a fine character of quartz.

HALE & NORCROSS.—Cutting out for the new station at the 2200-ft level is going ahead as usual. A drift will now be started south from the bottom of this winze to connect with the main incline for air purposes.

BALTIMORE AND AMERICAN FLAT.—The most of the week has been consumed in necessary retimbering and repairing of the drifts on the upper levels, so that no new or valuable ore developments have been made during the week.

ROCK ISLAND.—The shaft is down 100 ft below the 450-ft level, at which point a new station is being opened for the 550-ft level.

NORTH CONSOLIDATED VIRGINIA.—Sinking the main shaft is going ahead as usual. The addition to the hoisting works building for the reception of the new machinery is nearly completed.

SAVAGE. — Sinking the main incline goes steadily ahead without change or interruption

OVERMAN.—The pump has been lowered the 1100-ft station, and the water is fast being drained from the bottom of the shaft. The entire machinery of the mine is in splendid [illegible] ing order.

SUCCESS.—The main west drift at the [illegible] level is showing considerable more [illegible] the face, and the prospects of yet [illegible] body of pay ore on this level are looking [illegible]

WOODVILLE CONSOLIDATED.—The entire [illegible] in the shaft is now concentrated in cha[illegible] out for the head of the incline, which is [illegible] ready to be commenced.

SILVER HILL.—The shaft is down 415 [illegible] rock in the bottom still being quite hard, the sinking making good headway. The [illegible] in the face on the north drift on the third station level is again looking very favorable for ore developments.

EUREKA.—The new hoisting works are covered in, and everything is working with the utmost perfection.

BEST AND BELCHER.—Cutting down the grade between the Gould & Curry and Best & Belcher drifts on the 1700-ft level is going steadily forward. The heat is very intense, and the progress necessarily very slow.

BROOKS.—The shaft is down 85 ft, the bottom still in quartz, and ore of a fine character. The prospects of the mine are daily strengthening. Preparations are under way for the erection of good steam hoisting works.

SOUTH CALIFORNIA.—The bottom is in good working ground, with streaks of quartz from which excellent assays are obtained.

NORTH CARSON.—Material in face of main drift still soft, and giving good assays from frequent quartz seams and feeders. The main ledge is likely to be cut into at most any time now.

PROSPECT. — Driving the upper tunnel is making excellent headway, as is also the sinking of the new shaft.

NEW YORK CONSOLIDATED.—The mason work for the new machinery foundations is being pushed forward to completion as energetically as possible.

BUCKEYE.—Putting in the new machinery is being pressed to completion with all the energy possible.

MEXICAN.—All work suspended on account of the shutting down of the Ophir mine.

A Great Gravel Mining Enterprise.

The opening of the extensive hydraulic mines near Auburn is justly considered the beginning of a new era in our growth and prosperity, and is, therefore, deserving of more than a passing notice. To give a condensed history of the enterprise up to the present date, it is necessary to go back about four years. At that time J. B. Hobson, fully convinced of the inherent agricultural value of this foothill country, came among us with a view of securing a homestead in this section. On looking over the country he became favorably impressed with a tract of land lying about three miles northeast of Auburn, and at once entered into negotiations with the railroad company for the same. Mr. Hobson settled, with his family, on this land, and immediately began extensive and costly improvements, by way of building, fencing, clearing, etc., with a view to its agricultural development. On this tract of land are deep beds of washed gravel and high gravel hills. These beds were known to contain gold, but so far as prospected, the precious metal had never been found in sufficient quantities to pay up the ordinary process of drifting; and lying, as they do, above the Bear River ditch, the source of water supply for this section, the idea of ever working them by hydraulic was, doubtless, by former prospectors, considered out of the limit of modern probabilities, and sequently they were abandoned. Mr. Hobson had been but a short time on the place before discovering the richness of these deposits, and noting their great extent. In viewing and studying the matter closely he soon conceived how water might be got on the ground with sufficient pressure to work these deposits by hydraulic, the accomplishment of which he felt sure would, besides opening up a new and extensive industry, insure to his individual success. Accordingly, full of faith that he could direct capital to the accomplishment of the work in the near future, he set himself to the task, first, of securing from the Government a mineral patent to the land. This done, he embraced every opportunity to direct the attention of capitalists to the enterprise. Some manifested sufficient interest to send engineers to decide on the plausibility of Mr. Hobsen's previously conceived plan for bringing water in, but in each instance they pronounced it impracticable. It embraced a new feature in hydrostatic engineering.

There is no high country near the claims on which water could be brought in open ditch, delivered in a box, and run down a hill through pipe directly on the ground, in order to secure pressure, as is commonly the case. The nearest eminence on which water could be brought in open ditch that would give sufficient pressure, was two miles from the mine, and what was worse, between that point and the mine lay two deep canons. The project necessitated bringing the water this two miles through pipe which must, of course, form on its line two inverted syphons, and deliver the water on the to of the second eminence direct from this main pipe. As no similar project now exists, so far as is known, in the world, it is not surprising that even good engineers were slow to say that the undertaking could be successfully accomplished. On the 5th of last March Mr. Hobson went to San Francisco and succeeded in inducing his friends, W. T. Higgins, James Cannon, P. Growley and Charles Gelton, to join with him in an attempt to develop these mines. These gentlemen sent Hale, experienced miner to prospect the ground, ...do... to satisfy themselves more fully of its Just qualities, provided the project of bringing Kentucky could be made a success. The Meadow's report was not only favorable, but New Yo Thus re-assured, they formed themOphir... ...do... to a company styled "The Auburn ...ining and Ditch Compauy." They ...do... Rock I. the eminent engineer, Herman Ray & r, and offered him an equal interest, Silver, r, proposition that he would overcome the difSaxarition of getting in the water. He, on lookSier of the ground, decided at once that the ...rk could be successfully accomplished. After making such arrangements with the owner of the Bear River ditch, G. W. Reamer, as would insure them an ample supply of water, Mr. Schussler made the survey, which was completed on the 15th of last April. Without loss of time they advertised for proposals for doing the various branches of work. The contract for cutting the ditch, two miles of pipe ditch, and three miles of open water ditch was let to Sam Lock, the contract for furnishing the pipe, to Curry, of San Francisco; and the contract for cutting a 300 ft tunnel, to Neilson Graham.

The rest of the work fitting up the claim, putting in the ground sluice, building eighty rods of flume, etc., was done by men hired by the company, directly under the supervision of J. B. Hobson, Superintendent of the whole works. On the 18th of May the first blow was struck, and on the 25th day of July, just sixty-three days from the start, the work was all completed and everything ready for operation. The work, as completed, is as follows: First, the water is taken out of Bear River ditch near Clipper gap, some 5½ miles, or 1,760 rods above the claims. It is carried through an open ditch, including 80 rods of flume, 1,160 rods. The water then falls into a sand box, 8x20 feet and five feet deep, which is constructed with gratings, partitions, etc., for catching drift. Then into the main pipe, twenty-two inches in diameter, made of Nos. 11 and 12 iron, down a steep hill and across Dry Creek canon, which is 360 feet deep. Then over the divide between Dry creek and Lovell's ravine, 280 feet deep. Then up an incline from Lovell's ravine to the diggings, discharging the water under a pressure of 176 feet, registering on the pressure gauge seventy pounds to the square inch. The whole length of pipe is 10,500 feet. This pipe is put together with rivets, coated inside and out with asphaltum, and buried beneath the ground, and is said to be good for one hundred years' wear. At all high places in the pipe are automatic vacuum valves, which discharge of their own accord all accumulations of air in the pipe, thus preventing the spitting at the discharge, which is sometimes common. At the end of this main pipe is a cast iron distributor, designed by Mr. Schussler, and made especially for these works. It is a novelty in itself, and the only one of the kind in existence. By it at least twenty-five per cent. of pressure is claimed to be saved. From this distributor are at present two 16 inch pipes, laid up the side of the hill 300 feet to the giants where the water escapes, to spend its force against the auriferous bank through two nozzles, one three and one-half inches in diameter, and the other four inches in diameter.

The tail sluice, 1,250 feet long, on a grade of eight inches to twelve feet, is paved with pine blocks, with occasional iron riffles. On the line of the sluice are two undercurrents, constructed with all the latest improvements for saving gold. As we stated in a former article, when the water was turned on everything worked like a charm. Of the cost of this undertaking we have not been informed, but it evidently involved the outlay of many thousands of dollars. One thing we can say without much fear of contradiction, that in the county there was never so much work done on a mining enterprise in the same length of time. To the indomitable energy and perseverance of J. B. Hobson, in securing the development of this enterprise in our midst, is due unbounded praise; to the established engineering skill of Herman Schussler in making the undertaking, mechanically, a success, is due respect and admiration, and to the gentlemen who had sufficient nerve and speculative enterprise to risk their money in the undertaking is due our earnest desire that the enterprise may prove eminently profitable. To the driving character of J. B. Hobson, and the efficiency of J. H. Neal, foreman of the laborers on construction; John Tyler, foreman of laborers on ditch; Fred. Pretorions, foreman of boiler makers; John Simons, foreman of miners; and C. H. Hicks, boss carpenter, is due the credit of the well and speedy completion of the whole work.—*Placer Herald.*

New Method of Making Mortar.

So very marked is the mortar used in modern building as poor, compared with that used in ancient times, that various attempts have been made to ascertain the "secret," if secret it was, of the composition of the old builders in mortar making. One "secret" which the old builders possessed, we may quietly here impart to those of the present day, that is, to make good mortar, good lime and good sand must be used; the old builders did not use sand unfit to be used, as do the builders of the day oftentimes. When we examine almost any piece of modern work, we find that the mortar hardens very slowly, and even when it has become fully hardened, it crumbles away, loses cohesiveness, so much so that in many cases it is quite an easy matter to detach the stones or bricks from one another, and from the mortar. The very opposite characteristics are found in ancient work, and on examination it has been seen that the mortar has in great part been converted into silicates, entering into close union with the particles of quartz. It is to these silicates that mortar owes its firmness, and it is to the slowness with which silicates form in modern mortar, and small proportion of these present in it, that this owes its poverty. A method of setting free the silicious earth, and promoting the rapid formation of silicates, has been discovered by Prof. Artus, and which yields a mortar resembling in its characteristics those of the ancient kinds. The great recommendation the process possesses, is its simplicity. Lime is in the first instance well slacked, and carefully mixed with finely sifted sand; to the mass is added a quantity of unslacked lime to the extent of one-fourth of the sand in the first instance mixed with the slacked lime; mix the whole thoroughly, the mass heats and the mortar may be at once used. When the mortar is not wanted for immediate use, the first process only is carried out, namely, mixing the sand with the fine slacked lime; when wanted for use the unslacked lime has to be added. A very strong mortar is said to be the result.

THE BALANCE WHEEL.—If the balance wheel of a chronometer should revolve on a plane, in a straight line, with the same velocity it has in the chronometer, it would travel in one second 17.1 inches; in one minute, 85.3 feet; in one hour, 5,118.7 feet; in one day, 23.27 miles; and in two years three hundred and thirty-seven days and twelve hours, the circumference of the earth, or 24,856 miles. These results are based on the measurement of a balance wheel from the American Patent Pocket Chronometer, manufactured by Charles Fasoldt, of Albany, N. Y.

IN the Lady Bryan mine, on the Comstock, for the purpose of making a much more speedy development of the lower levels of the mine, all work has been suspended for the present, except that of sinking the main shaft, and running the main south and west drifts on the 380-ft level.

Destruction of Northern Forests.

The disposition to destroy the forests of the country is generally admitted to be a peculiar trait of the Yankee character, but it is evident that Great Britain is becoming alarmed about the encroachments of the lumbermen on her timber possessions in North America. The London *Farmer*, of June 21st, contains an article on this subject, from which we give the following:

"Canadian forests are in danger of being entirely swept away before advancing agriculture. Busy emigrants and native Canadians clear away the timber off hundreds of thousands of acres annually throughout the Dominion, and it is greatly to be feared that the result will be a considerable alteration of the climate through the process. The wholesale destruction of forest trees may result in a series of extremes of drought and flood, instead of an equable and continued amount of moisture. MM. Fantiat and Sartiaux recently communicated to the French Academy of Sciences the results of some carefully conducted experiments on the influence of forests on the hydrology of a region. MM. Fantiat and Sartiaux make their observations: (1) above the forests; (2) at the same altitude, and at so small a distance from the forest that any observable difference could be attributed only to the influence of the latter. In the heart of the forest of Halatte, at a height of 20 feet above the trees, a pluviometer, a psychrometer, maximum and minimum thermometers, and an evaporometer were placed, and similar instruments under the same conditions were placed in the open air at a distance of 300 metres from the forest. The result for six months of 1874 were as follows:—Amount of rainfall—in the forest, 192.50 mm.; in the open, 177.00 mm. Degree of saturation of air, in 100ths—In the forest, 63.00; in the open, 61.7. These gentlemen come to the conclusion that "if these observations, which are still made daily, continue to give the same results, it may then be affirmed that forests constitutes vast condensing apparatus, and the conclusion will be inevitable that more rain falls in wooded land than on bare and cultivated soil." In the United States the preservation of the forests has become a matter of national importance, and every encouragement is given to creating plantations and their judicious distribution all over the country. In the older districts of Canada the forest is almost entirely swept away; and the evils recognized and deplored in the States are, it is said, in these quarters of the Dominion also issuing in decreased moisture and impoverished lands, in destructive floods and equally destructive droughts. The *Toronto Globe*, in drawing attention to the fact, says: "It would be a curious commentary on the boasted intelligence of the present day, and its enlightened zeal in subduing the earth for the purpose of securing the greatest possible productiveness, if the very eagerness with which this object is pursued should issue in extensive districts being reduced to deserts, and in others being rendered less suitable for maintaining a large, prosperous, and healthy population."

GLAZING FOR POTTERY WITHOUT LEAD.—The poisonous nature of lead glazing for pottery is well known, and serious and fatal accidents from that source are not uncommon. For this reason several preparations for this use have recently been devised, in which lead does not enter. Among others, the following is given as something superior to any hitherto used to supersede the poisonous lead glazing: Constantin, of Brest, made last year a glazing of pulverized quartz, red lead, and silicate of soda, (water glass), which he guaranteed would withstand vinegar; but the Paris *Societe d'Encouragement* induced him to experiment on compounds without lead, and now he publishes the following prescriptions: No. 1.—100 parts silicate of soda of 50° Reaum., 15 of pulverized quartz, and 15 of chalk. No. 2.—100 parts of silicate of soda, 15 of quartz, 15 of chalk, and 10 of borax. The borax makes the compound more expensive, but in return makes it easier fusible, so that the glazing may be done at a lower temperature, while at the same time the glazing is harder and possesses more luster.

PORCELAIN.—The modern porcelain of China compared with the antique wares, shows the art has much declined The biscuit is not so white and pure, and the glaze is rougher. The colors, too, are less bright. The materials employed now are clay, quartz, steatite and glaze. The whole of the modern Chinese ware is made at King-teh-Chen, where the potteries were first established about 900 years ago. At present there are about 120 furnaces employed—about half the original number. Of the enamels, the cloisonne is still made at Pekin; and the enamels bear comparison with the ancient. Some of the best designs in effective specimens of hand, not molded work, are very artistic. A lady, Miss Barlow, in Staffordshire, has excelled in *sgraffito*, ornamented designs in gray clay. The colors of the designs being turquoise, violet, blue, olive, green, etc. The mode of firing and the material adopted rendered the tints mottled and more artistic. Lavatory fittings constitute a branch of pottery formerly quite unknown. Two kinds are known. The brown glazed stoneware and queensware.

THE Fruitvale horse railroad will be in running order by the 1st of September.

The Plane.

This instrument, when well made, and kept in order, surpasses, in accuracy of performance, all other hand tools. Originally furnished with only one iron, the plane now has usually two, the uppermost for cutting the shaving, the uppermost for breaking it in such a manner as to prevent it acting as a lever in lifting or tearing up fibres, in front of the cutting iron. In England the *stock* or body of the plane is generally made of beech; but on the continent apple and pear are frequently substituted with happy results. Through the stock is a vertical aperture, of which the lower portion acts as a guide to the cutting edge, and forms together with this latter the *mouth* of the plane. This effectually regulates the depth to which the cutting iron can penetrate, but it would not be sufficient to prevent it from following the inequalities of the surface to which it might be applied. This would utterly unfit the plane for the purpose for which it is intended; hence, this tendency is overcome by giving considerable length to the stock, which causes a plane in operating on a rough piece of wood, to remove successive shavings from the more prominent parts until a surface level with the deepest original depression is attained. The flatness attainable with a plane is greatly dependent on the skill of the workman. He must always try to plane "hollow" rather than round, for if a plane be sufficiently long in the stock, it is impossible for him to give any appreciable concavity to a surface of moderate size. For this reason roughing out planes, or "jack planes," are made as long in stock as possible, without making them too heavy and inconvenient, the usual size being from fourteen to eighteen inches long. Planes used for "truing," or "trying planes," as they are incorrectly called, are used to correct the inequalities left by the former, and are usually from twenty-two to twenty-four inches in length, or even twenty-eight to thirty inches, in which case they go by the name of "jointers," and are principally used for making long joints. The smoothing plane, which is employed to give the finishing strokes to a surface which has already been flattened, is generally about eight inches long.

In grinding the edge of the cutting iron care should be taken to use a true faced grindstone, and a good flat oilstone. The front iron having once been sharpened will require no further attention, as it lies against the cutting iron in such a position as to protect its edge effectually from ever getting blunted. The cutting iron should be ground to a flat cutting edge at an angle of about 25° on the stone; and then finished on the oilstone in such a manner as to form a fresh "facet," or bevel, making a more obtuse angle with the line of the iron, say about 10° more, so that the total inclination edge will be about 35°. In replacing the second iron on the first, the kind of work for which it is to be used must be borne in mind. If the second iron is brought very close to the edge of the cutting iron, the shaving is broken up more effectually, the work is neater and less liable to tear up; but the labor expended will be greater. As a rule, for roughing out, the edges may be somewhat distant, say about 1-16 in. apart; but for finishing, the top iron edge and the cutting iron edge should be almost on the same level.

The "bed" of the plane iron is made at different angles, to suit different kinds of work; the four angles most in use are known as *common pitch*, which denotes that the back of the iron reposes on its bed at an angle of 45° from the sole, and this inclination is usually employed for all surface or bench planes for soft wood. "*York pitch*" indicates an angle of 50° and is more adapted to use with mahogany and other hard stringy woods. *Middle pitch* or 55°, and half pitch or 60°, are employed with moulding planes, the former being for soft woods and the latter the harder kinds. In the course of time, the mouth of the plane gets enlarged, and out of truth. This may be to some extent avoided by keeping the sole greased by rubbing over with a piece of bacon rind; but sooner or later the mouth must be rendered smaller, which can be done by letting in a piece of box-wood in front of the cutting iron. Some planes, especially those used by cabinet makers, have the sole made either entirely or in great part of brass or iron. With a mouth so fine as it is possible to make these, and by reversing the position of the cutting iron, so as to give it a pitch of about 50°, the use of the top iron is not needed at all.*

PROPORTIONS OF LIME, SAND AND HAIR.—To make a good solid mortar use one measure of quicklime to five measures of sand for brickwork; and one measure of quicklime to four measures of sand and one-third of a measure of bullock or horse hair, for plastering mortar. Put on the first or scratch coat one-half an inch thick, the second, or brown coat, one-quarter inch thick. The third, or finishing coat, one-eighth of an inch thick, contains no hair, and is made of one measure of lime to two of saud, and the purest sand is used; this is called stucco. Hard finish requires one measure of ground plaster of paris to about two of quicklime, without sand.

TESTING LEATHER.—A simple means of testing the quality of leather consists, according to M. Bitner, in watching its behavior when treated with acids—preferably acetic acid. Leather not completely saturated with tannin will swell up; but if the tanniu has penetrated, the leather will not swell.

Good Health.

The School Girls' Meals.

The physical education of school girls is now receiving so much attention that it seems in place to ask the attention of mothers to the bad habits in eating into which a girl who attends a daily school is very apt to be driven. A girl who is growing, who studies, and who has all sorts of demands made upon her time, brain, and health, certainly needs sound sleep and plenty of nourishing food. The *sleep* she may get; for nature is likely to have some influence in this connection, but the majority of these girls get as little comfort from their *meals* as is possible. They are not apt to rise early unless it is to gain time for study or practice, and they hurry through their breakfasts, nervous for fear they will be late, and perhaps anxious about their lessons. Before the rest of the family has come to the second cup of coffee, the girls have finished their meal and probably are off to school.

They carry with them a lunch that is rarely tempting, but still more seldom nourishing, and this scanty, ill-digested breakfast, supplemented by the luncheon of bread and cake, must support them through all the morning hours of constant work. If the family has dined in the middle of the day, the girl's dinner has been saved in the oven, and is put down before her on the corner of the dining table, where it looks anything but inviting She is probably tired or excited—for the average school-girl alternates between these conditions—and she is not tempted to do more than hungrily satisfy her appetite, or wearily turn from the half-dried meal. If the dinner hour comes later in the day, she possibly studies her next day's lesson while waiting for her meal, and finds it hard to fix her mind upon her book. If dinner were ready, she fancies the lesson would not seem so complex, and as fasting rarely clears the mind of any one less saintly than a monk, she is right. After dinner, however, matters are not much mended, for then she finds herself growing sleepy, and the bed is the object of desire. That she is undergoing a slow process of starvation does not occur to the mother, who watches her with anxiety, and who prohibits parties, and long walks and late hours. The doctor orders iron to give tone and appetite, when he had better order time and tempting, nourishing food.

The boarding-school girl, in spite of the grumbling about the table, is often better off, in this respect, than the daughter at home, for eating at school is regarded as one of the duties of the day, and it is attended to with some degree of order and leisure. We commend this subject to mothers for attention, and it might be suggested to doctors who are asked to help the daughters to better health, that they sometimes should prescribe plenty of good food and plenty of time for eating and digesting it. —*Scribner.*

Dying of Stupidity.—Good temper, and the equanimity which is its result, are generally thought to be promotive of longevity. Yet if we may believe "an eminent physician," quoted by Lord Jeffrey, "the wealthier members of the Society of Friends, often die of stupidity, and rarely live to be fifty; eat too much and take too little exercise, and, above all, have no nervous excitement." This remarkable statement was made in 1813. Some persons may disagree with its conclusions as a whole. It may, however, be conceded that a reasonable amount of nervous stimulus is healthful—its absence being as injurious as an excess would be. It has been noticed that men who have worked hard for many years, are often carried off by some sudden or unlooked for disease, soon after retiring from business. Radical changes of habit, indolence and over-exertion are alike hazardous to perfect health.

What Makes Bald Heads.—A correspondent of the Chicago *Tribune* enters a protest against the practice of shampooing. He says: "It is well enough for the people of this country to understand once for all that the reason why there are so many bald-headed young men now-a-days is the universal custom that prevails of shampooing the head with stimulating washes. The wonder is that there are any men left who have full suits of hair. The custom should be discontinued at once, and young men should be warned in season against this most pernicious practice. Let shampooing cease from this time forward."

Health.—If this supreme blessing were enjoyed by all, and there was no sickness, and all lived the allotted term of human existence, (or three score and ten), what a heaven there would be on earth! But perhaps this will never be, though we observe that the mortuary record of Boston says that of the 142 people who died here during the week ending on the 17th inst., forty-six were of American parentage and ninety-six of foreign. The Americans lead greatly in regard to health. It is curious to mark how nearly equal were the deaths in the sexes—seventy-two males and seventy females.

Toothache.—Dr. Q. C. Smith praises the following most highly: Take of carbolic acid saturated solution, chloral hydrate saturated solution, paregoric, fluid extract of aconite, of each an ounce; of oil of peppermint half an ounce; saturate the pledget of cotton or a piece of sponge, and tightly pack in the cavity. —*Charleston Med. Jour.*

Effect of Exercise.

It is found by observation that the effect of "training," or the persistent use of gymnastic exercises, is to enlarge the heart and lungs both in size and capacity. It is stated by the superintendent of a public gymnasium that one of the persons sent to be instructed in gymnastics gained five inches in girth around the chest in less than three months. That this growth is not explained by mere enlargement of the pectoral muscles, is proved by the increased volume of air which the lungs are enabled to expire, as is demonstrated by the spirometer, and post-mortems abundantly show an increased capacity as well as size in the heart and the large blood-vessels. The lungs increase both in length and breadth, forcing the ribs outward and the diaphragm downwards.

It is for this reason that athletes and gymnasts are enabled to make prolonged and violent exertions without getting out of wind. The capacity of the heart and central arteries being enlarged, they can accommodate more blood. Their contractile power being increased by this new demand upon them, they are enabled to send on the current through the lungs with increased velocity, and thus by their greater capacity are able to oxygenize the blood as fast as it is supplied to them, and so no congestion takes place, and no inconvenience is felt. The normal capacity of the lungs of an adult male is about two hundred cubic inches. It is computed that an enlargement of three inches around the chest gives an increase of fifty cubic inches of lung capacity.

Danger of Protracted Sleep.—But here, as in so many other cases, the evil of deficiency has its counterpart in the evil of excess. Sleep protracted beyond the need of repair, and encroaching habitually upon the hours of waking action, impairs more or less the functions of the brain, and with them all the vital powers. This observation is as old as the days of Hippocrates and Aretæus, who severally and strongly comment upon it. The sleep of infancy, however, and that of old age, do not come under this category of excess. These are natural conditions, appertaining to the respective periods of life, and to be dealt with as such. In illness, moreover, all ordinary rule and measure of sleep must be put aside. Distinguishing it from coma, there are very few cases in which it is not an unequivocal good; and even in comatose state the brain, we believe, gains more from repose than from any artificial attempts to rouse it into action.—*Edinburgh Review.*

Useful Information.

The Watch.

"Watch" is from a Saxon word signifying "to wake." At first the watch was as large as a saucer; it had weights, and was called "the pocket clock." The earliest known use of the modern name occurs in a record of 1542, which mentions that Edward I. had "one larum or watch of iron, the case being likewise of iron-gilt, with two plumettes of lead." The first great improvement, the substitution of the spring for weight, was about 1550. The earliest springs were not coiled but only straight pieces of steel. Early watches had only one hand, and required winding twice a day. The dials were of silver or brass; the cases had no crystals, but opened at back, and were four or five inches in diameter. A plain watch cost the equivalent of $1,500 in our currency, and after one was ordered it took a year to make it.

There is a watch in a Swiss museum only three-sixteenths of an inch in diameter, inserted in the top of a pencil-case. Its hands indicate not only hours, minutes and seconds, but also days of the month. It is a relic of the old times, when watches were inserted in snuff-boxes, shirt-studs, breast-pins, bracelets and finger-rings. Many were fantastic—oval, octangular, cruciform or in the shape of pears, melons, tulips or coffins.

What is True China or Kaolin?—China clay is formed by a natural process of washing from the decomposed feldspar and aluminated quartz, of certain kinds of granite. Kaolin, or China clay, is of an earthy texture, containing about ten per cent. of free silica, and equal parts of combined silica. Its preparation for the potteries consists in subjecting the decomposed rock to washings or streams of water, the quartz, mica, and other particles falling by their weight, or being moved by the velocity of the stream, while the finer qualities settle in tanks, or dried in the clay press to a stiff clay, fit for the wheel, and afterwards cut into blocks. The albite variety of feldspar readily decomposes, and the porphyritic rocks of Cornwall afford an easily worked clay. The Staffordshire potteries alone use more than 10 000 tons of the finer kind of China clays from Cornwall and South Devonshire.

Pottery and Porcelain.—It was supposed, a few years since, that the ancients knew nothing of covering earthenware with a vitreous glaze, but recent discoveries have shown the contrary. Egyptian researches have thrown considerable light upon the subject of glass Sir G. Wilkinson, Winckelmann, Layard, and other authorities have proved that glass and earthenware were made 3,500 years ago.

How to Lay Brick.

A great many masons who claim to be good workmen fail to lay brick well. Almost invariably they mix the mortar too stiff and use entirely too much of it, making joints as large as they would in a common red brick wall; corners will be found badly matched, the labor of cutting and fitting being replaced by a liberal supply of plaster. The most skillful plans and the best quality of brick count for nothing when joints are made half an inch thick. Fire mortar should be thin enough to run almost like water; the brick should be dipped in it and rubbed together, or else laid dry and the mortar poured on afterwards, the great aim being to secure solid, even work; all important joints should be carefully made with cut or matched brick, no holes being left to be patched with bits of brick or clay.

There is another point in this connection worth looking after: Boss masons often have their own ideas about correct shape and proportions, and with a total disregard of plans they jog on with cheerful unconcern in the old beaten track. Failure, due either to faulty plans or bad workmanship, is not to be local; a more general giving out follows from bad stock. A change of ore in a blast furnace may quickly cut it out, some varieties being particularly hard on brick—that also may make the difference between a blast of six months or one of as many years. A cupola which usually lined up once a year changed its fuel and destroyed the same brick in three months; I remember another instance in which the same change in a rolling mill doubled the quantity of brick used. Sulphury stock is especially severe on ordinary fire brick, destroying them just as it does cast iron. An examination of the burned ends will indicate partially to an expert whether the stock caused the trouble, but consumers can judge better concerning this from their books.

In cases of failures from bad management it is especially hard to locate the blame, because the evidence must necessarily come almost entirely from parties having a direct personal interest in the result of their testimony; no general rules can be laid down to meet these cases; usually only a thorough investigation by an expert will throw any clear light on the subject.

Pins.—We believe that pins, as we now have them, came into use about the year 1483, and the perfection of pins was insured in 1543 by an act of Parliament which read, "that no person shall put to sale any pins but only such as be double-headed, and have the head soldered fast to the shank of the pin, well-smoothed, the shank well-shaven, the point well and roundly filed, canted and sharpened." In 1626 the pin manufacturing business of Gloucester, England, became so great that 1,500 persons were employed. The first American manufactory was established in 1812, and at that time a paper of pins could not be purchased for less than one dollar, and the first attempt at pin making was successfully made in New York City. A machine patented in 1832 by John I. Howe, was the first to produce in America pins with wire and "spun heads," and in 1840 the same gentleman began making pins with solid heads. The pins of Mr. Howe are more extensively known, and the demand for them much greater than the products of other manufacturers. Previous to the introduction of pins, their place was supplied by many awkward substitutes. Those found in Egyptian tombs are exceedingly bungling in make-up, and are in most instances seven and eight inches long. Their heads are large and made of gold, facts which would render them at the present unfit for any practical purpose. The ancient Mexicans used thorns, and the English for a long while used bits of sharpened wood.

Early Pottery Operations in England.—Lambeth, 250 years ago, was noted for its potteries. At about that time some Dutch potters established themselves there. Glazed pottery and tiles manufactured by them became celebrated, and the wares were sold throughout the kingdom. The Staffordshire potteries, which arose about a century ago, supplanted the Lambeth delft manufacturers. Still one or two good houses sustained the reputation of the district. The late Vienna Exhibition has shown to what extent chemical manufacture has developed the production of fire clay into glazed stoneware crucibles. One of the most remarkable productions of the pottery art was a stoneware pump of large size, and capable of being worked by steam power. This pump was to pump hydrochloric acid into the alkali works. The difficulty of handling this liquid made the manufacture a matter of necessity.

London, with 3,254,260 inhabitants, is the most populous city in the world, while Philadelphia, with 674,022 inhabitants (in 1870), is the eighteenth city in point of population. These eighteen cities, in their order, are the following: London, 3,254,260; Satohan, China, 2,000,000; Paris, 1,851,792; Pekin, 1,300,000; Tschautschau Fu, 1,000,000; Hangtscheu Fu, 1,000,000; Siangtan, 1,000000; Singnan Fu, 1,000,000; Canton, 1,000,000; New York, 942,292; Tientsin, 900,000; Vienna, 834,284; Berlin, 826,341; Hangkan, 800,000; Tschingtu Fu, 800,000; Calcutta, 794,645; Tokio (Yeddo), 674,447, and Philadelphia, 674,022 Of cities that are smaller than Philadelphia, the leading ones are: St. Petersburg, 667,963; Bombay, 644,405; Moscow, 611,970; Conetantinople, 600,000; Glasgow, 547,538; Liverpool, 493,405, and Rio de Janiero, 420,000.

Domestic Economy.

Recipe For Making Currant Wine.

The editor of the Germantown *Telegraph* says:—For several years we made a ten-gallon keg of currant wine, of as good quality as any we have tasted, and is generally so pronounced by those who have had an opportunity to judge. The mode of manufacture is simple, and can easily be followed by any family having the currants, and the disposition to make the wine.

The currants should be fully ripe when picked; put them into a large tub, in which they should remain a day or two, then crush with the hands, unless you have a small patent wine press, in which they should not be pressed too much, or the stems will be bruised and impart a disagreeable taste to the juice. If the hands are used, put the crushed fruit, after the juice has been poured off, in a cloth or sack and press out the remaining juice. Put the juice back into the tub after cleansing it, where it should remain about three days, until the first stage of fermentation is over, and removing once or twice a day the scum copiously arising to the top. Then put the juice in a vessel—a demijohn, keg or barrel—any size to suit the quantity made, and to each quart of juice add three pounds of the best yellow sugar and soft water sufficient to make a gallon. Thus, ten quarts of juice and thirty pounds of sugar will give you ten gallons of wine and so on in that proportion. Those who do not like sweet wine can reduce the quantity of sugar to two and a half; or who wish it very sweet, raise it to three and a half pounds per gallon.

The vessel must be full and the bung or stopper left off until fermentation ceases, which will be in twelve or fifteen days. Meanwhile the cask must be filled up daily with currant juice left over, as fermentation throws out impure matter. When fermentation ceases rack the wine off carefully, either from the spigot or by a syphon, and keep it running all the time. Cleanse the cask thoroughly with boiling water, then return the wine, bung up tightly, and let stand for four or five months, when it will be fit to drink and can be bottled if desired.

All the vessels, casks, etc., should be perfectly sweet, and the whole operation should be done with an eye to cleanliness. In such event every drop of brandy or other spiritous liquor added will detract from the flavor of the wine, and will not in the least degree increase its keeping qualities. Currant wine made in this way will keep for an age. We have some made in 1856 which is really an excellent article.

Good Pie Caust.—Many persons have difficulty in making pie crust, often finding it heavy and dark. A lady writer in the Vermont *Journal* gives directions how to avoid this: To one quart of flour thoroughly mix one small teaspoonful cream tartar, one teacup of lard, (less will do,) lightly rubbed in the flour, one teaspoon salt, half teaspoon soda dissolved in very cold water. Mix lightly with a knife, pouring in a little of the water at a time. Do not wet all the flour, and do not knead it. If you want the top crust to resemble puff pie crust, roll out some of your dough and spread on lard, sprinkle on flour, then roll up. Now, do not as I do, to, cut off a piece and turn the edges up before roll out. I have learned a better way the with your rolling pin a piece large enough rates your top crust, just as it lies rolled up round, board. Wet the bottom crust around feed edge with cold water before putting the top crust. Do not pinch the edges of the rod crust down. Cut or prick, to let the cotted while cooking. Bake in a quick oven the will have a nice looking pie. feed the

Jenny Linn's Soup.—Mr. Editor:—Your respondent, R. Hooker, in a late communication, asks for the recipe of Jenny Lind's soup which was constantly prepared for her by her own cook. It is not an expensive article, being composed of sago, eggs and cream, upon a basis of beef or veal stock. I give the recipe in full: Wash a quarter of a pound of the best pearl sago until the water poured from it is clear; then stew it quite tender in water or thick broth; it will require nearly or quite a quart of liquid, which should be poured on it cold and heated very slowly; then mix gradually with it a pint of good boiling cream and the yolks of four fresh eggs, and mingle the whole carefully with strong veal or beef stock, which should be always kept ready boiling. Mlle. Lind was in the habit of taking the soup before she sang, as she found the eggs and sago soothing to the chest and beneficial to the voice.—*Germantown Telegraph.*

Cheese Fritters.—Slice thin one-half dozen large tart apples, and prepare half as many thin slices of nice cheese. Beat up one or two eggs, according to the quantity required, and season high with salt, mustard and a little pepper. Lay the slices of cheese to soak a few moments in the mixture, then put each slice between two slices of apples, sandwich style, and dip the whole into the beaten egg, then fry in hot butter like oysters, and serve very hot. These fritters are an addition to any breakfast table.

Graham Muffins.—Take one pint sweet milk, one teaspoonful salt, two tablespoonful brown sugar, one teaspoonful baking powder, one teaspoonful butter, not melted; mix and make as for gems.

MINING AND SCIENTIFIC PRESS.

W. B. EWEB.....SENIOR EDITOR.

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San Francisco:
Saturday Morning, July 31, 1875.

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STATE INDUSTRIAL EXHIBITION OF CHIthie exhibition, which will be held ember 8th to October 9th, 1875, the ....do.... Academy of Sciencea will assume the son of the depsrtment of natural history, addition to placing an importaut part own collection on exhibition, its manare will attend to the propar classification, arrangement snd display of all other contributions to that department, and at the close will make such disposition of the latter as contributors may direct. If placed in the muaeum of the Acsdemy neceaaary expensea of tranaportation, etc., will be paid. This departure of the Academy of Sciencea from the usual policy of scientific bodies ae regards temporary public exhibitions, is made partly with a view to excite a more genaral intereat in the study of natural history, but chiefly, at present, to afford to all proprietore of minea—gold, silver, copper, lead and iron, and other minerala—a reliable medium andjfavorable opportunity for bringing their products directly to general public notice. It is intended to make the collection fairly repreeentative of the commercial wealth of the Western Statea and Territories.

THE KOHLER REDUCTION AND REFINING WORKS, Damon's landing, Alameda county, will commence operatione next week. A prospectus of the company will be found in our advertiaing columns. As soon ae the works are started up we will give a detailed description of them, with such facte concerniug the process ae the inventors care to make public.

THE track of the Southern Pacific railroad is now extended a few milea beyond the Santa Ana river, and will be pushed energetically across the San Gorgonio pass. Material for finishing the road ae far as Dos Palmoe is rapidly arriving, and there will be no interruption in the conatruction until that point is reached.

Gold vs. Silver Mining.

In our last iasue we called the attention of onr gold miners to the fact that more care should he given to the saving of a larger percentage of the gold contained in the orea, if they expect gold mining to command capital as readily as silver. For fifteeu yaars silver mining has hsd the lead, commanding millions of capital, and the reason for it is thst while the educated and practically skillful amalgsmators who are generally employed, procure from saventy-five to eighty-five per cent. on the average, the California gold mills fall below it—a wsste which gold miners must remedy.

When it comas to the value per ton between the gold ores of California and the silver ores of Navada, we verily believe tha wealth in gold axceeds that of silver, the main fault being in the reckleasness with which our gold ores hsve been handled. With many it is considered neceaaary only to rig up a set of stamps and lat them pound awsy, with chesp, inaxperienced hands to attend to the amalgamating depsrtmeut. The end in too msny inatances is failure, to the datriment of whole mining diatricts, and generally winding up hy saying, "the ora is rich but we can't save tha gold." Now what suggests itaalf to evary sensible miner for making gold mining attractive to capital and successful for themselvaa and for giving life and vigor to all our gold quartz sections? It ia very clear more care must be given to the manipulation of the ores. Skilled hands ahould be employed, and if one plan doas not succeed in securing a proper percentage of assay vslue—which in no case should fall helow savanty-five per cent.—another ahould at onca be sought out. All silver ores cannot be handled successfully the same way. The Comstock ores are treated by a very simple method, thay being the easiast of all ailvar ores to handle; but the sama syatem would be a complate failure in Panamint district.

There is one thing which our gold quartz minsra must consider, and that is, coarse gold is the exception and "flour gold" the rule in gold ores, while they are worked for the excaptional particles and not for the atoms. An old adage might apply here, "take care of the cents and the dollars will take care of themselvea." We say tske csre of the fine gold and the coarsa is aure to look out for itself. Our mountain gold minera and city gold mining operators ehould remember also that there ia a eettled inactivity in our gold mining stocks. In the three different stock boards now in operation in San Francisco, the eilver mining atocks alone are those which to any marked degree commsnd attention, many of which sre merely holes in the ground, while the gold stocks, which have a real value, go begging. Msny a gold property suffers for the want of a few dollare, while millions sre squandered in worthless eilver mines, because silver ie the favorite. If our operatore should form a gold mining stock board, which should deal only in gold mines, it might help matters a little and assist in building up the gold mining intereste of California; for with all our wsstefulness, they will show as good records for interest on capital *invested*, ae does silver mining. Of course we must except a few mines on the Comstock, which are the world's wonders. By a combination of capital in gold as in silver mining, our gold intareets would not languish as they do; and with a gold etock hoard handling such stocks exclusively, attention would be called to such mines.

The Comstock, to-day, would have been a barren wsste but for the advantages of a method of making saleable ratee, by which meana aeseesments were levied and developments csrried to a successful discovery of wealth. Our gold mining interesta have never had these advantages, but if they were properly bronght before the public in the aame mauner ae this silver stock, much benefit would accrue, and more capital be forthcoming.

What depth brings forth in our gold mines is shown by Hayward's mine in Amador, the Washington in Mariposa, and the Idaho and Eureka in Grase valley; but then few companies can put in the capital for such developments. It should be done by the many who are ever willing to venture a few hundreds with fair chances of a good return. We are led to these observationa from a desire to advance the gold miuing interests of California, and hope all those interested who have sny suggestions to the aame end will favor us with them for publication. In the East there ie a growing intereat in our mines, which, if nuraed, will bring a good deal of cspital to our shorea, and gold mining for this Eastern unprejudicad capital is more attractive than silver. If a gold hoard was formed it ehould be maintained by our leading operators, and might aerve to attract capital to home minea, and away from the Comstock, which has already as much as it wants.

The plan would, without doubt, be well received by our mountain minera, if the proper parsons took the initiative step. Something muat be done, at any rate, to eave our gold mining interesta, and we ahould be glad to hear of any feaaible plana to attract capital in that direction.

The heat on the 1700-ft level of the Gould and Curry mine is still intense, and but slow progress can be made with the retimbering of the drifts.

Water for the Hydraulic Mines.

The water supply for most of the hydraulic claims in California is pretty short, and rapidly diminishing under the influence of July weather in the mountains. A number of hydraulics are in operation still, however, although most of them will shut down soon and wait for the expected delnge in the fall. The minera are all praying for esrly and heavy rsins, and we sincarely wish thair most sanguine expectationa will be realized.

Msny naw mines are being opened in different parts of the Stste as naw ditches ara started or old ones extended. In some places conaiderahle local interest is excited in opening up new diggings and re-opening old ones. In Butta county, according to the *Mercury*, hardly a day passas that does not sae aoma new mine added to the liat of thoaa that pay well for the labor hestowed on them. Whila considerahle attention hss been paid to the mines in Forbeatown, thare has also been in anothar psrt of the county a larga amount of work done and money expended. The Red Hill hydraulic mining and watar company, on the West Branch, intend to dam Wast Branch and turn out every drop of water into a ditch that shall run nearly parallal with it. Now thara are 9,000 inches of water, but it will gradually fall to 5,000 which will ba sll sufficient for mining or any other uses that tha company will have for water. Thay intend to mina the hed of the river as far aa they own, or rather in auch places aa they think will pay best, for they have ground all the way along for fifteen or twenty miles.

The huga ditch is already under wsy and is marching along as fast as niuety-five men under the charge of an energetic superintendent, Mr. G. F. Whitman, can push the work. Knowing that a large amount of timber would ha needed both now aud in the future, tha oompany have completed a fine aaw mill at tha hesd of the ditch, where everything can be eaaily got at. Probably there is no richar district in California than tha one about to ba opaned up. That an abundanoe of gold wss in tha bed of the stream snd on the bars, has long been known; but owing to tha volume of water it wss impossible to get st it. But now tha question will soon be tested. Mr. Whitmsn will be all ready by the middle of Auguat to hagin washing.

The Forbestown ditch, the property of the Feather River and Uniou mining company, and intended to work their claims at Sicard Flat, will not, it is said, work the injury to the ranchmen that was at first expected. The President of the company states that they never intended to divert the water to the extent of injuring a single ranch along the line of their ditch. They had taken psina to inquire as to the number of days in the week that the ranchers needed wster this eeason, and had heen told that oue day would be anfficient; and they therefore gave their agent instructions to run the water down during Sunday for irrigating purposes. Mr. Green, in an interview with the editor of the Oroville *Mercury*, was very emphatic in his declaration that the ranchers should have watar. If there was not enough for the claim and ranchee, the latter should receive the preference; for, said he, our claims will laat only five or six yeare at most, and then if the ranches were destroyed we ehould have no sale for our water.

The Gold Run tunuel, in Placer county, calculated to tap the deep gravel deposits of that district, has juet been completed. Thia tunnel, including branches, is over half a mile in extent. The Gold Run ditch and mining compsny, which hae been prosecuting this work, have contracted to run 1700 feet of tunnel in the Dutch Flat district, preparatory to beginning which they are now moving their worka. In running these extensive tunnels the Burleigh drill is used almoet exclusively.

The miners everywhere are anxiously waiting for a water eupply and preparing their claims for the wet season with all the energy possible.

MINING ITEMS—Calistoga *Press*, July 20: The new furnace at the Great Western miue haa been completed and was fired up last week. In 7 daya from the firing up 24 flaake of quicksilver were taken out, from 2 condensers. It generally takes from 2 to 3 weeks to "amoke" the condenaere, but as thie new furnace is perfect, and the ore rich, they have "smoked" the condeneere with the above result. This ie the best showing for the richnese of a mine on record, and there ie no telling what amount of metal will be taken out when the furnace is in full blast. Thie week 105 flasks were shipped from the mine—the work of 7 daye. Next week 3 furnaces will be in full rnnning order.

THOS. N. WAND, has been elected snperintendent of the Excelsior mine, *vice* C. D. Morriaon, rasigned.

SENATOR JONES of Nevada, A. T. Stewart of New York City, J. D. Coughlan and Georga Brown of California, have bought a piece of land at Delord and Annunoiation atreets, New Orleans, whereon they intend to build an artificial ice factory 150 feet long, 116 feet wide and more than 50 feet high, to cost $125,000. They have an ice factory in California, one in Chattanooga, one nearly finished in Galveston, and are about to build one at Atlanta.

Among the Foundries and Machine Shops.

Work continues unabated at our various foundries, and the machinists of San Francisco may congratulate themselves that their lot has been cast in a city where mechsmical labor maata with such constant damand and so liberal a return ss it doas here.

The Occidental Foundry.

The force at this foundry, hesides turning out the ususl amount of small work, is being directed to filling the contract for the construction of the appliances to be used by the Fryar Brothers in their process for reducing oraa, which is to be first put to practicsl tast st Grass Vallay, Nevads county. The proprietors of the Occidantal are constructing six-taen tanks, thirty inches square and aix and one-hslf feet long. Sixteen such tanka have sufficient capacity for a five-ton mill. Of course the Fryar process is a profound aeorat, and will remain so until the patents are thoroughly parfactad. If it provas tha success which ita inventor claims, it will certainly have an importsnt effect on the mining interests of the Pacific coast. As is well known, Mr. Fryer, the inventor, ssserts his ability to obtain 95 per ceut. of the assay of all ore treated by his process.

Fulton Foundry.

Messrs. Hinckley & Co., of the Fulton foundry, have just completed and have nearly ready for shipment two condensing propeller angines, 20x24 inch, built to the order of the Humboldt ateamship company. Thay will be used in a steamar built at Humboldt bay, and soon to be launchad, which ia intanded for paasenger and freight, and will ruu between this city and Humboldt. She is 157 feet on deck, tan feet depth of hold and proportionate tonnage. Part of the force of the Fulton foundry are now employed in getting out the iron work to he used in tha extension of the Nuclaus building, and the improvemants going on at the cornar of Market and Second straeta, both buildinga the proparty of the Cunningham estata. Tha work whan completad will aggregata 600 tons in weight.

Etna Foundry.

At the Etna foundry, Mr. G. W. White hsa baen overseeing the construction of a "Whita furnaca," for the Jeffarson miniug company, of Nye county, Nevada. It will have a capacity of from twenty-four to forty tona per day, and when placed will cost $10,000. This furnace is the largest of ita description ever built. The cylinder ie forty inchea in diameter snd twenty-four feet long. The brick work is enclosed with iron plates. Among the new features introdnced in this furnsce we noted perforated door waye or blowers attached to the firing doora, ao that no emoke eecapes when opened. Also a double friction wheel for turning the cylinders. The shipping weight will be twenty tons, and Mr. White expects to hsve it in running order within six weeks.

At this foundry Mr. A. J. Doolittle is engaged in making some important improvemente in hie celebrated hand boring augur. He ia getting one ready aoon to be used at Michigan Bluff, a point where it has been lsrgely need and is best known. Mr. Doolittle feels confident that when thoroughly perfected he will havo one of the most valusble labor eaving msohines of the day. In cutting tunnels and working in gravel and cinnabar banke, it hae demonetrated remarkable utility.

Meesrs. Pendergsst & Smith, the proprietors of the Aetna, have a lsrge number of important ordcre on hsnd, and are conatantly turning out miacellaneous work.

Progress at the Sutro Tunnel.

The following ia the report of progress in the Sutro tunnel, for week ending July 22, 1875:

Number of feet in tunnel, July 15	10,049
Number of feet driven during week	85
Distance in, July 22	10,134

Detaila of work performed are ae follows, heading being 8x10 feet:

Holes drilled	333
Holes blasted	330
Aggregate depth	2262 feet
Average depth	6.79 feet
Powder consnmed	1,006 lbs
Exploders consumed	352
Rock extracted	1,000 tons

ROCK — Comstock porphyry containing pyrites and seama of calcspar and quartz; excellent drilling and blasting. Will have to be partly timbered after pasaing through.

WATER. — Quantity flowiug, forty minere inches.

AIR.—Temperature at heading, 80°; ehaft No. 1, east, 64°; west, 67°; ahaft No. 2, east, 78°; west, 82°; mouth, 86°.

[Signed] A. SUTRO, Gen. Supt.

THE Belcher ore extraction atill continues to pay a profit for working, and it is thought the prospects of the Belcher mine, for finding new bodies of ore on the lower levels, are certainly as good to-day as that of any mine on the Comstock lode.

The Spring Valley mining company, of Cherokee Flat, Butte county, last week shipped three gold bars worth $63,000.

The Mountain Meadows Massacre.

The trial of Lee, nt Beaver City, Utah, for rticipation in the Mountain meadows mass- re in 1857, gives a new interest to that mem- rable tragedy; and it is only now that the ruth has come nut with all its harrnwing de- aila. Previous to the year mentioned the Mormons had always been glad to trade witb 'American" emigrants, and the passage of u rain was an event of interest, so that Salt Lake became a second outfitting place for emigrants California. These omigrants found things hanged on their arrival at Salt Lake, as no ne would trade with them. They left and topped a week at Provo, fifty miles south of alt Lake, bnt were finally ordered to move on the mayor of the town. The emigrants oved on slowly, as the strength of their ani- als was giving way. They heard of Moun- tain meadows as a good grazing place, and here they concluded to wait until ready to un- dertake the desert journey.

During the first day of their stay at the meadows they looked over their provisions and found that they had barely forty days' rations for a sixty days' journey, bnt they saw no alter- native and they resolved to attempt the jour- ney. The last Sabbath was spent in religious exercises, and next day at dawn they prepared to start. Just as the sun rose upon their tents and wagons a volley of musketry was heard and seven men standing by a camp fire were killed. The emigrants prepared to defend themselves as best they could. They were cut off from the spring, and all who attempted to reach it were shot. From the beginning of the siege the emigrants found that Mormons were with the Indians, but they saw no signs of white men. On the fifth day of the siege, the 15th of Sep- tember, 1857, the emigrants saw a wagon with horses approaching, and white men bolding aloft a flag. It was of course supposed that help was coming.

In those times, when the Mormons were preparing for war with the United States, every county in Utah had its own military organiza- tion, and Iron County, within whose limits were the Mountain meadows, had a body of militia called the First Iron County regiment. Soon after the emigrants passed through Cedar City, a portion of this Iron county regiment received orders to make ready for service, "armed and equipped as the law directs," and with the necessary transportation, camp equip- age and ammunition for a short campaign. These Mormon soldiers marched south in the direction of Mountain meadows. Some days later a messenger arrived in Cedar City from the south, and Lieutenant-Colonel Haight im- mediately dispatched more troops to reinforce those who had gone before.

On the morning of the fifth day's siege these two bodies of troops formed a junction on the meadows north of the emigrant camp, and near them were a number of Indians arrayed in all the glory of war paint and feathers, and armed with rifles, bows and arrows, knives and toma- hawks.

The whites were called to order and a docu- ment was read to them and submitted for their acceptance or rejection. Did they approve of it? Would they carry it into execution? The answer was unanimously in the affirmative. It was from this body of Mormon militia and their allies, the Indians, that the party in the wagon had proceeded toward the emigrant camp, and the chief man of that deputation was John D. Lee.

The emigrants related to him what they had suffered. He listened with attention and pro- fessed the greatest interest. Some of the cat- tle had been driven away and some killed, but Lee would hunt up the hostile Indians and see what arrangements could be made with them for the deliverance of the emigrants.

Lee returned as peace commissioner in a few hours and told the emigrants to lay down their arms so as to show the Indians that there was no deceit in their suing for peace; he would give them safe escort to the settlements. They could do nothing else, so the sick, wounded, and aged, the women and children, were put in the wagons and they were hurried out of the corral. Then came the men, unarmed, in single file, under the protection of the militia. After going about half a mile the order to halt was given at the head of the column.

No sooner had the emigrants and their Mor- mon protectors answered to the order "halt," than the officer in command, without a mo- ment's hesitation, ordered "fire," and in an in- stant more the bodies of the confiding emi- grants were struggling in death. The Indians were lying in ambush, and at the signal for the massacre they sprung from their concealment and fell upon the aged and infirm, women and children, sparing none who were old enough to remember and ever tell the tale of the bloody deed.

The screams of the frantic women and the yells of the savage Indians filled the air. Again and again the shrieks of the mothers were heard pleading for their children, but there was no mercy on Mountain meadows. Over one hundred and twenty men, women and children had been deceived and betrayed into ambush, and in half an hour they lay cold in death. The engraving shown on this page is a representation of this scene, which was pub- lished shortly after and will give a faint idea of the massacre. Scenes in that dark tragedy have been related by some of the white fiends who took part in it, that make the blood curdle in one's veins. Some of them tell how the brethren seized the children by the hair of the head and looked them in the face to judge whether they could remember the terrible scenes or not. If the child was too intelligent to live the butcher cut its throat, and still worse, some of them were taken by the heels and their brains dashed out against the wagon wheels.

When the slightly wounded in the first fire essayed to escape, they were pursued and hunted by white men and Indians as if they had been the wild beasts of the forest. Seven- teen children who were considered too young to remember the crime were saved and dis- tributed among the Mormons. All the details of the terrible tragedy are now coming out at the trial of the Mormon Lee, and the blame is now thrown to a certainty upon those who were long suspected. The whole affair, coming out

MASSACRE OF EMIGRANTS AT MOUNTAIN MEADOWS.

as it does at present, will be a fearful blow at Mormonism and do much toward rooting it out of Utah.

A New Quartz Crusher.

We examined this week, at the corner of Main and Folsom streets, in this city, a novel quartz crushing machine, which is constructed on a principle entirely different from anything now in use. It is the invention of Mr. Stephen Kendall, who formerly resided in the vicinity of Jackson, Amador county, and who is an old mining man.

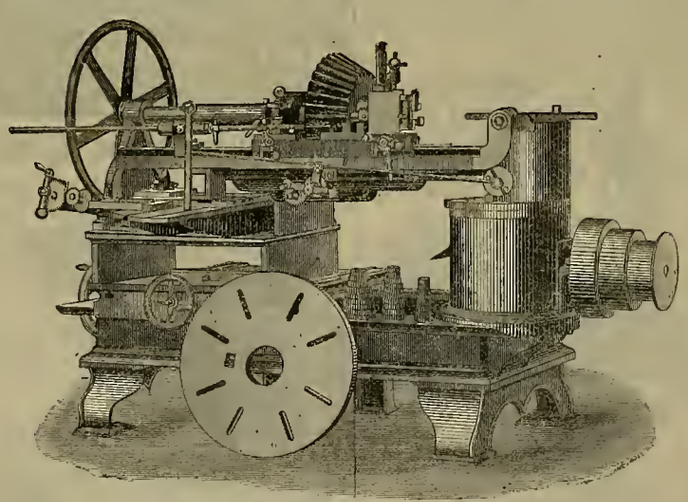
The machine is a quartz battery, which is double acting, in somewhat the following man- ner: Two ordinary mortars are placed on a frame a short distance apart. Between these two mortars is suspended, by a journal, a swinging frame, which extends above and below the base. The portion which extends above consists of a semi-circular bar or stamp stem, which is supported by arms from a shaft underneath, in such a manner, that when it is oscillated upon the journal or shaft, its ends will alternately enter the mortars. Each end of this semi-circular bar carries an ordinary stamp shoe, which will strike the dies in the mortars.

The portion which swings below the base consists of an oval frame, and inside of the oval frame is arranged a cam on a shaft, so that when the cam shaft rotates, the cam will strike the opposite sides of the oval frame alternately, and thus throws it back and forth, producing a swinging motion to the suspended frame, which causes the stamps to alternately strike in the mortars.

In the present instance there are four of these stamp stems, and as there are shoes at each end of each stamp stem, it makes an eight stamp battery. It takes very little power to operate this contrivance, and there is no expen- sive frame and complicated machinery about it. It is quite compact, and its weight and cost, as compared with an old style mill doing the same work, is much less.

This one could all be put on a wagon, stamps, bed, frame and all, and it could be set up in twenty-four hours with ease. Mr. Kendall's main idea in getting this up was to provide a practical cheap mill which will answer the pur- poses of working miners with no capital. There are many mines in the mountains which are now idle for want of reduction works, which would be worked if cheap crushing appliances were available.

Mr. Kendall thinks that this little mill will arrastras at small mines, as they will have more than double the capacity and will require no more power to run them. Something of this character has long been needed by working miners for their own claims, and those inter- ested will look to further practical experiments with the hope that the machine will "fill the bill." The mill can be seen in operation daily between twelve and one o'clock at the locality mentioned.



GEAR-CUTTING MACHINE.

GEAR CUTTING MACHINE.—The engraving shown on this page represents an improved gear cutting machine, which is made at the Kead Iron Works, 106 Mill street, Rochester, New York. The maker claims for this machine accuracy, durability and strength, producing gears of all kinds and sizes. A detailed de- scription is not necessary, as the cut is easily understood.

ON the Santa Cruz and Felton road, about 150 men are employed—principally track lay- ers and carpenters. The tunnel above the powder mill will be completed within a fort- night, after which a hand car will be able to pass over the entire line.

Notices of Recent Patents.

Among the patents recently obtained through Dewey & Co.'s SCIENTIFIC PRESS American and Foreign Patent Agency, the following are worthy of mention:

VENEER CUTTING MACHINE.—George W. Swan, San Francisco. This is an improvement on veneer cutting machines, which consists first in an improvement in mounting and operating the knife or veneer cutter and sec- ondly in a device for feeding the block to the cutting knife. The two guide timbers that sup- port and guide the cutting knife are secured at an angle and parallel with each other, the an- gle preferred being about sixty degrees. The cutting knife is secured horizontally between the inclined guides, and is guided at each end in ways on the inside of the guide timbers so that it will have an angular up-and-down mo- tion, while its cutting edge always maintains a horizontal position, thus giving a shearing cut across the entire length of the block. Cutting knives of veneer cutting machines have been heretofore mounted at an angle between two upright guides so as to give a shearing cut, but the effect is different from the above described plan because the angular knife begins cutting at the corner of the block and cuts diagonally through it, while by Mr. Swan's arrangement it cuts squarely across the block from top to bottom. By this arrangement the power re- quired to force the knife through the block is more uniform, as it cuts the same length throughout its stroke. To the lower part of the frame and in front of the knife are secured two or more horizontal pairs of guides, and between each pair of guides is a slide or dog, which can be worked by a screw backward or forward. These guides are directly in line with the bottom of the gate or frame in which the knife moves and at right angles to the knife, and the slides or dogs feed the block of wood to the knife after each stroke. The feeding screws are operated automatically by securing a pinion on the outer end of each screw, then securing a shaft transversely across the outer ends of the screws, upon which are toothed wheels which engage in the pinions referred to. A shaft is supported in boxes across the end of the support or frame at right angles to the shaft which is secured across the outer ends of the screws, and parallel with the screws. This shaft has a toothed wheel on its outer end which engages with a pinion on the shaft which is secured across the outer ends of the screws. A ratchet wheel is secured to the middle of the shaft. The knife or cutter is operated in the slides by a pitman connection with a large crank wheel on the drive shaft above. On the wrist pin of this crank wheel is secured a loosely revolving sleeve, which has secured to it a short tube at right angles to the sleeve. A rod is supported in a box on the underside of the upper timber of the frame and has its inner end bent at right angles so as to pass through the short tube. To the opposite end of this rod a slotted crank is secured. This crank is connected with a pawl carrier which has one end attached to the shaft by a connect- ing rod, so that when the large crank wheel rotates the bent rod is given a semi-rotation back and forth, causing the crank to operate the pawl holder. The pawl engages with the ratchet wheel each time the crank wheel rotates and moves the wheel a certain distance around, thus rotating the shaft and screws so as to feed the block forward after each descent of the knife. The upper end of the connecting rod is adjustable back and forth in the slotted crank, so as to regulate the movement of the ratchet feed and lengthen or shorten the feed of the block for the purpose of obtaining the desired thickness of veneer.

VINEYARD PLOW.—Milton Ross, San Jose, Santa Clara county, Cal. This is an improve- ment on that class of vineyard plows in which the rear end of the plow beam is adjustable be- tween the two handles of the plow, so as to throw the forward end of the beam either to or from the land, for the purpose of clearing the double-trees from the vines, etc., near which it is necessary to plow. The improvement con- sists in mounting the middle of the beam upon a crank pin or pivot, by means of which not only the rear end of the beam but its entire length can be shifted to or from the land side, as desired, and thus permit the beam to be ad- justed in any direction, so as to form either an ordinary plow or a vineyard plow.

OPERATING ELEVATOR AND OTHER VALVES.—Philip Hinkle, San Francisco. This is a novel device, which may be employed to operate elevators and other valves when it is necessary to open one and close another valve at the same time. It consists of a slotted segment, formed on different centers, and the stems of the valve are moved by this slot. The outer edge of the segment is provided with teeth, and a pinion mounted upon the axle of an operating rope pulley serves to throw this segment in either di- rection, as the case may require. By this con- struction the inventor is enabled to open the valves with a direct motion, and control the supply of water with accuracy.

SENATOR JONES, of Nevada, has purchased eighty new freight cars for his railroad. They will be shipped on the next steamer for Aspin- wall.

Tenth Industrial Exhibition of the Mechanics' Institute, S. F., 1875.

PRELIMINARY ANNOUNCEMENT.

The Board of Managers of the Tenth Industrial Exhibition have the pleasure of anuouncing that an Industrial Exhibition will he held, under the auspices of the Mechanics' Institute, in the city of San Francisco, to be opened on Tuesday, the 17th of August, 1875, at 11 A. M., and to continue open at least one month thereafter.

In making this pnblic announcement, the Managers desire that those who intend to exhibit should send in their applications for space as early as possible, so as to avoid the necessity of excluding, as has heen the case heretofore, the many desirable exhibitors who are unusually tardy in making applications.

The forthcoming Industrial Exhibition will he the tenth held under the auspices of the Mechanics' Institute, and the Managers are justified in saying that it will undoubtedly surpass in completeness of detail and general arrangement any heretofore held.

The last Exhibition was attended by 700,000 visitors, attracted hither by the fame of these Industrial Fairs, and for the purpose of investigation, business and pleasure.

All the available exhibiting space was applied for several weeks before the day of opening, and the Managers were compelled to deny admission to many desirable exhibits.

The Board of Managers desire particularly that the arts, the industries and natural prodncts of the country should be well represeuted at the forthcoming exhibition, and no pains will be spared to make these classes of exhibits a special feature there.

The Exhibition will be held in the building constructed for that purpose in 1874, but it will he materially enlarged and improved in many details for the Exhibition of 1875.

The space under roof will exceed 180,000 square feet, or about four and a half acres, exclusive of the Horticultural Garden, which will occupy 24,500 square feet additional.

The location of the Exhibition Building, on Eighth street, between Market and Mission streets, cannot be snrpassed for convenience and accessibility, and can be approached from every part of the city by means of the various lines of street railroads, any of which bring visitors within two blocks of the entrance gate.

The utmost care has been exercised in providing for ample ventilation and light, and during the evening the building is brilliantly illuminated by over 5,000 gas ights.

The promenade avenues are broad, and 3,000 seats are provided for the comfort of visitors, for whose convenience there is also an excellent restaurant, under the management of a first-class restaurateur.

Every afternoon and evening the best orchestra the city can supply will discourse excellent music under the direction of an accomplished leader.

The building is always well attended by visitors, and dnring the last Exhibition over 29,000 were daily admitted for a number of days, and under no similar circumstances can the manufacturer, the mechanic, the inventor, producer or business man so advantageously place himself before the people of the Pacific Coast.

Persons desiring to obtain information, or to make application for space, should address "Managers of Tenth Industrial Exhibition, San Francisco, California," or make personal application as below.

It is expected that the various transportation companies will convey goods intended in good faith for exhibition, at half the usual rates.

Exhibitors from abroad, if they have no agent or consignee in San Francisco, can consign goods and mark the same to the "Manager of the Tenth Industrial Exhibition, 17 Post street, San Francisco," and they will be stored, if they arrive before the day of opening, free of expense; but no charges or expenses for freight or forwarding, etc., will be paid by the Managers.

In order to secure space, application should be made on or before July 20th, 1875.

Blanks will he furnished on application.

Premiums will be awarded as follows, viz: 16 gold medals, 50 silver medals, Society Diplomas, Certificates Merit and Special Premiums, as the Board may determine.

Blanks for space can he obtained at the Mechanics' Institute on application by letter or otherwise; and any information will be given, by applying to any member of the Board of Managers, as below:

A. S. HALLIDIE.....113 Pine street.
JAMES C. PATRICK.....122 Battery street.
HENRY L. DAVIS.....421 California street.
D. E. HAYES.....213 Fremont street.
ASA R. WELLS.....Mechanics' Mill.
P. B. CORNWALL.....Cor. Spear & Harrison streets.
CHAS. ELLIOT.....516 California street.
GEORGE SPAULDING.....414 Clay street
RICHARD SAVAGE.....139 Fremont street.
W. F. STOUT.....604 Merchant street.
J. H MACDONALD.....217 Spear street.
J. P. CURTIS.....320 Jackson street
R. B. WOODWARD.....Woodward's Gardens.
JAMES SPIERS.....311 Howard street.

To the Librarian of the Mechanics' Institute, or to J. H. CULVER, Secretary, 27 Post street, S. F.

Rules and Regulations of the Tenth Industrial Exhibition, Mechanics' Institute, S. F., 1875.

1. The Pavilion will he open for the reception of goods on Monday, August 2d. The exhibition will be open to the public on Tuesday, August 17th, at 11 o'clock A. M.

2. Applications for space must be made on or before July 20th, stating character of exhibit, amount and kind of space required—wall, table or floor. And, if cases, state length, width and hight of case. Blanks will be furnished for this purpose, and a clerk will be in attendance at the Library of the Mechanics' Institute, every day from 12 to 1, and 7 to 10 P. M.

3. All persons presenting articles for exhibition must have them registered by the Receiving Clerk, who will give a receipt for the same, which receipt must be presented when the articles are withdrawn, at the close of the Exhibition.

4. Judges will be appointed by the Board of Managers, immediately upon the opening of the Exhibition, to examine all articles presented, in accordance with Article III, and the Managers will award premiums on such articles as the judges shall declare are worthy which will he delivered as soon as they can be prepared. Due notice will be given of the announcement of premiums.

5. The mornings of each day, until 10 o'clock, will be appropriated to the Judges, and no visitors will be admitted during the time thus appropriated, except at the special request of the Judges, or by permission of the Managers.

6. Articles intended for sale may be labeled accordingly, but cannot be removed until the close of the Exhibition, except by written permission of the Managers.

7. Steam power will be provided, so that machinery of all kinds may be seen in actual operation, and every facility possible will he given to exhibit working machinery to the best advantage.

8. The name of every article must be attached by the exhibitor to it.

9. Articles intended for exhibition must be entered and placed on exhibition on or before Saturday, August 21st.

10. Perishable articles will be received, or may be removed at any time during the exhibition, with the consent of the Managers.

11. The most effectual means will he taken, through the agency of the Police and otherwise, to guard and protect the property on exhibition; and it will he the purpose of the managers that all articles shall he returned to the owners without loss or injury. Still, all articles deposited will he at the RISK OF THE OWNERS.

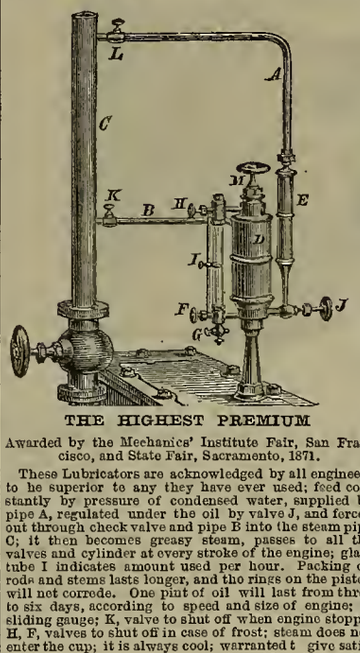
12. In case of any misunderstanding, application may he made to the Managers, who will at all times he in attendance.

13. The Managers are desirous that articles should be presented early. Those from abroad, intended for exhibition, should be properly packed, and if not consigned to exhibitor's agent, must he marked, "MANAGERS OF TENTH INDUSTRIAL EXHIBITION, SAN FRANCISCO, CAL." All articles thus received, arriving too early, will be stored free of cost to the exhibitor, and the Managers will have them duly placed in proper position for exhibition. No freight charges will he paid by the Managers; but exhibitors are notified that arrangements are being made with various transportation companies to repay freight charges on evidence of goods exhibited.

Information will be furnished by addressing MANAGERS OF TENTH INDUSTRIAL EXHIBITION, SAN FRANCISCO, CAL.

Machinery.

N. Seibert's Eureka Lubricators.



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These Lubricators are acknowledged by all engineers to he superior to any they have ever used; feed constantly by pressure of condensed water, supplied by pipe A, regulated under the oil by valve J, and forced out through check valve and pipe B into the steam pipe C; it then becomes greasy steam, passes to all the valves and cylinder at every stroke of the engine; glass tube I indicates amount used per hour. Packing on rods and stems lasts longer, and the rings on the piston will not corrode. One pint of oil will last from three to six days, according to speed and size of engine; I, sliding gauge; K, valve to shut off when engine stopps; H, F, valves to shut off in case of frost; steam does not enter the cup; it is always cool; warranted to give satisfaction. Patented February 14, 1871. Manufactured by California Brass Works, 125 First street, S F. 24v23

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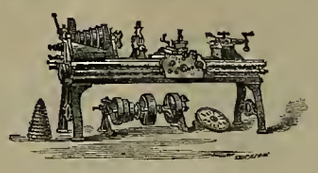

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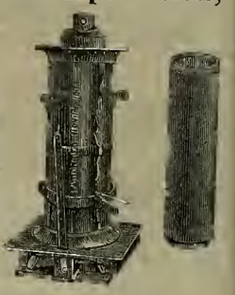

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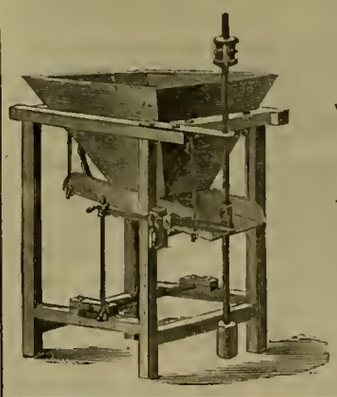

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Price of the second edition, $10.50, (cloth); $12 (leather).

Inventor of the "WEE PET" Assaying Machine, which obtained a GOLD MEDAL at the San Francisco Mechanics' Institute Fair of 1869.
Price of the machine, with tools, fluxes and instructions, $100.

GIANT POWDER.

Patented May 26, 1868.

THE ONLY SAFE BLASTING POWDER IN USE.

GIANT POWDER, NO. 1,

For hard and wet Rock, Iron, Copper, etc., and Submarine Blasting.

GIANT POWDER, NO. 2,

For medium and seamy Rock, Lime, Marble, Sulphur, Coal, Pipe Clay and Gravel Bank Blasting, Wood, etc.

Its EXCLUSIVE use saves from 30 to 60 per cent. in expenece, beeidee doing the work in half the time required for black powder.

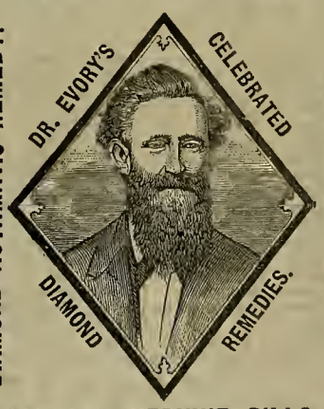
☞ The only Blasting Powder used in Europe and the Eastern Statee.

BANDMANN, NIELSEN & CO.,
v22-3m16p General Agents, No. 210 Front Street.

DR. F. EVORY. WM. G. STILL.

DIAMOND CATARRH REMEDY.

DIAMOND ASTHMATIC REMEDY.



DIAMOND INVIGORATOR.

DIAMOND NERVINE PILLS.

CATARRH AND COLDS—Dr. Evory's Diamond Catarrh Remedy never fails; perfect cure; try it; fifty cents per bottle. Depot, 606 Market street, San Francisco, Cal., opposite Palace Hotel. Sold by all druggists.

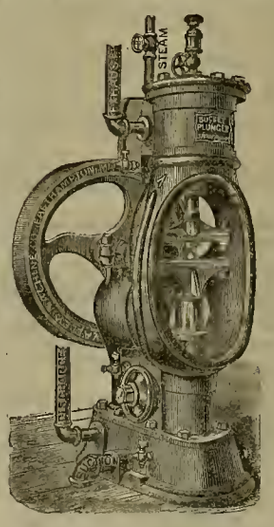
PARKE & LACY,

310 California street. San Francisco

Sole Agents for WRIGHT'S

BUCKET-PLUNGER STEAM PUMP.

ALWAYS RELIABLE.



FRANCIS SMITH & CO.,

MANUFACTURERS OF

Hydraulic Pipe,

AND

ARTESIAN WELL PIPE.

Having the Latest Improved Machinery, we can make it an object to

Mining & Water Companies

OR

WATER WORKS,

To Contract with us for

SHEET-IRON PIPE.

All Sizes Made and all Work Guaranteed

30 Beale Street,

JOHN THOMSON. JOHN B. PARKER.

THOMSON & PARKER,

(Formerly with David Stoddart,)

112 Beale Street, San Francieco, Cal.,

ENGINEERS and MACHINISTS,

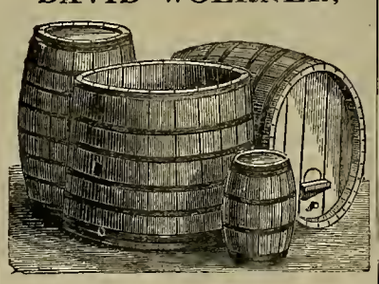
MANUFACTURERS OF

STEAM PUMPS, STEAM ENGINES,

And all kinds of Machinery.

REPAIRING PROMPTLY ATTENDED TO.

DAVID WOERNER,



COOPER,

No. 104 and 112 Sosar St., San Francisco.

Wine Caske, Tanke, Tube, Pipes, Beer Barrele, etc., Manufactured at Short Notice and LOW RATES.

LUMBER for CASKS, etc., TANKS, etc. Steamed and Dried if required.

eow-bp.

San Francisco Cordage Company.

Established 1856.

We have just added a large amount of new machinery o the latest and most improved kind, and are again prepared to fill orders for Rope of any special lengths and sizes. Constantly on hand a large stock of Manila Rope, all sizes; Tarred Manila Rope; Hay Rope; Whale Line, etc., etc.

TUBBS & CO.,
629 611 and 613 Front street, San Francisco

BLACK DIAMOND FILE WORKS.

TRADE MARK

G. & H. BARNETT,

Manufacturers of Files of every Description

Noe. 39, 41 and 43 Richmond street,

Philadelphia, Pa.

Sold by all the principal hardware stores on th Pacific Coast. 18v25.1y

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SAN FRANCISCO

Pioneer Screen Works,

Removed to 32 Fremont Street, near Market.

SCREENS

J. W. QUICK,

Manufacturer of perforated sheet metals of every description, at reduced rates. Mill owns a new Battery Screens extensively, can contract for large supplies at favorable rates. This is the only establishment on the Coast d voted exclusively to the manufacture of screens.

$5 to $20 Per Day at home. Terms free. Address G. STINSON & Co., Portland, M.

General News Items.

The new steam tug built for the Stockton transportation company was launched on the 22d inst. at the shipyard of Mr. Davis in Stockton, on Lindeay Point. The boat was christened the *Jenny Gawne*, and is a trim little craft of handsome model. Her dimensions are—length, 70 ft.; breadth of beam, 18 ft., and she will draw 6 ft. of water.

The Postmaster General has fixed a mail route along the shores of the lekee for a fast mail to the West. It is expected to be in operation by the 1st of October. It will make the distance from New York to Chicage in not more than 26 houre, and he hopee to reduce it to 24 hours—a gain of 12 hours over the present mail and express time.

A New Orleans diepatch of the 17th instant states that a riot is apprehended at East Feliciana, where the negroes have assnmed the offensive, and are collecting and arming through the parish, for the enpposed purpose of capturing the town of Clarion. Great excitement prevaile throughont the parish.

The city of Geneva, Switzerland, was visited by a tornado on Tuesday morning last, which proved most disestrous in ite effects. Houses were unroofed, windows broken, and the marker gardens in the suburbs entirely destroyed.

Five soldiere, acting ae an escort to U. S. Mershel Dnsold, Stonewall Hunter and a colored man named Ben, were drowned recently while crossing the Yellowetone river (Montana) at the ferry, ceused by the rope breaking.

A Co-operative wine oeller ie to be started in the town of Sonoma this season. The old barracks building has been purchased and the cesks to hold 200,000 gallons will be provided for this year'e vintage.

Patent No. 2, to the Central Pacific railroad company, ae the eucceseor of the California and Oregon railroad company, for 332,528.66 acres of land, was filed for record in the Clerk's office last Monday.

The trial of Lee, in Beaver, Utah, for complicity in the Mountein Meadow massacre, is still in progress. The testimony bears hard againet the accused, and the Mormon priesthood

The failure of Duncan, Sherman & Co., hankers in New York, last Tuesday, almost created a penic in Wall street. Gold jumped in a few moments from 112⅝ to 116⅝.

The Central Pecific and Virginia and Truckee railroad compenies have agreed to transport all articles and animels for exhibition at the coming State fair free.

The eteamer *Eastport* was wrecked off Point Arena, on the morning of the 23d inet. A passenger, Mre. Armstrong, and her two children were lost.

Thirty cotton mills were closed at Oldham, England, yesterday, the operativee refusing to accept the masters' terms with regard to wages.

An accident occurred on the N. P. R. R. in Minnesota last Monday, by which four persons were killed and a number severely injured.

The Centennial Board of Finances annonnce thet an addition of $1,000,000 will be needed for building purposes this year.

A Madrid dispatch eays the losses by Carliste during the past three weeks, in killed, wounded and missing, have been 400 men.

Mrs. Stanton declines to be a candidate for Snperintendent of Public Instruction in San Lnis Obispo county.

The Internal Revenne Bureau has received informetion of the seizure of three more distilleries in Pekin, Ills.

Prof. Jenny had discovered encouraging prospects of gold among the Black Hills by last accounte.

A dastardly attempt was made to murder Mr. Joel Hewkins, of Hollister, on the night of the 20th inet.

A heavy rainfall in Nebraska and Iowa on Tuesday night will delay the harvest in thoee States.

The Union bank, of London, the largest joint banking firm in that oity, failed on Tuesdey.

Grain riots have occurred and a famine is threatened in several districts of Portugal.

The Carlists are rapidly giving in submission to the Spanieh Government.

Yellow fever ie raging at Pensecola, to an alarming extent.

A new bank has been organized in Santa Barbara.

Two more schoolhousee are to be erected in Los Angeles.

Mining and Scientific Press.—On the 3d inst. this paper, published by Dewey & Co., at 224 Sansome street, San Francisco, entered upon its thirty-first volume. It is, beyond a donht, the best journal published on the Pacific coast for the scientist, mechanic and miner, and should receive the most liberal support. It costs much money, to say nothing of patience and endurance, to publish an ordinary paper; but the amount required of all these to publish such a paper as the Press can hardly be realized by amateurs or those not having had any experience in the publishing and printing business.—[Panamint News, July 14th.

The Scientific Press—This valuable paper entered upon its thirty-first semi-annual volume on the 3d inst. For mechanics and miners, in fact for all classes of people, we know of no paper which contains more substantial reading matter than the Scientific Press. It is published in San Francisco, by Dewey & Co., at $4 per year. No person interested in mining or other scientific pursuits should be without it, as it is weekly filled with invaluable scientific literature.—[Amador Dispatch.

Patents & Inventions.

A Weekly List of U. S. Patents Issued to Pacific Coast Inventors.

From Official Reports for the Mining and Scientific Press, Dewey & Co., Publishers and U. S. and Foreign Patent Agents.]

By Special Diepatch, Dated Washington, D. C., July 27th, 1875.

For Week Ending July 13th, 1875.*

Newspaper File.—Franklin B. Aldereon, San Jose, Cal.

Gong Attachment for Engine Houses.—Robert Bragg, S. F., Cal.

Floor Clamp.—Elijah Hickmen, Red Bluff, Cal.

Ore Concentrator.—Geo. W. White, S. F., Cel.

Reciprocating Churn.—Alfred Goodnongh and Thomas T. Drennan, Portland, Ogn.

*The patents are not ready for delivery by the Patent Office nntil some 14 days after the date of issue.

Note.—Copies of U. S. and Foreign Patents furnished by Dewey & Co., in the shortest time possible (by telegraph or otherwise) at the lowest rates. All patent business for Pacific coast inventors transacted with perfect security and in the shortest possible time.

BLOOD DISEASES.

The blood heing the source from which onr systems are bnilt up and from which we derive our mentel as well ae physical capabilities, how important that it ehonld be kept pnre. If it contains vile festering poisons all organic functione are weakened thereby. Setthng upon important organs, as the lungs, liver or kidueys, the effect ie moet disastrous. Hence it behooves every one to keep their blood in a perfectly healthy condition and more eepecially does thie apply at thie perticnlar eason of the year than at any other. No matter what the exciting canse may be, the real ceuse of a large proportion of all diseases is bad blood. Now Dr. Pierce does not wisb to place his Golden Medicel Discovery in the cetalogue of quack patent nostrums by recommending it to cnre every disease, nor does he so recommend it, on the contrary there are hundreds of diseases that he acknowledge e it will not cure; but what he does claim is this, that there is but one form of *blood* disease that it will not cure, and that disease is cencer. He does not recommend his Discovery for thet diseese, yet he knows it to be the most searching blood cleanser yet discovered, and that it will free the blood and eyetem of all other known blood poisons, he they animal, vegetable or mineral. The Golden Discovery is *warranted* hy him to cure the worst forms of Skin Dieeases, ae all forms of Blotches, Pimples and Eruptions, also all Glandular Swellings, and the woret form of Scrofulous and Ulcerated Sores of Neck, Legs or other parts, and all Scrofnlous Diseases, of the Bones, as White Swellings, Fever Sores, Hip Joint and Spinel Dieeases, all of which belong to Scrofulous diseeses.

CONFIRMED-HIP JOINT DISEASE CURED

W. Grove Station, Ie., July 14, 1872.

Dr. Pierce, Buffalo, N. Y.:

Dear Sir—My wife first became lame nine yeare ago. Swellinge would appear and disappear on her hip, aud ehe was gradually hecoming reduced, and her whole eyetem rotten with disease. In 1871, a swelling broke on her hip discharging lerge quantitiee, and since that time there are several openinge. Heve had five doctors at an expense of $125, who say nothing will do any good hut a surgical operation.

July 16, 1873, he writes thus: My wife has certainly received a great benefit from the nse of your Discovery, for she was not able to get off the bed and wae not expected to live a week when she commenced using it, a year ago. She has heen doing most of her work for about six monthe. Has used twenty bottles and is still using it. Her recovery ie considered as almost a miracle, and we attribute it all to the use of your valuable medicine. I can cheerfully recommend it as a blood purifier and strength restorer. J. M. ROBINSON.

Discovery is sold hy druggiste.—*Com.*

Mining Works For Sale.

—THE—

U. S. GENERAL SMELTING & MINING CO.

(LIMITED),

Spanieh Bar, Colorado Territory,

Offer their entire estate for sale at AUOTION, SATURDAY, AUG. 28th, A. D., 1875, betweeen

10 o'clock A. M. and

4 o'clock P. M.

We would call especial attention to this sale. For particulars, address HENRY WILLIAMS, as above.

University of California,

BERKELEY, near Oakland.

COLLEGES OF AGRICULTURE,

CHEMISTRY, MECHANICS,

MINING, ENGINEERING

and LETTERS.

Examinations for Admission, August 11th and 12th, at 10 o'clock A. M.

Tuition free. Circulars sent on request.

hp-td

LEHIGH

Emery Wheels

Are the best. Try them.

Emery Wheels under a new patent. Send for circular to TREADWELL & CO.

GAS AND STEAM PIPE

IN LOTS TO SUIT.

TREADWELL & CO., San Francieco.

STEAM ENGINES AND BOILERS.

From 3 to 75-horse power. Shafting, Pnlleys, Hoist Gears Quartz Mills, Water Tanks, Spanish Arastras, Pnmps and Pipes, Hephurn and Belden Pans, and all kinds of Machinery for sale at lowest prices by

THOS. P. H. WHITELAW,
266 Brannan street, S. F

Highest cash prices paid for all kinds of Machinery.

A STURTEVANT BLOWER

For Sale Cheap.

No. 2—In good order, with or without helting, shaft, pulleys and galvanized air pipe. Enquire at the BREWERY, corners of Fourteenth and Folsom streets, San Francisco.

Woodward's Gardens embraces an Aquarium, Museum, Art Gallery, Conservatories, Tropical Houses, Menagerie, Seal Ponds and Skating Rink.

No Agents are authorized to receive subscriptions for this paper at less than our advertised rates.

IMPORTANT

—TO—

MINE OWNERS.

LATEST INVENTION.

New Method of Working Rebellious Ores Without the Aid of Quicksilver.

R. J. KOHLER REDUCTION AND REFINING WORKS CO.

Incorporated April 27, 1874, with a Capital of $5,000,000, in 50,000 Shares of $100 Each.

ESTABLISHED FOR THE PURPOSE OF SMELTING ORES IN AN IMPROVED MANNER, and for the reduction and refining rebellions ores; also, by a newly patented process, producing the precious metals without loss or the use of quicksilver. These Improvements have been fairly tested, and proved successful.

Location of the Worke,

At Damon's Landing, six miles east of Oakland, in Alameda county.

The Company's Property

Consists of just four acres of land, bounded on the east by the C. P. R. R. track (with a switch of 500 feet in length and telegraph at the works), on the west by San Leandro Bay, where the company's wharf can receive all water freights from foreign places.

Buildings.

A frame building, 60x100, well built, divided into business, assayer's office and laboratory, leaving ample room for the manufacture of concentrators.

A one-story brick building, 26x60, with an artesian well in it capable of throwing 45 gallons a minute, a 60-horse power engine and suitable boiler in place, with all necessary appurtenances.

Brickwork.

So far, about 600,000 bricks have been laid on the works, including with the above named brick buildings a chimney, 25 feet square at the base, and roasting, smelting and refining furnaces,

For the Concentration of Ores.

As far as practicable, particularly sulphurets, they will be concentrated at the mine before shipment to the company's works, thereby greatly reducing the cost of sacking and freight; thus enhancing the production of bullion at the works. Among the inventions belonging to the company is a portable and inexpensive concentrator of galvanized iron, capable of being worked by one-horse power and attended by a boy. By means of this concentrator in many cases ten tons of ore can be diminished to one.

Say that five tons of ore yield one ton concentrated, four-fifths of the freight is saved, and ore worth $200 per ton becomes worth.....$1,000

$150 per ton, worth	750
$100 per ton, worth	500
$50 per ton, worth	250

Profits.

It would be difficult to estimate the enormous profits which it is likely this company will realize when the works are complete and in full operation.

Numerous offers have been made to sell ores to the company, which assay very high, that cannot be worked by any process hitherto in use, but can by this company's new process. It follows the company can make their own price on such ores, taking their portable concentrator to the mine and reducing the ores previous to the shipment to the company's works. From one locality, there is a mountain of rebellious ore; the offer has been made to transfer at the rate of 500 tons per day, if required, and to sell the ore, assaying at from one to three hundred dollars per ton, at the rate of 20 per cent. of assay value to the company. The freight on the ore from this locality to the company's works will not exceed $20 per ton.

Capacity of the Works.

Ore can be reduced at the rate of 50 tons per diem until more furnaces are constructed. Taking 50 tons as a basis, at only $33⅓ profit, for 30 days (one month), would give the company $50,000.

All ores can be assayed at the works; orders taken at the office.

As an evidence of the superiority of the Kohler process of reduction over all others, it may be stated that before the incorporation of this company a quantity of micspickle ore, the most rebellious ore to be found in California, was taken and worked by said process, in the presence of a well known metallurgist, and made to yield at the rate of $52.20 per ton.

In many instances the result of working gold-bearing sulphurets exceeds the rate of the most carefully made assays.

Money Expended.

Up to the present time, about $45,000 has been laid out, and only those interested can tell the struggle the inventor has passed victoriously through, amid the cold shoulder from nearly every one. The present state of the works has only been reached by the sacrifice of stock to a large amount; some shares disposed of at par (originally), and others at lower figures, as necessity required. The principal holders of the stock donated about ten thousand shares to fully complete the works, some three thousand of which have been sold at various prices, and the remainder, when sold, will furnish ample funds to enable everything to be in full working order by September 1st. In fact, the roasting and smelting could he commenced by the middle of August.

Looking at these works in a mere hard business view, even as an ordinary smelting R. and R. W., the investment would be a secure one. Costing in all, say some $60,000, when well known smelting works in San Francisco have made a large fortune on the old plan, the various new Kohler inventions give a wide margin for profits.

The fact of reducing rebellions ores in our own State without shipping the same to England, or having the alternative of abandoning the mine, is a strong point; and the Kohler concentrator can be obtained by mine owners at about $3 000 each, in place of paying from $30,000 to $50,000, as they have been doing heretofore.

A few thousand shares remain for working purposes, and can he obtained at the office, southwest corner of Pine and Sansome streets.

There is not the slightest possibility of any assessment ever being made on this stock.

(Signed) H. P. EAYRS,
Secretary.

MACHINE DEPOT,

NEYLAN & YOUNG, - - Proprietors.

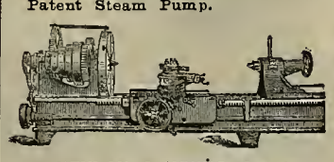
CAMERON'S PATENT STEAM PUMP,

THE SIMPLEST, CHEAPEST, AND BEST PUMP IN USE, FOR ALL KINDS OF WORK.

CAMERON'S
Patent Steam Pump.

PICKERING'S PATENT
Engine Regulator, Stop Motion and Speed Adjuster,

HAS NO EQUAL FOR ALL KINDS OF ENGINES.
Every Governor Warranted.



New Haven Manufacturing Co's
MACHINISTS' TOOLS,

FROM ENTIRELY NEW AND EXTRA HEAVY PATTERNS.

Those Tools are not surpassed by any other makers.

Send for Price List.

Patent Engine Regulator.

NEYLAN & YOUNG, Agents, - - - 18 and 20 Spear St., San Francisco.

THE NEVADA

QUARTZ MINING PROPERTY FOR SALE,

With a new 15-stamp mill, now running. Has its own water power, with houses, shops, etc. Government title; joins the Providence mine, on Deer Creek, Nevada City, Cal. For sale or to hond.

Address, I. S VAN WINKLE,
413 Market street, San Francisco.

Banking.

The Merchants' Exchange Bank
OF SAN FRANCISCO.

Capital, Five Million Dollars.

C. W. KELLOGG.....President.
H. F. HASTINGS.....Manager.
R. N. VAN BRUNT.....Cashier.

BANKING HOUSE,
No. 423 California street San Francisco.

KOUNTZE BROTHERS, BANKERS,
12 WALL STREET, NEW YORK,

Allow interest at the rate of Four per cent. upon daily balances of Gold and Currency.
Receive consignments of Gold, Silver and Lead Bullion, and make Cash advances thereon.
Invite Correspondence from Bankers, Mining Companies, Merchants and Smelting Works.

French Savings and Loan Society,

411 Bush street, above Kearny..... SAN FRANCISCO

4v27tf G. MAHE, Director.

Business Directory.

GILES H. GRAY. JAMES M. HAVEN.

GRAY & HAVEN,
ATTORNEYS AND COUNSELORS AT LAW

to Building of Pacific Insurance Co., N. E. corner California and Leidesdorff streets,
SAN FRANCISCO.

JOHN ROACH, Optician,
429 Montgomery Street,
. W. corner Sacramento.
Sm v. Instruments made, repaired and adjusted
22v17-3m

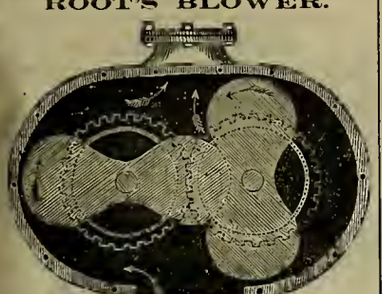
WM. BARTLING. HENRY KIMBALL.

BARTLING & KIMBALL,
BOOKBINDERS,

Paper Rulers and Blank Book Manufacturers,
505 Clay street, (southwest cor. Sansome),
5v12-3m SAN FRANCISCO

BENJAMIN MORGAN,
Attorney at Law and Counselor in Patent Cases,
Office, 715 Clay Street, S. F.
Refers to Dewey & Co., Patent Agents; Judge S. Heydenfeldt or H. H. Haight. 5v28-3m

ROOT'S BLOWER.



JOHN CAINE, General Agent and Manufacturer of Root's Patent Force Blast Blowers and Portable Forges for the Pacific States and Territories.
Steam Engines, Steamboat, Mining and Agricultural Machinery built to order. Job work of all kinds.
GLOBE IRON WORKS, Stockton, Cal.

Diamond Drill Co.

The undersigned, owners of LESCHOT'S PATENT for DIAMOND-POINTED DRILLS, now brought to the highest state of perfection, are prepared to fill orders for the IMPROVED PROSPECTING and TUNNELING DRILLS, with or without power, at short notice, and at reduced prices. Abundant testimony furnished of the great economy and successful working of numerous machines in operation in the quartz and gravel mines on this coast. Circulars forwarded, and full information given upon application.

A. J. SEVERANCE & CO.
Office, No. 315 California street, Rooms 1 and 2.
24v26-tf

DIVIDEND NOTICE.

California Savings and Loan Society,
512 California Street.. The Directors have declared a Dividend of Nine and Six-tenths (9 5-10) per cent. per annum on Term Deposits, and Eight (8) per cent. per annum on Ordinary Deposits, for the half year ending on the 30th of June, 1875, free from Federal Tax, and payable on and after Tuesday, 6th of July, 1875. By order. D. B. OHISHOLM, Secretary.

DIVIDEND NOTICE.

San Francisco Savings Union—532
California Street, corner Webb. For the Half Year ending with June 30th, 1875, a Dividend has been declared at the rate of Nine (9) per cent. per annum on Term Deposits, and Seven and One-half (7½) per cent. on Ordinary Deposits, free of Federal Tax, payable on and after July 12th, 1875. By order.
LOVELL WHITE, Cashier.

Thursday Noon our last forms go to press. Communications should be received a week in advance and advertisements as early in the week as possible.

Metallurgy and Ores.

JOHN TAYLOR & CO.,
IMPORTERS OF AND DEALERS IN

ASSAYERS' MATERIALS
Chemical Apparatus and Chemicals,
Druggists Glassware and Sundries.
PHOTOGRAPHIC GOODS, ETC.,
512 and 514 Washington street, SAN FRANCISCO

We would call the special attention of Assayers, Chemists, Mining Companies, Milling Companies Prospectors, etc., to our large and well adapted stock

ASSAYERS' MATERIALS
—AND—
Chemical Apparatus,

Having been engaged in furnishing these supplies since the first discovery of mines on the Pacific Coast.
☞ Our Gold and Silver Tables, showing the value per ounce Troy at different degrees of fineness, and valuable tables for computation of assays in Grains Grammes, will be sent free upon application.
7v25-tf JOHN TAYLOR & CO.

Nevada Metallurgical Works,
21 First street.....San Francisco.

Ores worked by any process.
Ores sampled.
Assaying in all its branches.
Analysis of Ores, Minerals, Waters, etc.
Plans furnished for the most suitable process for working Ores.
Special attention paid to the Mining and Metallurgy of Quicksilver.

E. HUHN,
C. A. LUCKHARDT,
Mining Engineers and Metallurgists.

RODGERS, MEYER & CO.,
COMMISSION MERCHANTS

ADVANCES MADE
On all kinds of Ores, and particular attention PAID TO
CONSIGNMENTS OF GOODS.
4v16-3m

Instructions in Assaying,
Chemical Analysis, Determination of Minerals, and use of the Blow-pipe.
HENRY G. HANKS
Will receive a few pupils at his new laboratory, 617 Montgomery street, up-stairs. TERMS MODERATE

LEOPOLD KUH,
(Formerly of the U. S. Branch Mint, S. F.)
Assayer and Metallurgical CHEMIST,
No. 611 Commercial Street,
(Opposite the U. S. Branch Mint)
SAN FRANCISCO CAL. 7v21-3m

Mining and Other Companies.

Bandereta Mill and Mining Company—

Location of principal place of business, San Francisco, Cal. Location of works, Coulterville Mining District, Mariposa County, Cal.

NOTICE.—There are delinquent upon the following described stock, on account of assessment, No. 1, levied on the 17th day of June, 1875, the several amounts set opposite the names of the respective shareholders, as follows:

Names.	No. Certificate.	No. Shares.	Amount.
Apps, Wm	11	100	$ 25 00
Adam, Thos	43	100	25 00
Bolander, Catherine	22	100	25 00
Delaney, E J	9	500	125 00
Donovan, M J	13	100	25 00
Fitzgerald, Lawrence	44	100	25 00
Fitzgerald, Lawrence	65	50	12 50
Kelly, Wm H	31	50	12 50
Mitchell, J C	28	100	25 00
McGill, Jas	21	100	25 00
Reese, Margaret	29	25	5 25
Ray, A P	30	50	12 50
Taylor, D W	41	1000	250 00
Taylor, D W	55	1000	250 00
Taylor, D W	56	500	125 00
Wynants, Peter	3	1000	250 00
Wynants, Peter	51	1000	250 00
Wynants, Peter	52	500	125 00
Welsh, Thos J	12	100	25 00
White, D H	25	100	25 00

And in accordance with law, and an order of the Board of Directors, made on the 17th day of June, 1875, so many shares of each parcel of said stock as may be necessary, will be sold at public auction, at the office of the company, room 16, 408 California street, San Francisco, Cal., on the 2d day of August, 1875, at the hour of 2 o'clock P. M., of said day, to pay said delinquent assessment thereon, together with costs of advertising and expenses of sale.

J. W. TRIPP, Secretary.
Office, Room 16, No. 408 California street, San Francisco, Cal.

Eagle Mine and Mill Company—Location

of works, Lander county, State of Nevada. Location of principal place of business, San Francisco, California.

Notice is hereby given, that at a meeting of the Directors, held on the tenth (10th) day of July, 1875, an assessment, No. 1, of fifty (50) cents per share was levied upon the capital stock of the corporation, payable immediately, in United States gold coin, to the Secretary, at the office of the company, room 8, No. 533 Kearny street, San Francisco, California.

Any stock upon which this assessment shall remain unpaid on Monday, the sixteenth day of August, 1875, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on the 5th day of September, 1875, to pay the delinquent assessment, together with costs of advertising and expenses of sale.

H. L. BYRNE, Secretary.
Office—Room No 8, 533 Kearny street, San Francisco, California.

Electric Mining Company—Location of

principal place of business, San Francisco, State of California.

NOTICE.—There are delinquent upon the following described stock, on account of assessment levied on the 22d day of June, 1875, the several amounts set opposite the names of the respective shareholders, as follows:

Names.	No. Certificate.	No. Shares.	Amount.
J Mullen	362	425	$21 25
G W Haskell	375	50	2 50
G W Terrell	51	500	25 00
A Briggs	06	1334	66 70
A Briggs	220	200	10 00
T B Wingard, Trustee	357	100	5 00
A H Putnam	351	78	3 90
E Wallet	433	730	36 50
E Wallet	303	038	31 90
F W Lawlor	377	200	10 00
F G Northam	427	2775	138 75
R Smith	420	1000	50 00
W M Kerr	428	202	10 10

And in accordance with law, and an order of the Board of Directors, made on the 22d day of June, 1875, so many shares of each parcel of said stock as may be necessary, will be sold at public auction at the salesroom of Maurice Dore & Co., No. 325 Pine street, San Francisco, on the 16th day of August, 1875, at the hour of 12 o'clock M. of said day, to pay said delinquent assessment thereon, together with costs of advertising and expenses of sale. A. B PAUL, Secretary.

Office,—No. 318 California street, San Francisco. Room No. 13.

Gold Mountain Mining Company—Principal

place of business, San Francisco, Cal. Location of works, Lower Rancheria, Amador County, Cal.

Notice is hereby given, that at a meeting of the Board of Directors, held on the 1st day of July, 1875, an assessment (No. 4) of twenty-five cents per share was levied upon the capital stock of the corporation, payable immediately, in United States gold and silver coin, to the Secretary, at the office, No. 115 Leidesdorff street, San Francisco, Cal.

Any stock upon which this assessment shall remain unpaid on the 7th day of August, 1875, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Monday, the 23d day of August, 1875, to pay the delinquent assessment, together with costs of advertising and expenses of sale.

W. A. KNAPP, Secretary.
Office—115 Leidesdorff street, San Francisco, Cal.

Morning Star Gold and Silver Mining

Company. Location of principal place of business, San Francisco, California. Location of works, Great Mogul District, Alpine County, California.

NOTICE—There are delinquent upon the following described stock, on account of assessment, No. 25, levied on the 21st day of June, 1875, the several amounts set opposite the names of the respective shareholders, as follows:

Names.	No. Certificate.	No. Shares.	Amount.
W F Bowen	144	10	$ 10 00
Mary E Culver, balance, Cert. No. 521, 40 shares sold, for assessment No. 24	988	1	1 00
S S Dunmire	908	3½	3 50
O R Fossen	399	5	5 00
Alameda Harvey, balance, Cert. No. 939, 20 shares sold, for assessment No. 24	990	1	1 00
William Kelly, balance, Cert. 657, 15 shares sold, for assessment No. 24	992	1	1 00
Wm Hyndmann	505	20	20 00
Phillip Meagher	277	10	10 00
Phillip Meagher	393	7	7 00
Phillip Meagher	702	20	20 00
Phillip Meagher	703	13	13 00
Phillip Meagher	705	10	10 00
Fred'k Mansell	755	10	10 00
H A Mayhew	224	10	10 00
H A Mayhew	225	10	10 00
H A Mayhew	226	5	5 00
J Penniman	146	5	5 00
J Penniman	912	2	2 00
J Penniman	948	4	4 00
A H Post	845	10	10 00
Margaret Palmer	728	15	15 00
Wm Robinson, Jr	884	11	11 00
H M Shute	985	115	115 00
Joseph Soper	907	20	20 00
Mrs. A Swartz, balance, Cert. 151, 10 shares sold, for assessment No. 24	994	1	1 00
Louis Vesaria	942	30	30 00
Louis Vesaria	958	23	23 00
David Wally	986	38	38 00
George Wegstern, balance, Cert. 749, 10 shares sold, for assessment No. 24	996	1	1 00
Herman Wanken	647	5	5 00
Herman Wanken	591	5	5 00
Herman Wanken	718	1	1 00
Herman Wanken	748	5	5 00

And in accordance with law, and an order of the Board of Directors, made on the 21st day of June, 1875, so many shares of each parcel of such stock as may be necessary will be sold at public anction, at the office of the company, room 1, No. 402 Montgomery street. San Francisco, on Saturday, the 14th day of August, 1875, at the hour of 1 o'clock P. M., of such day, to pay delinquent assessments thereon, together with costs of advertising and expenses of the sale.

O. H. BOGART, Secretary.
Office, Room 1, No. 402 Montgomery street, San Francisco, California.

Orleans Mining Company—Location of

principal place of business, San Francisco, Cal. Location of works, Grass Valley Mining District, Grass Valley, Nevada County, Cal.

Notice is hereby given, that at a meeting of the Board of Trustees of said company, held on the 23d day of July, 1875, an assessment, No. 6, of one dollar per share was levied upon the capital stock of said company, payable on the 23d day of July, 1875, in gold coin of the United States of America, to the Secretary, at the office of the company, room 8, No. 315 California street, in the city of San Francisco.

Any stock upon which said assessment shall remain unpaid on the 23th day of August, 1875, will be advertised on that day as delinquent, and unless payment shall be made before, will be sold on the 13th day of September, 1875, to pay the delinquent assesement, together with costs of advertising and expenses of sale.

GEO. P. THURSTON, Secretary.
Office, room 8, No. 315 California street, San Francisco, Cal.

Silver Sprout Mining Company—Principal

place of business, San Francisco, State of California. Location of works, Kearsarge Mining District, Inyo County, California.

Notice is hereby given, that at a meeting of the Board of Directors, held on the third day of July, 1875, an assessment of five cents per share was levied upon the capital stock of the corporation, payable immediately in United States gold coin, to the Secretary at the office of the company in San Francisco.

Any stock upon which this assessment shall remain unpaid on the tenth day of August, 1875, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Wednesday, the 1st (first) day of September, 1875, to pay the delinquent assessment, together with costs of advertising and expenses of sale.

T. B WINGARD, Secretary.
Office—No. 318 California street, San Francisco, (Room No. 13.)

Tolman and Miller Mill and Mining Company—

Location of principal place of business, San Francisco, California. Location of works, West Point, Calaveras County, California.

Notice is hereby given, that at a meeting of the Board of Directors, held on the 14th day of July, 1875, an assessment, No. 2, of thirty (30) cents per share was levied upon the capital stock of the corporation, payable immediately, in United States gold coin, to the Secretary, at the office of the company, room 1, No. 402 Montgomery street, San Francisco, California.

Any stock upon which this assessment shall remain unpaid on the 16th day of August, 1875, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Monday, the 6th day of September, 1875, to pay the delinquent assessment, together with costs of advertising and expenses of sale. By order of the Board of Directors.

O. H. ROGART, Secretary.
Office, room 1, No. 402 Montgomery street, San Francisco California.

Umpire Tunnel and Mining Company—

Location of principal place of business, San Francisco, Cal.

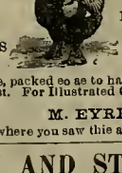
NOTICE.—There are delinquent upon the following described stock, on account of assessment levied on the 20th day of May, 1875, the several amounts set opposite the names of the respective shareholders as follows:

Names.	No. Certificate.	No. Shares.	Amount.
Beal, W A, Trustee	213	100	$5 00
Beal, W A, Trustee	262	30	1 50
Beal, W A, Trustee	265	10	50
Beal, W A, Trustee	266	11	55
Beal, W A, Trustee	277	10	50
Beal, W A, Trustee	278	10	50
Beal, W A, Trustee	279	10	50
Beal, W A, Trustee	300	100	5 00
Beal, W A	201	50	2 50
Bromley, T A	222	100	5 00
Bromley, T A	223	100	5 00
Bromley, T A	224	100	5 00
Buffington, J M	321	350	17 50
Butler, Wm	196	400	20 00
Butler, Wm	197	800	40 00
Butler, Wm	198	1300	65 00
Cochran, J T	301	100	5 00
Davis, W W	22	500	25 00
Davis, W W	23	50	2 50
Davis, W W	24	50	2 50
Davis, W W	25	50	2 50
Davis, W W	26	50	2 50
Davis, W W	155	1500	75 00
Davis, W W	156	100	5 00
Davis, W W	157	100	5 00
Davis, W W	158	100	5 00
Davis, W W	159	100	5 00
Davis, W W	312	100	5 00
Davis, W W, Trustee	302	1000	50 00
Davis, W W, Trustee	304	500	25 00
Davis, W W, Trustee	305	500	25 00
Davis, W W, Trustee	306	710	35 50
Dunseth, J D	201	130	5 50
Eakins, P A	4	10	50
Eakins, P A, Trustee	288	40	2 00
Eakins, P A, Trustee	296	50	2 50
Edgerly, Samuel	50	20	1 00
Edgerly, Samuel	59	20	1 00
Edgerly, Samuel	55	20	1 00
Edgerly, Samuel	68	20	1 00
Edgerly, Samuel	75	10	50
Edgerly, Samuel	82	10	50
Edgerly, Samuel	91	50	2 50
Edgerly, Samuel	237	100	5 00
Edgerly, Samuel	238	100	5 00
Edgerly, Samuel	239	100	5 00
Edgerly, Samuel	240	100	5 00
Edgerly, Samuel	241	100	5 00
Edgerly, Samuel	255	100	5 00
Edgerly, Samuel	256	100	5 00
Edgerly, Samuel, Trustee	281	50	2 50
Finch, J W	226	100	5 00
Finch, J W	227	100	5 00
Finch, J W	228	100	5 00
Finch, J W	229	100	5 00
Finch, J W	230	100	5 00
Finch, J W	231	100	5 00
Finch, J W	232	100	5 00
Finch, J W	233	100	5 00
Finch, J W	234	100	5 00
Finch, J W	235	100	5 00
Flood, P L	327	40	2 00
Gains, H A	257	40	2 00
Lamar, J B	324	1000	50 00
McPhetridge, E	284	250	12 50
Moodie, G W	207	300	15 00
Newman, G W	335	186	9 30
Smith, J P	308	100	5 00
Smith, J P	309	100	5 00
Smith, J P	310	100	5 00
Smith, J P	311	100	5 00
Smith, J P	325	500	25 00
Smith, J P	326	500	25 00
Squier, David	208	60	3 00
Van Honten, J, Trustee	138	100	5 00
Van Honten, J, Trustee	190	20	1 00

And in accordance with law, and an order of the Board of Directors, made on the 20th day of May, 1875, so many shares of each parcel of said stock as may be necessary, will be sold at public auction, at the office of the company, room 1, No. 531 California street, San Francisco, Cal., on the 2d day of August, 1875, at the hour of one o'clock P. M., of said day, to pay said delinquent assessment thereon, together with costs of advertising and expenses of sale.

WM. SMALL, Secretary.
Office—Room 1, No. 531 California street, San Francisco, California.

Bronze Turkeys
Gobblers, 30 to 40 pounds. Hens 15 to 20 pounds.



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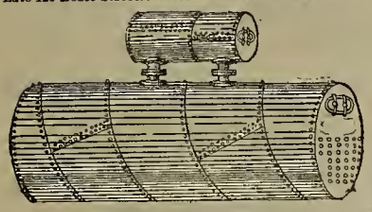

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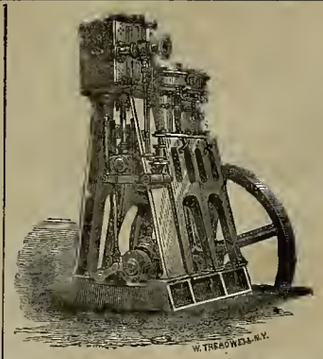

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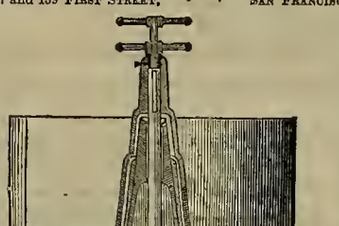

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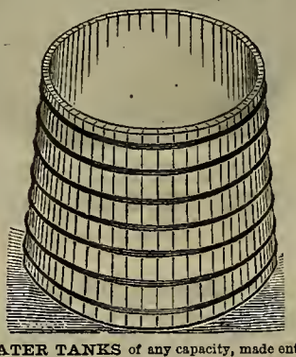

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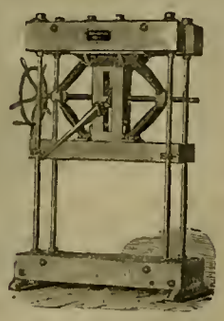

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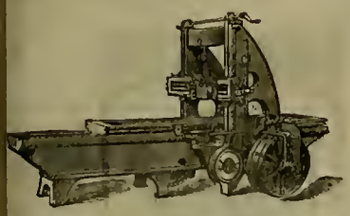

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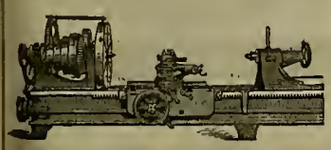

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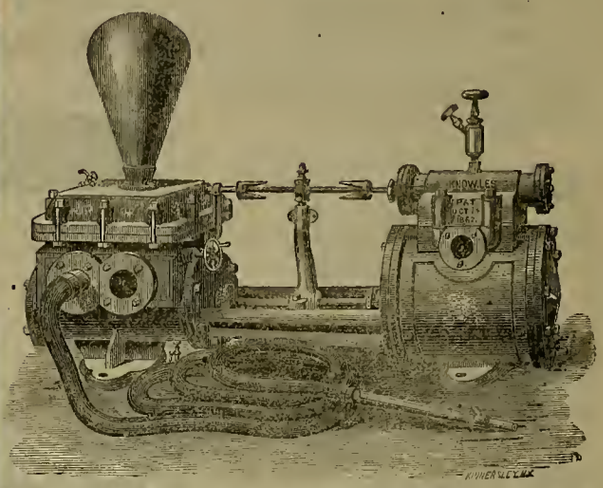

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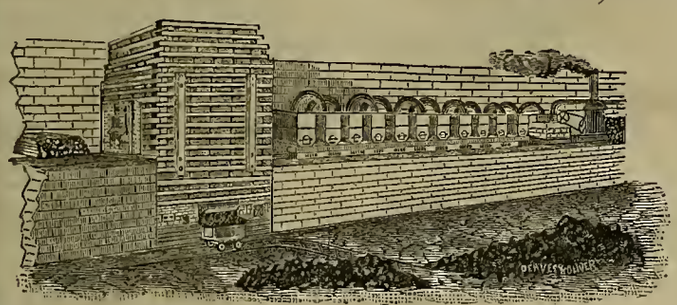

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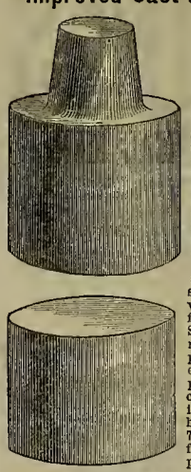

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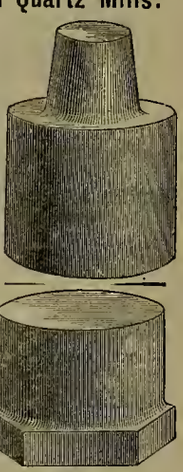

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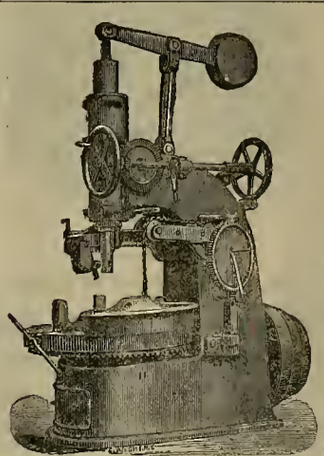

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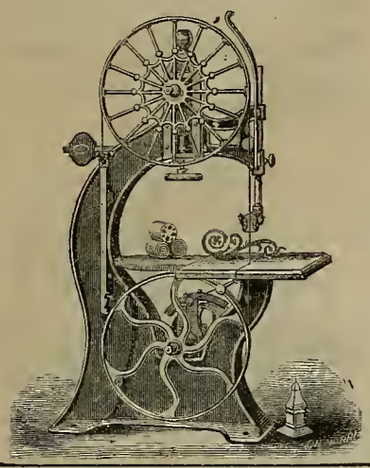

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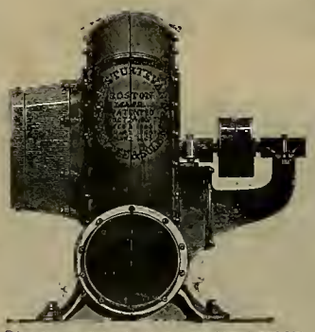

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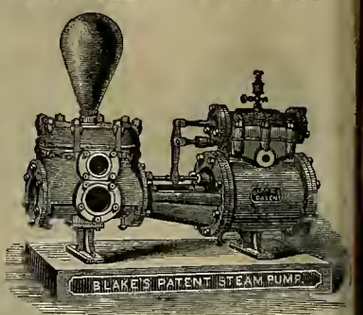

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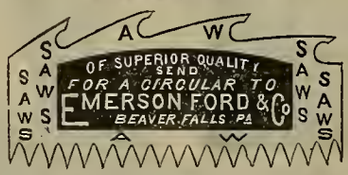

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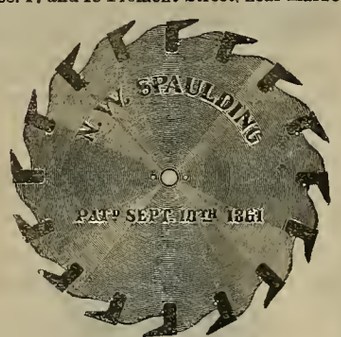

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SAN FRANCISCO, SATURDAY, AUGUST 7, 1875.

VOLUME XXX Number 6.

Process and Quicksilver Furnaces Used at Idria.

Through the courtesy of Mr. J. B. Randol, manager of the New Almaden mine, we are enabled to lay before our readers, engravings of the muffle furnaces used at the quicksilver mines in Idria, Austria, from drawings prepared by Adolfo Exele, imperial mine manager. The attempts formerly made by Mr. Glovazky to burn the soot in muffle ovens, were taken up again in 1869, and entrusted to the care of Mr. Toman, assayer. Mr. Toman succeeded in working the soot advantageously in muffle ovens, combined with a simple condenser, by mixing the same with lime and clay, and running it into moulds. Attempts made also with pulverized ore also gave good results, in consequence of which, six muffle furnaces were erected under one building at Idria, in 1870.

These new furnaces combined many essential improvements upon the original experimental furnace, the working of the latter causing sickness among the laborers, while now, hardly any sickness caused by mercurial vapors exists among the muffle workmen.

Each furnace contains two muffles, which are five feet six inches long, twenty-four inches wide, and ten inches high; and each two furnaces have a common fire place, so that the six muffle furnaces actually form three double furnaces with twelve muffles.

The accompanying engravings on this page and page 89, representing these furnaces are carefully drawn to a scale, so that similar furnaces could be made from these drawings if desired. Figure 1 is an elevation of and vertical cross section through the muffles. Figure 2 is a horizontal section through the muffles, and a plan of the condensing pipes. Figure 3 is a vertical section and elevation of the condensing pipes. Figure 4 is a vertical longitudinal section of the furnaces. Figure 5 is a general plan of the arrangement.

The details are as follows: *a*, is a muffle of cast iron, one inch thick, to be closed with a cast iron cover, properly lined; *b*, is the cover; *c*, anchors; *d*, wedges fastened to the muffle and luted with mortar; *e*, condensing pipes; *f*, water boxes; *h*, gates or faucets; *i*, water circulation pipe; *k*, water pipe for outflow; *l*, gutter for same; *m*, sand filter, to collect scattered particles of soot and quicksilver; *n*, outside gutter; *o*, cleaner fastened to a pole; *p*, stuffing box with rubber packing; *q*, collecting box with cover and lock, filled with water to receive the products of condensation; *r*, pipe leading into chimney to ventilate collecting box; *s*, pipe to run off quicksilver; *t*, vessel with cover and lock to receive the quicksilver; *u*, pipe to lead off gas, conducted under a cloak, and not in direct communication with the chimney, as a strong draft would carry off the mercurial vapors; inside the cloak is a small opening which leads to the chimney; *v*, are the grate bars; *w*, fire door; *x*, ash pit; *y*, fire flues; *z*, register; *a'*, cleaning holes; *b'*, chimney; *c'*, smoke cloak; *d'*, tin protecting sheet; *e'*, chamber to collect flying particles; *f'*, compensating weights; *g'*, discharging box; *h'*, channel to discharge refuse; *i'*, car, which is drawn out by pulleys, so that workmen need not enter the channel.

The crushed ore, averaging ten per cent., is mixed with fifteen per cent. of lime, (the lime being burned and slacked to a powder) then mixed with water and made into bricks nine inches long, four and a half wide and one inch thick. One cental of ore gives about thirty-eight or forty bricks, which are roasted with a moderate red glow heat for four hours. In charging, a protecting tin sheet is placed between the discharging box and the cloak, so that the dust and smoke will not annoy the laborers, but is drawn off immediately into the collecting chamber *e*. There is a pulley attached to the protecting sheet so as to allow it to be easily manipulated.

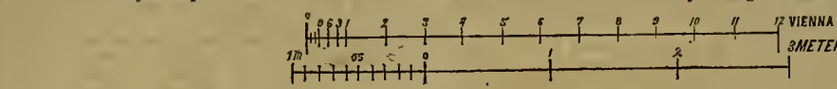
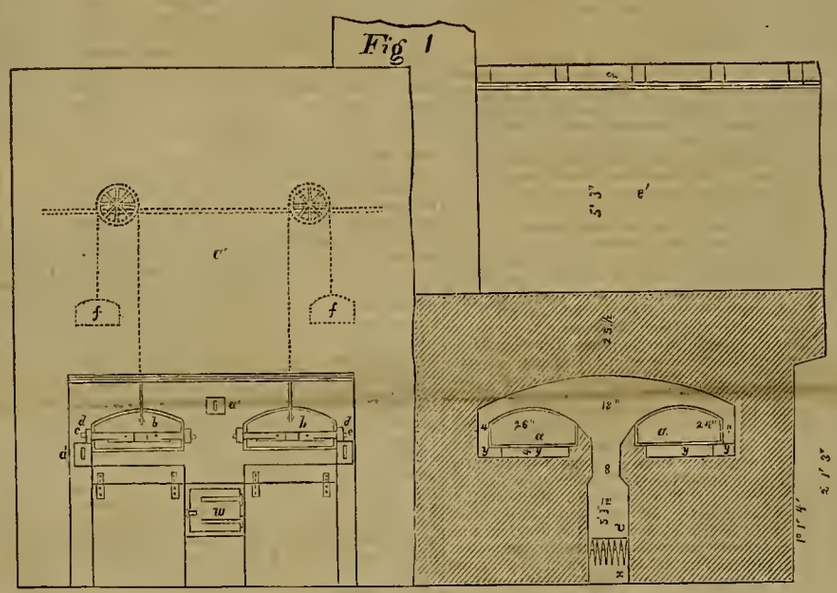


Fig 1



ELEVATION. CROSS-SECTION.

Elevation of, and Vertical Cross-Section Through the Muffles.

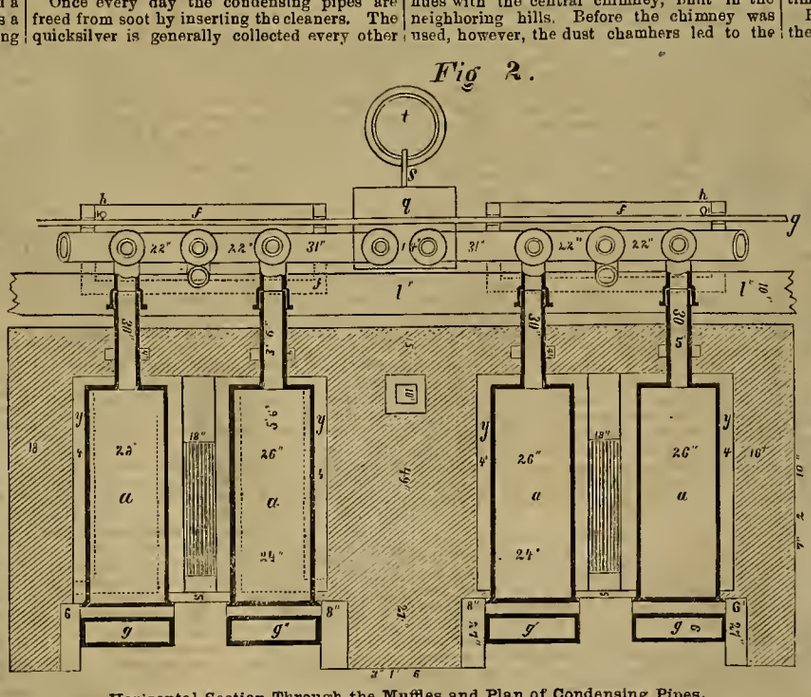
Once every day the condensing pipes are freed from soot by inserting the cleaners. The quicksilver is generally collected every other day, yielding from twenty to twenty-four hundred weight, so that the daily product is from ten to twelve hundred weight.

Once a week the soot is taken from the collecting box and the quicksilver freed in a press, generally giving from ten to twelve hundred weight. The residue amounting to four hundred weight is dried and returned to the muffles.

Since the year 1872, the dust-collecting chambers have been connected by underground flues with the central chimney, built in the neighboring hills. Before the chimney was used, however, the dust chambers led to the open air, in connection with other arrangements now out of use, so as to prevent loss of quicksilver as much as possible and save the laborers' health. Before the opening of each muffle the connection with the pipe for leading off gas was severed by means of a regulating knob, *k'*, and connection made with a wooden channel, *l'*, leading along the furnaces, and emptying into two coke filters. The air was pumped out from these, so that on opening the muffle a draft was established through the same.

In these six muffle furnaces, during seven or eight months' operations, some 1,500 tons of ore are reduced, yielding an average of from five to nine per cent.

Fig 2.



Horizontal Section Through the Muffles and Plan of Condensing Pipes.

MUFFLE FURNACES AT THE QUICKSILVER MINES IN IDRIA, AUSTRIA.

The Cost of the Late Strikes and Their Lessons.

It is estimated that the losses incurred by the recent Pennsylvania strikes reach fully ten million dollars; while those incurred by the English strikes during the past season reach fully fifteen millions. This is merely the loss of time to those actually engaged in or driven from labor by the strikes. The indirect losses incurred by those depending more or less directly upon the industry of the strikers and laborers would aggregate several more millions. Moreover, the sufferings of the workingmen can hardly be measured by the amount of wages lost; for the shopkeepers and dealers who have to advance them goods and provisions during the strike must naturally call for liens upon their debtor's earnings, homesteads and other property, which often entails farther losses, to say nothing of the depressing influences which an overshadowing debt invariably casts upon a man, especially if he is blessed with a family dependent upon his labor for their support.

And further, this immense loss is all on one side. That of the mine and mill owners, though vastly less is nevertheless enormous. The owners assuredly gain largely in the appreciation of their products as a direct consequence of the cessation of competition in their productions and are thus largely, and sometimes fully, repaid for their losses.

Hon. John Bright, of England, than whom the workingman has no better friend in either England or America, in answering a note from a Glasgow workingman upon some subject connected with trade unions and strikes says: "A hook, and not a small one, might be made up of the strange doings of trades unions. Monopoly is hard to teach, and I fear that workingmen will only learn through suffering that they can do mischief which cannot afterward be repaired."

Mr. Bright's idea, we believe, is that all such differences should be adjusted by courts of arbitration, the practicability of which have already been fully proven in England.

Apropos to the above, we may, in this connection, call attention to the fact already adverted to in these columns, that these strikes almost invariably call out the spirit of invention, to devise ways and means for capitalists to carry on their operations with less of the hand labor, which they find so uncertain and uncontrolable. As an evidence of the correctness of this assertion we would call attention to the fact that during the late Pennsylvania coal strike a new patent "jigger" for separating slate from the coal was brought to a greater degree of perfection, and bids fair to make rapid inroads upon the collieries of that region, and just as rapidly deprive the industrious little breaker boys (slate pickers) of their occupation. The Schuylkill *Republican* learns that over a hundred slate pickers in Shenandoah alone found no work when the late resumption took place, on account of the introduction of this new machine. The machines do their work well and will prove a great saving to the operators of collieries.

IDAHO, MONTANA, UTAH AND NEVADA.—Mr. Charles T. Bell will visit the above named territory on business for this office. We bespeak for him a full measure of success.

A NEW silk factory is being built at Warehouse Point, Conn.

The Mahogany Mine Trustees in Law.

Suit wes brought in the Fourth District court last week by Charles Forbes and six other stockholders, against the Mahogany mining company, its President, Board of Trustees, etc. The complaint deteils a freezing-out geme, which may expose interesting developments in court. The allegetions are that in 1870 the Mahogany incorporeted to work the Mahogauy mine in Owyhee, Idaho Territory. Thet several times the capital stock has been increased, and the last increase was mede July 1st, 1875, when the stock wes doubled, meking 50,000 sheres. Thet when the company was first incorporated the hy-laws prohibited the Trustees from creating any debt exceeding $25,000. Thet the mine of the compeny wes valnahle, and tbe company were getting along prosperously. Thet the present Boerd of Trustees confederated for the purpose of defreuding the stockholders of the mine. To accomplish this object, they first emended the by-laws so as to give the Boerd e right to contract debts to en unlimited exteut. They then met and privately agreed to purchase some adjoiniug ground at $160,000, which ground, the bill alleges, is not reelly worth more than $20,000. In order to carry out this scheme they had the property conveyed to an outsider, end then authorized the President of the company to purchase it for $160,000. This proceeding wes kept entirely secret from the stockholders who were not in the ring. By changing the time of the annnel meeting, und keeping the chenge qniet, the old Boerd was re-elected, nnd then the stockholders were cajoled into doubling the stock, and into ratifying the purchase et $160,000. The money in the treasury wes then eppropriated to pay for the property, and the company also got into debt to the extent of $100,000. When the stockholders applied for dividends on increased stock they were informed that the stock would all be required for the company's indebtedness. Among some of the stockholders there was the usuel couree of grumbling, but threets of assessmente were launched at them, nud the Secretary said they would be fought with their own money if they sought a legal investigation. Judge Morrison has issued a temporary injunction, restraining the Trustees from selling the increased stock or in eny way consumatiug the purchese.

Interesting to the Student of Mineralogy.

The cross sections of the Sutro tunnel are bringing to light much that will be of interest to the studeuts of mineralogy. The *Independent* seys that lest week after penetrating e belt of andesite the heeder entered into a peculiar strata of greenstone porphyry filled with pyrites which has the peculiarity of presenting elmost n stratified appearance. Not loug since seams of whet has the appearence of regular slate were presented to one of our geologists and they could hardly be made to believe that it ceme from the midst of a volcanic mountain. Among other mineralogical curiosities met with recently was a veiu of red jesper enclosed by a dark green chloritic rock, the jasper containing most beautiful white stars, the reys from which spread out into the jasper with such distinct lines thet it had the appearance of an artificial productiou. At the present writing the header has entered a clay formation treversed by feeders of calcspea and quertz, the letter containing spots of finely-tinted rose-colored amethyst.

Mineral Wool.—A New York paper states that a new inveution has recently attrected the attention of manufacturers. It is the production of so-called "Mineral Wool" from the sparks of e founder's furnece, by blowing the flowing sparks through a current of steam, which will transform them into fine, flexible, end elastic threads, about a yard long. This ertcle, eckuowledged as a first-class non-conductor, is well adapted for clothing in cases where loss or increase of heat are not desired. Although mede out of common sparks or dross, it has a bright white color similar to that of cotton.

A Substitute for Ink has been devised in Berlin, which coneists of points, like the leads of ordinary pencils, that can be fitted into holders. The writiug at first very much resembles leed penoil marks, but moistened immediately assnmes a violet tint, and theu adheres to the paper like ink. As many as six good copies cen be taken from it by means of an ordinary copying prese.

Agricultural Immigration from England.—The Federal Union of Agricultural Laborers in England have appointed a commissiou to proceed to America and make a thorough examination of the Mississippi valley, in order to ascertain how far it is suitable for eettlement by emigrants. Messrs. Odger and Wicks, the deiegates selected for thie purpose, are shortly expected to arrive.

A Long Blast.—The German papers speak of the blowing ont of the Horder mining and smelting compauy's blast furnace, after a continuous run of eighteen yeare end teu months. This is the lergest run by three years that we ever heard of.

Prizes for a New Method of Preserving Plaster Casts.

The Prussien Government has offered two prizes of the value of about £150 (3,000 marks) and £500 (10,000 marks), respectively, for the discovery of a new method of cleansing plester casts, etc., and for the invention of a new material possessing the advantages of plaster, but whioh will not deteriorate hy repeated washings.

The first prize of 3,000 marks is offered for a method which will give plester cests the power of resisting periodioelly repeeted washings, without injuring in the least the delicacy of the form or toe tint of the plester.

Special Conditions.—(*a*) The method must he applicable, in eqnal degree, to all kinds of plaster occurring in trade, and must not diminish the herdness of the cast. (*b*) In order to entirely preserve the delicacy of the form, those materials are abeolutely excluded which do not soek into the plaster. (*c*) It is not uecesaary to preserve the originel color of the plaster; a yellowish tint, or any warmer tint, may he allowed; but the evenness of the color is, at any rete, indispensable. (*d*) Plester casts prepered according to tbe method must stnud repeeted washings with soep and lukewerm weter. (*e*) The method mnst be appliceble to plaster casts of any size and shape. (*f*) Competitors for this prize are to prove the practicability of their respective methods by sending samples; end, if desired, by preparing casts placed at their disposal.

The second prize of 10,000 marks (ebout £500) is offered for a meterial for making casts of ert work possessing the edvantages of plaster, but which, without eny speciel preperation, will not deteriorate by periodically repeeted washing.

General conditions referring to both of these prizes.—The Ministers reserve to themselves the nomiuation of a committee of experts, in order to examine the consignments which mey be received. Competitors are to send with their consignments sealed envelopes, provided with mottoes, aud containing the names of the senders. On the outside of these envelopes is to be written the eddress to which the returned samples or eny communications are to he sent. The consignments which heve heen fonnd to correspond with the conditions stated ehove will become the property of the Government, and the nemes of the successful competitors will he published. The remaining consignments will be retnrned to the address given on the envelopes. Competitors are to forward their consignments to the Royel Prussian Ministry of Public Worship, Instructiou, and Health (Kouigl. Preussisches Ministerium der geistlichen Unterrichts, nud Medicinal Angelegenheiten), not leter than 31st December, 1875.

A New Kinn of Coal.—A test has recently been made in St. Louis of a somewhat recently discovered coal from Arkanses. This coal is called anthrecite, and was tested for steemer use with marked success. Its nse for zinc manufactories was well tried before, but no test of iron smelting has so far been made, or at leest made puhlic. It is said to be entirely free from smoke during combustion, and ie also free from sulphur. Analysis gives 85½ per cent. of fixed cerbon, 8½ per cent. of volatile carbon, and 6 per cent. ash. When burning, the coal it looks like the ordinary charcoal fire—there is intense heat, very little fleme and no oinder. The eshes ere yellow. This enthracite hes been used by the Weshington county zinc works for some time, on account of its great purity. It is believed it would be valuable in brickmaking, and that one bushel of it will equal fonr bushels of coke. The only drawback to its geuerel nse is that it is somewhet difficult of ignition, requires, when used in a furnace, thet the bars shall be near to the boilers, and must have a strong drenght. In point of cost, it is in that market $2 or $3 per ton cheaper thau Pennsylvania anthracite.

Glass and Steel.—Gless eppears to have properties similar to those of steel, which relate to hardening and annealing. We change the temper of a steel tool by heating and slowly cooling. This is jnst what is done in the production of the Bastie glass. We make steel very hard by cooling it very suddenly from a high heat by a bath in cold water. In temperiug a sword blede it is neoessary at one time in the process to cool it so suddenly from a great heat, that the blade, if allowed to drop npon the floor, wonld break in pieces es readily and completely as though it were made of ordinary glass. We probably ae yet have bnt a very imperfect knowledge of the capacities of either glase or iron.

A Crooken Railroan.—It is said that the Colorado Central railroad, which is twenty-one miles in length, is built among the rocks end ledgee, and is known to be the crookedest line ever huilt. At but three places is the track straight, and then only for a distance of 300 feet. It ie moreover eeid that the legislature granted the company a charter as a joke, never expecting that it would be built, yet it has proved a profitable investment to the builders.

To Stick Cloth on Glass. W. G. B. writes as followe—can anyone answer his querry:—I wish to stick some cloth to glase in order to eew it into an article. Will you please tell me what I shall use to hold it firmly? and greatly oblige.

Domestic Motors.

No sooner is oue humen want supplied than enother springs up to teke its place. We have now our washing machines, onr sewing machines and our patent knife cleaners, but still unsatisfied we cry out for a small engine to work these useful servants and to be of use in many ways that will appear when once such an engine has been invented. At first sight it may seem a simple matter and one that would call for not mnch exercise of the inventive feculty, but the fact is thet it will be by no means an eesy matter to fulfill ell the conditions required to be fnlfilled hy a motor of this natnre, and this may be ergued to some extent hy the failure of several attempts already made in this direction. We find the conditions cleerly and briefly steted by e contemporery. They are as follows:

In the first place, then, a domestic motor must be safe—that is, it must be absolutely free from risk of explosion, or fire. In the second plece, it must be generelly applicable. In the third, it must not be likely to get out of order. Fourthly, it must be perfectly under control, and require no special skill to manage it. Fifthly, it must be cleanly in its operation; and lestly, it must he cheap. One or two minor requirements might be steted, but we believe we have enumereted all thet are essential.

It is manifestly not impossible to accomplish all that is here demended, and under certein circumstences it would be by no meens difficult. For instance, here in Montreal where we have a constant supply of water under pressure it would he no very difficult metter to use it for the purpose. Smell turbines might be built and placed in rooms where power was needed—they would take up but little room and would be the been ideal of a domestic motor; cheap, noiseless, perfectly safe, nuder perfect control and absolutely cleen and free from smell. This motor, however, would not be available in all towns or in country places. For these au engine of some other kind would have to be divised.

We have alreedy, in these columns, described e petroleum motor designed to occupy a position somewhat analogons to that we are now considering, but as yet it is not sufficiently tried to enable any decision on its merits to be arrived at. Small steam engines are now being constructed in London for driving sewing machines. These little engines are on the oscilleting principle, and are seid to be extremely simple, and well mede. Steam is supplied by little verticel boilers, heated by a Bunsen burner or ring. No chimney is required, and the exheust steam is carried off by india-rubber pipes. Although the pressure used is low and the boilers small, the arraugem nt cannot be pronounced quite free from danger; and the heat end smell inseparable from the use of steam eud tbe difficulty of satisfactorily disposing of the exheuet must always tell ageinet the popularity of this, or any other form of steam engine, as a motor suitable for drawing-room use, altbough it would, no donbt, prove serviceable in tailoring esteblishments, and other places where a considerable number of sewing machines have to be worked; and it would probably do good service in small leundries.

Hot air seems to be the favorite motor at present suitable to the circumstances. It would be a safe, noiseless motor end the hot air discharged could easily be got rid of or even rendered serviceable in ventilation. These hot air engines could be made very small and yet qnite powerful enough for the purpose, end the cost need not be great. Once a pettern engine has been constructed and proved to be successful it can be reprodnced at small cost, especially if the demand should grow, as it would in ell probability, to dimensions rivaling those of the present sewing mechine trade.—*Mechanics' Magazine.*

An Ancient Library.—Mr. Andrew McF. Davis delivered a lecture before the Young Mens' C. U. B. Society, in this city lately, upon "The First Public Library." The speeker gave a learned review of tne early history of Assyria and Egypt es an introduction to what he considered the earliest public library ever founded in the world. This library was unearthed by Layard in the Palece of Keyinyik at Nineveh. The booke, if they may be so termed, consisted of flat, square tablete of baked clay of varione sizes, from an inch to nine inches in length, having on each side a page of cuneiform letters, many of them eo minute, as to be diecerned only by the aid of a microecope. Each teblet wae numbered and formed a page in a book. The characters were probably imprinted upon the clay while it was still moist. The tablets were found piled in regular order. Upon one of these tablete, now in the British Museum, is the declaration of the founder of his intention to dedicate the tablets to the use of his eubjects. Amongst these tablets is oue containing a petition from some of the subjects of the then ruler, complaining of the peculations of one of the ministers.

Woman Suffrage in Connecticut.—The House of Representatives, at Hartford, voted on the 21st ultimo, 82 to 102, to indefinitely postpone the bill giving women the right to vote in Presidential elections. The advocates of female suffrage here regerd the large vote in their favor ns nearer a victory than any action heretofore taken in any other State, and consider it quite a triumph for their cause that the Committee'e report was unanimously in favor of the bill.

Geographical Congress.

A Geographical Congress iu France will be something new. Frenchmen have from time immemoriel been guilty of charming ignorance of things geographical, which they never deigned to apologize for, further than to eay that their own country was so interesting that they did not need to travel for matters of interest. Voltaire did not scruple to locete the Blue Ridge in the vicinity of Baltimore, and General Ducrot did not know the Marne from the Seine. Bazaine hed never heard of Matamores when he came to Mexico and most of the French still fancy thet the Southern States of our Union are below the Isthmus; bnt they ere changing all those things in France, now that the war is over, and the nation not only keeps atteches busily at work editing popular reports on topography, etc., in most countries, but Paris is making a greet spread over the exhibition of geographical sciences at the Tuilleries, and will over the international congress to be held iu August. The exhibition will he a very imposing effair. All the great countries are well represented.

The idea of this internetional congress was origineted in 1869 by the Peris Society, nnd it was proposed to essemble in Belgium. Ou account of the war the first session could not be held until August, 1870, when there was a large assemblage of notabilities at Antwerp. England was very desirous of securing the second Congress, but as Paris prevailed, a kind of international coolness took plece between England and France, and England has refused to be officially represented. The Russian department of the exhibition is to be remarkebly fine. Among other wonders, Russia exhibits a chart of the oasis of Khiva, end a superb collection of Khiven jewelry and other ornaments. There is now a great passion here for travel and knowledge of other nations; hooks and pictures which describe national hebits nnd characteristics are eegerly sought, and the exhibition will be visited by hundreds of thousauds of people. —*Paris Letter.*

The New Arctic Expedition.

The first obstruction which the expedition is likely to experience will be ceused hy the great ice-park which annually forms in Baffin's hay. This is knowu es the great central perk, and cousists of anoient floe-ice, and of more recent ice, varying from six to eight feet in thioknese. Much of this is broken every yeer by the swell from the south, or dissolved by the warm cnrreut which sets into the bay; bnt the great middle peck, es it is termed, always presents a formidable barrier to the whaling fleets which frequent Beffin's hay—elthough they rarely fail in breaking through it sooner or later, according to the seaeon end the strength and compectness of the ice, which extends from side to side of the bay for a distance of from 180 to 200 miles.

To the north of this formidable obstructiou is that open sea called tbe North Water, and which it is the object of the whalers to reech as early as posible, for there the whales of whicb they are in search ehound, and tbe sooner they come upon their haunte the greater is their success. The ice of Baffiu's bay is not to be compared with that which forms in the seas north of Nova Zembla and Switzbergen, where the edge of tbe peck has been found twenty-four feet thick, and sbeets of from thirty to forty feet tbick are not nncommon.

Baffin's bay has been the scene of frequent disasters to whelers. In 1830 occurred a very terrible catastrophe. A gale from the south-soutbwest drove a whole fleet into Melvillo bey, nipping the ships against the land-floe. As the gale increased the floes overlepped each otber and bore down with accnmuleted force upon the devoted fleet, when a scene of indescribable horror ensued. In the space of a quarter of en hour many fine vessels were shattered to peices—the ice tearing open their sides, meny were squeezed flat, others literally turned inside out. The few which escaped did so only by cutting docks in the lend-floe for their protection. The total loss to the owners was estimated at £143,000.—*Eclectic.*

Fun in Animals.—It is well known that lambs hold regular sports apart from their dams, which only look on composedly at a little distance to watch, and perheps enjoy their proceedings. Monkeye act in the eame manner, and so do doge, the friskinese of which resembles tbat of children. Mr. Leigh Hunt once told Dr. Robert Chembers that he had observed a young spider sporting about its parents, running up to and away from it in a playful manner. He has likewise watched a kitten amusing itself by running along past its mother to whom she always gave a little pat on the cheek as she passed. The elder cat endured the pats tranquilly for a while; but at length becoming irritated, she took an opportunity to hit her offspring a blow on the side of the head, whech sent the little creature spinning to the other eide of the room, where she looked extremely puzzled at what had happened. An irritated humen being would have acted in precisely the same manner.

The Mexican.—When the Ophir mine ehnts down this month, work will also have to be stopped in the Mexican, as the repairing of the sheft will necessarily interfere with the hoisting of the rock.

The Monterey *Democrat* has been enlarged.

SCIENTIFIC PROGRESS.

Molecular Changes in Metals.

Prof. R. H. Thurston, of the Stevens Institute of Technology, Hoboken, N. J., recently contributed a series of articles to the *Scientific American*, in which he gave an outline of the various phenomena effecting the strength of metals used for constructive purposes, and also described some of a peculiar character which have been but recently discovered, such as the character of resistance due to autoraatic action or ordinary use, strain, etc. Reference was also made in those articles to the better known facts that oxidation or corrosion also exercises a most important influence on the charaoter of metals. Instances of this latter class have been frequently alluded to in these columns, such as the fact that old tools, which have been laid aside or lost for a long time, seem to acquire an exceptional excellence. Razors which have lost their keenness and their temper recover, like mankind, when given time and opportunity to recuperate. A spring regains its tension when allowed to rest. Farmers who have left their scythes exposed to the weather, sometimes, from one season to another, find their quality improved by it. Boiler makers frequently search old boilers carefully, when reopened for repairs after a long period of service, to find any tools that may have been left in them when last repaired; and if any are found they are almost invariably of unusually fine quality. The custom of looking about the scrap heaps and under the windows for tools purposely or carelessly dropped, and when one is found badly rusted, it usually proves to be superior in quality to what it was when new.

Prof. Thurston in further alluding to this class of phenomena, in a paper recently furnished to the *Journal of the Franklin Institute*, institutes another striking example as follows:

One of the most striking illustrations of this improvement in the quality of wrought iron with time has recently come to the knowledge of the writer. The first wrought iron T-rails ever made were designed by Robert L. Stevens about the year 1830, and were soon afterward laid down on the Camden and Amboy railroad. These were Welsh rails, and, when put down, were considered, and actually were, brittle and poor iron. Many years later, these were replaced by new rails, but until quite recently some still remained on sidings. When a lot of unusually good iron was wanted, some of these rails were taken up and re-rolled into bar iron. The long period of exposure had so greatly changed the character of the metal that the effect was unmistakable. These facts are stated by gentlemen upon whom perfect reliance may be placed.

The Philosophy of these Changes.

The Professor in continuing his paper says: "But," it will be asked at once, "how can such changes occur without apparent cause, however long the time?" There are probably two methods of improvement, each due to an independent molecular action. In the case of the razor and the spring, which regain their tempers when permitted to rest, it seems probable that a molecular re-arrangement of particles, disturbed by change of temperature in one case and by alternate flexing and relaxing in the other, goes on, much as the elevation of the elastic limit and the increase of resisting power, discovered by the writer and shown on the strain diagram, takes place under strain and set. The other cases may probably be due to a combination of this physical change with another purely chemical action, which is illustrated best in the manufacture of steel by the cementation process. In this process, iron imbedded in charcoal and kept at red heat, gradually absorbs carbon and becomes steel. Here the element carbon enters the solid masses of iron, and diffuses itself with greater or less uniformity throughout their volume. There seems to exist a tendency to uniform distribution which is also seen in a thousand other chemical changes. Many chemical processes are accelerated, checked and even reversed by simple changes of relative proportions of elements, which compel acceleration or reversal as the only means of securing this uniformity of distribution.

When, therefore, wrought iron containing injurious elements capable of oxidation, is exposed to the weather, the surface may be relieved by the combination of these elements with oxygen, and the enclosed interior, by this tendency to uniform diffusion, is relieved by the flow of a portion to the surface, there to be oxidized and removed. This process of flow goes on until the metal, after a lapse of years, perhaps, becomes comparatively pure. Meantime the occurrence of jarring and tremor, such as rails are subjected to, may accelerate both this and the previously described change.

The Gulf Stream.—The deep sea soundings of Lieut. Berryman confirm the prevailing theories concerning the cause of the Gulf Stream. At the depth of 2,000 feet in the straits of Florida, the temperature is only three degrees above freezing, while deep soundings on the telegraph route show a temperature of ten to fifteen deg. below the freezing point. Hence the warmer and lighter water is from the Mississippi crowded to the surface, and is forced toward the colder regions of the North, while the denser water of the North flow south to restore the equilibrium.

The Cruise of the "Challenger."—An interesting and important dispatch from the *Challenger*, dated from Yokohama, reports a continuation of good scientific work on the Pacific. The sea, off the coast of Japan, has been sounded to the depth of over five miles, and even at that depth a sample of the bottom was brought up. It was composed wholly of the silicious shells of a genus of foraminifera. From the general results of these soundings and those made elsewhere, it appears that the bed of the ocean down to 2,000 fathoms is being covered with "globigerina ooze," containing the whole of the carbonate of lime of the shells of the foraminifera living and dying in the water above it, and forming a deposit of almost pure carbonate. Below that depth, in some way not ascertained, the deposit loses more or less of the lime, till at 2,600 fathoms there is found only pure red clay, a silicate of alumina and iron, with silicious tests of animals; from thence to the lowest depths the proportion of clay decreases and that of silicious shells increases, until the clay becomes little more than a cement binding the shells together. This single result throws a wonderful light on some important geological problems. Another valuable biological fact is that foraminifera and diatoms inhabit the water the whole way down, and it is even suspected that they may be more abundant in the lower depths. Two remarkable discoveries in connection with the temperature of the waters of the Pacific have also been noted. A surface layer of eighty fathoms mean depth, heated to above seventy-seven deg. Fah., and extending northwards from the coast of New Guinea about twenty deg., and westward as far as the meridian of the Pellew islands, has been ascertained to be moving westward more or less rapidly. A great part of the Western Pacific has been shown, by the serial temperature soundings, to be not entirely in free communication with the Southern Sea, for the water after sinking rapidly in temperature until it reaches 34.5 deg. Fah., at a depth of 1,500 fathoms, maintains that temperature for all greater depths.

Spectroscopic Analysis.—The first application of the spectroscope in quantitative analysis has been made by Sir John G. N. Alleyne, of the Butterly iron works, near Alfreton, Derbyshire, and the result of his researches (in which he has been ably assisted by his son, Mr. Raynold Alleyne) was embodied in a highly interesting paper, read before the Iron and Steel Institute recently. The mode of procedure may be briefly explained thus: With a modification of the Becquerel tube, and in an atmosphere which will not support combustion, he first observes the line given in the spectrum by a body containing a known quantity of phosphorus, and then substitutes the body containing the unknown quantity of phosphorus to be determined. The phosphorus lines are just blotted out by introducing hydrogen into the tube, and restored by replacing a portion of the hydrogen by a measured quantity of carbonic acid. The quantity of phosphorus is inversely as the quantity of gas used. He can estimate in three minutes quantities under 0.500 down to 0.020 per cent. or less, with accuracy; above 0.500 requires further investigation, owing to the great power of the phosphorus lines. For the determination of small quantities of phosphorus in iron or steel, Sir John Alleyne's discovery is valuable, and may be regarded as laying the foundation of quantitative spectrum analysis generally.—*London Mining Jour.*

Intensity of Colored Lights for Illumination.—Some experiments have recently been made at Trieste with a view of testing the intensity of colored lights, and of white light with different oils. While no doubt was entertained that the best effect with lights at a distance was had with white light, and the next best with red, it was desired to ascertain the comparative utility of other colors for harbor lights. Small hand lanterns were used with white, red, green, deep and dark blue glasses. With the whits were used American petroleum, paraffine and olive oil. At half a mile distant the dark blue was quite invisible, and the deep blue hardly visible (showing their uselessness for illumination at sea.) The experiments made to a distance of two nautical miles, gave the following results: 1. That white light with petroleum is more intense than with paraffine; the latter also went out several times, so it lacked the necessary certainty. 2. That among the lights with olive oil, the red was the brightest—after the white—and the green (Bohemian make) after the red. The green light may at short distances alternate with the white.

Messages from the Sea.—Mr. Garside, of Southport, describes in the *Pharmaceutical Journal* of the 19th inst., the method he successfully employed for restoring the legibility of a letter which had been submerged in the wreck of the *Schiller*, and was quite illegible until submitted to the process described. The letter was carefully brushed over with a solution of sulpho-cyanide of potassium (one in twenty), and then, still damp, held over a dish containing hot hydrochloric acid. The writing was thus developed of a deep red color. The *rationale* of the process is this: The iron of the ink is precipitated as peroxide upon the fibers of the paper, and remains when all other coloring matters are washed away. Being in an insoluble form, however, no effect is produced by the re-agent until the fumes of the acid have rendered it soluble. Probably ferrocyanide of potassium would answer as well or better than sulphocyanide.

Man as Compared with the Steam Engine.—The useful effect of steam is not far from ten per cent. of the theoretic value of the coal consumed in its production, while careful estimates fix the efficiency of the human person—which is nothing more nor less than a machine—at about twenty-three per cent. of the value of the food consumed. The human machine, then is greatly superior, in its efficiency, to the steam engine, giving out more than twice the per centage of work; but it is vastly more costly. According to an elaborate estimate made by M. de Saint-Robert, recently published in the *Revere Scientifique*, of work performed by a man, it would be necessary to employ eight men to obtain one horse power. Estimating the cost of coal at ten dollars per ton, and the wages of a man at the very low rate of forty cents per day, the expense of this amount of power (one horse power) for a day of eight hours would be about ten cents for the steam engine, and three dollars and twenty cents for its equivalent of eight men.

Magnetization of Rails on Railroads.—It has been observed that the nearer a rail is placed in the magnetic meridian, the greater the intensity of its magnetization; and this is whether laid upon the track or thrown together in piles. This fact may be readily observed by examining rails where they are laid upon a curve in the road, the more they may form a north and south direction, the less intense is their magnetism. The effect is more intense in steel rails than in those of iron. Rails or bars of iron become permanent magnets under the action of the hammer. This effect is produced in rails by the jaring and handling of the trains in their passage.

MECHANICAL PROGRESS.

Economy in the Use of Fuel.

In a paper on economy in the use of coal, lately read before the Royal School of Mines, Berlin, we find the following synopsis of interesting historic facts: The progress in the economical consumption of fuel in the last fifty years has been enormous, and has been effected in great part by metallurgists; and here again we find the scientific men taking the lead. In the economical application of the heat developed by fuel, the Bessemer process is enormously effective, not more than ten pounds of coal being requisite for the production of 100 weight of steel from pig iron by this method, while in the older process, still in use for fine qualities of steel, 250 pounds are needed. Siemens, by making the heat which would escape through the chimney of an ordinary furnace warm the fuel and the air necessary to combustion, obtains an economy of two-thirds the weight of fuel. It was Faber de Faure, an accomplished Bavarian metallurgist, who first made practical use of the gases which formerly escaped in immense quantities from the tops of blast furnaces, and the enormous blast engines, the hoisting engines, pumps, and hot-blast stoves, even the roasting kilns of such establishments now-a-days require no fuel except this long neglected waste product. Bischof, another German engineer and metallurgical author, was the first to produce gas artificially for smelting purposes, and this was certainly one of the greatest advances ever made in our art. By first turning it into gas, fuel can be much more perfectly consumed than in the solid form, and hence can be made to give us, as in the Siemens furnace, in which only gas is need, a much higher temperature than is practically attained by the combustion of coal in the ordinary way; but perhaps the greatest advantage of gas is that substances in general scarcely regarded as fuel at all can be employed for the production of gas with the most brilliant results, a matter of the greatest importance, especially in a region destitute of true coal, like California. Lundin, a noted and thoroughly educated Swedish metallurgist, has taught us how to produce gas from wet sawdust, entirely without preparation, of such power that wrought iron may be melted with it, and the great difficulty is to find any material infusible enough to answer as a lining in the furnace where it is consumed. Some idea of the importance of these improvements will be had from the fact that the economy in fuel effected in England alone, in the year 1872, as compared with 1871, by the progress made in the introduction of more perfect apparatus, represented more than 4,000,000 tons of coal.

Cheap Light.—A Russian claims to have discovered a process for producing light by electricity, which is thus described: A small tube of glass not more than six inches in length, is filled with a pencil of charcoal, the air is exhausted and the tube hermetically sealed. A moderate current of electricity is then passed through the charcoal from an ordinary electro-magnetic machine, causing it to glow with a very brilliant, but at the same time soft light. It is said the charcoal does not apparently suffer consumption, but lasts for an indefinite period, and that the strength of the current required is so small that 200 of these lights, at a considerable distance apart, can be easily maintained by a single machine. The inventor claims that he can light the whole city of St. Petersburg, both street lamps, stores, and private residences, by a single fifteen horse-power machine, with no greater cost than that of running the machine.

Iron and Steel Belting.

The question has been asked us whether the use of the band saw for sawing logs is practicable. We have certainly illustrated, more than a year since, a saw mill of that very description, and as the thing has actually been done, the question may in that sense be regarded as fully answered. Like all other improvements or innovations, this method of sawing is subject, as regards economy of power, efficiency, and quality of work, to the test of experience. We know of nothing to its disadvantage in these respects, but merely place it among the devices the value of which is not yet thoroughly ascertained and demonstrated, and which are doubtless susceptible of still further improvement.

But not only have hand saws been used with success for heavy work, but another application of a metallic band of essentially the same nature has been made, and it is said with satisfactory results. We refer to the employment of a belt of sheet iron instead of leather or rubber for transmitting power from one pulley to another. This has been done in at least one instance on record, and the operation of the belt is reported to have met all the requirements of the work. The pulleys in this case were of cast iron; and it is suggested that if pulleys with an elastic surface were employed, still better results would be obtained. The substitution of steel belts in place of cast iron is also recommended as at least an experiment worth trying; and the fact that in the case of a band saw the saw itself transmits the power by its friction on the lower pulley, as high as fifteen-horse power being in some cases effectively transmitted by such a saw, is pointed out as a proof of the entire adaptability of steel to belting purposes. The tensile strength of low steel is such that it is calculated that a belt of this material one foot wide and one-sixteenth inch thick could with a perfectly safe working strain—the same in proportion to actual strength which is allowed in ordinary belts—transmit 900 horse-power. So far as ability to bear tension is concerned, this is certainly enough and to spare. The various mechanical difficulties which may suggest themselves to the reader are liable to occur have in a great degree been overcome in the manufacture of band-saws, for which almost precisely the same conditions, facility of joining and general management are required as would be called for in belting for any class of work.—*Leffel's Mechanical News.*

Cannon vs. Cuirass.—An experiment made in Herr Krupp's artillery grounds at Dulmen seems to threaten the future of cuirassed vessels. Hitherto, it is well known, the solidity of the cuirass has pretty well kept pace with the calibre of the ordnance destined to do the work of destruction. By a felicitous idea, however, the force of the cannon has now been quadrupled. The invention, if so it may be called, consists in directing four guns towards the same spot, and firing them simultaneously by electric ignition. To test this new method, a target was constructed by Herr Krupp consisting of two 10-inch plates, a wooden layer 200 millimetres thick, two 6-inch plates, and another layer of wood 200 millimetres thick, the whole lined by an iron layer 1½-inch thick. At a distance of 200 metres from this target were placed four 26-centimetre cannon, the calibre of which may be imagined from the fact that each requires forty-two kilogs. of prismatic powder. The first simultaneous discharge of the four guns, which were loaded with long cubic grenades, tore away large pieces of the iron plates, and so shook the target as essentially to diminish its resisting power. Other discharges seem to have had an even more destructive effect. As the power of the German breech-loading gun is greatest at 400 metres, at which distance the naval engagements of the future are likely to open, the Dulmen experiment is supposed by some to have decided the long pending controversy of cannon *versus* cuirass.

When steam navigation began, the wildest speculations were indulged in as to speed; but all of them were doomed to be falsified by the results. With the hosts of improvements yearly adopted, the original speed of eight miles per hour has scarcely been doubled. On the average it has not; the fastest ocean-going steamers only accomplish fifteen miles. In smooth rivers and in narrow channels much higher rates of speed have been obtained; but the average of all kinds of steamers, river and ocean is from twelve to sixteen miles per hour, and the problem that still vexes engineers is how to obtain a much higher rate of speed. When that will be solved no one can tell; the ocean is a mighty monster, and will not readily be subdued.

A Substitute for Diamond Dust.—Amongst the recent inventions is one which a Mr. Mackintosh has patented. It will command a large amount of attention, as it converts what is at present a very high cost into a comparatively insignificant one. It is a method of hardening glass to such an extent as to render it an efficient substitute for diamond dust. This important result is obtained by cooling the glass in refrigerating moulds.

Oil Instead of Steam.—An engine is said to have been invented in Paris which is driven by the alternate expansion and contraction of oil in cylinders, the liquid being expanded and contracted by alternate streams of hot and cold water. How the inventor provides for economy of heat and meets the loss of momentum which must result from the want of instantaneous action on the part of his primary forces, is not stated.

Mining Summary.

The following is mostly condensed from journals published in the interior, in proximity to the mines mentioned

California.

AMADOR.

Sharp and Boxall Mine.—*Dispatch*, July 31: A supply of piping has just been placed on this mine, belonging to Dr. Sharp and Wm. Boxall, which is located about two miles above town, on Jackson creek, preparatory to hydraulicing on a pretty large scale. We understand that they will probably be ready to commence the work in about ten or twelve days. If this mine should prove a success, and it is likely that it will, there will probably be a number of new mines opened in the same vicinity very soon.

Volunteer Mine.—*Foothill Ensign*, July 30: During the past week we took occasion to visit the Volunteer claim, situated near the Kennedy mine. The mill, near Jackson, and distant half a mile from the mine, has been running about a week. It has five stamps, and works to a charm. Some trouble is experienced with the new ditch which supplies the water, but this is always the case with a new ditch. It is supplied with the waste water from the Oneida mine. Everything is working as smoothly and successfully as could be expected, and shortly the mill will get through its ten tons of rock per day regularly. The mine is not being worked at present, owing to the fact that there are 300 tons of rock ready for milling.

Maximillian Mine.—This location, at present but little known, promises to make its mark in the future as one of the paying mines of the county. It is situated about half a mile above town. It is supposed by many to be disconnected from the great quartz lead upon which permanent mines are located, and to form part of another gold bearing vein, smaller in size, but apparently richer in mineral. The ledge met with on the surface, in spite of all predictions that it would pinch out, has continued to reach down into the earth, manifesting no sign of exhaustion. Last week, at a depth of 80 feet, a decided improvement took place, the ledge expanding from a mere spur or off-shoot, and assuming the dimensions of a distinct lead. The ore is exceedingly rich, some of it near the surface was worked last winter in one of the old mills near town, and notwithstanding the poor facilities for saving the precious metal, a fair margin of profit remained after paying expenses of working. No rock has been worked recently, but an assayed sample taken 80 feet from the surface, yield at the rate of $95 to the ton.

ALAMEDA.

Machinery for the Coal Mine.—Livermore *Enterprise*, July 31: Considerable machinery belonging to the Livermore coal mine was received and sent up to the mine last Monday. The superintendent is using all exertions to push the work ahead, and the bunkers—or coal receivers—are being built, and the general timber work is advancing. Several houses have been erected at the mine, and already a great deal of stir and business is manifested up that way. The coal has improved very much of late.

ALPINE.

Illinois-California.—Alpine *Chronicle*, July 31: Work on this claim was started up on Monday last, under the superintendence of Joseph Lane. This claim is situated in the Raymond mining district, and about two miles from our town. It is the intention of the company to prosecute the work of development with energy. The old tunnel will be pushed to the ledge, which is not far distant from the present face of the tunnel.

The Exchequer.—Mr. Remaine, of London, has been examining the Exchequer and other mining property belonging to English companies, and is satisfied that the reports concerning the Exchequer are not too highly colored. The company will begin shipping bullion before winter sets in.

CALAVERAS.

Mining Items.—*Citizen*, July 31: The well known "Woodhouse" mine has been purchased by Mr. Charles Underwood, of Monterey, and a 15-stamp mill is now being built thereon. The mine has been under development for the past four years by the former owner, C. Bailey, and a large amount of ore accumulated on the mine. The mine is opened and prospected by tunnels, levels, shafts and open cuts, for its entire length of 3,000 ft; and about 4,000 tons of ore stand now ready for the mill. Superior advantages for cheap milling are connected with this property. A first-class water power is connected therewith, and the ore on the most liberal estimate can be milled for not exceeding $1 a ton. The records at the Harris mill show, that some 250 tons of ore worked there gave from $31 to $72 a ton. The company, in future to be known under the old name of "Woodhouse" gold mining company, is held by three parties, Mr. Underwood holding control. Mr. John Rider, millwright, of Mokelumne Hill is now engaged in building the mill for the company, the mill is to be of the most approved pattern, and all the modern improvements for the saving of precious metals are to be added to the batteries.

COLUSA.

Quicksilver.—*Sun*, July 31: The furnace of the Abbott mine has been shut down for the purpose of putting on an improvement, which it is thought will increase the capacity for smelting over about one-third. We understand the Messrs. Rathbun have struck a more extensive body of very rich ore in another claim, just south of their original ore. The ore they had in their first claim is as rich as it can be, and there was a good amount of it, but the new one is said to be very extensive.

CONTRA COSTA.

Satisfactory Result.—*Gazette*, July 31: We learn that the result of grinding some 1,700 pounds of the uncelected Lafayette rock, in the arastra, last week, was an amalgam button of gold and silver of about $6 in value. Considering that it would necessarily require a considerable amount of amalgam to charge the crevices of the arastra—constructed rudely of stones—it is surprising that anything of value should have been secured from the first run, or even from several runs of rock no richer than this was supposed to be; and a result such as is reported, cannot but be regarded as assuring to the best expectations of the prospectors.

EL DORADO.

The New Ditch.—*Republican*, July 31: The mammoth ditch being constructed by the El Dorado water and deep gravel mining company, and upon which 1,500 men were employed both last season and this, is rapidly approaching completion, and will doubtless be completed in October. In view of this fact, all those who desire to avail themselves of the direct benefit of this greatly increased water supply, should begin preparations for the use of it upon their mining claims, ranches, etc., at the earliest moment. The company will have a large amount of water to dispose of, and cannot afford to allow it to go to waste for any great length of time.

FRESNO.

Mineral Matters.—*Expositor*, August 4: The mining interests are looking up somewhat. We learn that the Ne Plus Ultra copper mining company are now taking out an excellent quality of ore—some of it assaying as high as 30 per cent. The incline has attained a depth of 100 ft on the ledge, and at that depth the ore vein is much wider than the shaft, which is 6x6. A large deposit of high grade ore is in sight. The Confidence quartz mine is improving in appearance as the shaft goes down. The ore now being extracted shows largely in free gold and sulphurets. The Champion mine, on Big Dry creek, is also showing better ore. The mill has been running for some three weeks, and a clean-up will be made in a few days. The owners confidently expect good returns. In the Coast Range, quicksilver mining is prospering. The New Idria mine is running, as usual, a large force of men, and turning out its usually large quota of quicksilver. The Cerro Benito mine is looking more promising. Recent developments in the Little Panoche mine inspires confidence in the stockholders. The Fresno mine is prospecting, and indications are favorable for one of the richest mines yet opened. A number of new quicksilver mines have recently been located.

INYO.

Sales in the Darwin District.—*Independent*, July 24: Two important sales were made recently in the Darwin district. The transfer of 1,050 ft of the Invincible for the consideration of $5,000; the Bella Union and 1,250 of the Raleigh for $15,000 gold coin. George W. Grayson was the purchaser. The Invincible is situated about 1,000 ft from the famous Christmas Gift, the Bella Union 2,000 ft from the Lucky Jim, and the Raleigh about 4,000 ft north of the Grand.

Items from Panamint.—*News*, July 28: We took a trip on Monday last to the mill and mines of the Sunrise company, and found everything in a very forward state. The finishing strokes are being put upon the mill, and the probabilities are she will be running in about one week from to-day. We took a walk over their new road from the mill to the mines, and found it has a most excellent grade; one span of horses will be able to haul all the ore to the mill that can be put into a wagon. Arriving at the Sunrise mine we found a splendid iron track railway had been constructed from the road to the mine, which will greatly facilitate the handling of the ore. It is automatic, only one man at the brake being required to operate the whole thing. One or two more openings have been made, exposing a much larger body of ore than was expected, and showing splendid indications of true foot and hanging walls. The company have out 200 tons of ore, and there are probably 1,800 to 2,000 more tons in sight, in the different outs and openings of this mine that will mill over $100 per ton. From experiments made with this ore the superintendent is satisfied that they will be able to work it up to 65 per cent. of its value, without roasting.

The Twilight, another of this company's mines, is situated some five or six hundred yards northeast from the Sunrise. A shaft has been sunk on this mine to a depth of about 40 ft, going down on a rich body of ore all the way. They have out on this dump about 100 tons of ore, which is probably equally as good as that of the Sunrise. The ore was taken from the shaft and two or three cuts or openings. These two mines are certainly very valuable property, and if the immense ore bodies now being developed continue to hold out, even to a depth of 40 or 50 ft, a mill of four times the capacity of the present one will be required to work the ore.

We next visited the Emma, belonging to Everleth & More, which is situated about two hundred yards to the east of and about equidistant between the Sunrise and Twilight. But little work has been done on this mine, but enough to expose a splendid body of free milling ore that will work about $150 per ton. A road to reach the mine can be made at a small expense, to connect with the road of the Sunrise company, and some 300 yards therefrom. We think the Emma will prove to be one of the big mines of Panamint. We returned to the residence of the gentlemanly superintendent of the Sunrise company, and it being the 'witching hour of lunch, we were invited to a repast, and being tired and hungry we set down and did full justice to the viands in the appeasement of a voracious appetite. This company is deserving of the greatest success, which we heartily wish them, and believe they will soon realize.

MARIPOSA.

The Green Mountain Copper Mine.—*Citizen*, July 31: About the years 1860, '61 and '62, the mine situated near James' ranch, is known to have yielded a vast amount of copper ore, which was smelted and sent to San Francisco. Afterwards, owing to depreciation of copper, and the exceeding high cost of transportation, which at that time was entirely dependent on teams, the works were suspended, and but little has been done since, except by Mr. Harry De Groot, who a few years back extracted from the Green Mountain copper mine, which is in the vicinity of James' ranch, considerable copper, but owing to the amount of water and the lack of facilities to drain the mine, work was suspended up to within a few months since, when under his management, the work upon the mine was again resumed, and within the short space of three months, he has caused a tunnel to be driven 220 ft, and this, too, through what is termed mica, schist and hornblende rock, which required powder and fuse every inch of the way. The tunnel, when completed, will be 475 ft long. Mr. De Groot expects to run the remaining 155 ft in about forty days. The work at present gives employment to eighty men, and is expected that when the tunnel is finished, and the drainage of the water from the mine is perfected, employment will be given to a greater number of men.

NEVADA.

The Fryer Reduction Works.—*Foothill Tidings*, July 31: The reduction works near Glenbrook park, in which will be used the Fryer process, will be put in operation before a great while. The company will commence to put up the machinery next week. The boiler work, which is said to be the largest job ever done in the county, was made by Joseph Bonnivart, of Grass Valley, who has erected buildings for doing the kind of work required by the company in the future. The engine boilers were made at Lakenau's foundry, Grass Valley, and the heavier castings were made by the Occidental foundry, San Francisco. There will be sections enough put up now, to reduce 10 tons of ore per day. Thorough tests will be made at the present locations, after which the machinery will be removed to some mine in the county. The inventor has perfect confidence in the success of the process and expects ere long to be able to prove to the most credulous that what has heretofore been claimed of the process is a fact, and that the waste of at least 50 per cent. of gold, which has for years been going on with the old system, will be stopped, and that mines now idle will again pay liberal dividends. So saith the *Transcript*, and let us hope this confidence may not be misplaced.

Product of the New York Hill.—Grass Valley *Union*, July 28: We saw 3 bars of gold, bearing as that, in the possession of Mr. John D. Meek, on Monday evening last. The bars were made of gold which came out of the New York Hill mine, and the gold was obtained by a partial clean-up of the mill after 10 days' run. The value of the gold was about $11,500. The sulphurets which are heavy and rich are yet to bear from. And splendid ore is still coming out of the New York Hill mine.

Good Clean Up.—Grass Valley *Union*, August 4: A clean up was made at the Empire last Saturday, after a run of 21 days by the mill, and the result is about $23,000 of gold. This pay is largely profit. The underground appearances of the mine are most excellent, and we believe that the next month's work will show a gain over last.

PLACER.

Mining Items.—*Argus*, July 31: The St. Patrick mine is taking out splendid rock at present, and their mill is in perfect working order. Everything looks encouraging for a good run.

The Good Friday mine is just now taking out better rock than they have ever done before, and the superintendent, J. M. Bryan, entertains the highest hopes for striking pay soon.

The Greene mine is also looking well. The rock continues good. The mill, which is the best and most complete in the district, is running constantly.

Iron.—*Herald*, same date: The iron mine, near McDonald's mill on Bear river, discovered last winter, and which is owned by a Sacramento company, gives indications at present of being a big thing. The work of development, we understand, is to begin at once, and with the assistance of cheap fuel, which the Lincoln coal mine will furnish, the company have no doubt but they can make the mining and smelting of iron an extensive and highly profitable business.

SIERRA.

The Charcoal Ledge.—*Mountain Messenger*, July 31: Sam. Stephenson and others are prospecting on the old Chsrcoal ledge situated about 3 miles west of the Ksystone mill. They have a tunnel in nearly 300 ft and expect to tap the ledge before long. The rock paid $75 per ton, working in an arrastra, but the ledge there being broken up, work was stopped.

SONOMA.

Mining Items.—*Russian River Flag*, July 29: The Grest Eastern fired up its five retorts last week and they are now turning out four flasks of quicksilver a day.

The Redington quicksilver company has declared a dividend of $10 a share, payable on the 31st inst.

The Calistoga *Press* learns that the Live Oak claim, near Cloverdale, has been bonded to Dr. Blotchly and others. The claim contains large deposits of green marble of a very valuable character.

The tunnel in the Sequal mine is in about 140 ft and is not yet to the ledge. Work is suspended for the present.

TUOLUMNE.

A Rich Strike.—Columbia *Independent*, July 31: The Reed Brothers & Co. have made another rich strike on their pocket vein, located on the south branch of the Stanislaus river, above Pine Log, and opposite the junction which Red Gulch forms with the river. Last week they took out 18 pounds of gold. To show the richness of some of the rock: they say that from two charges put in an ordinary sized prospecting mortar and crushed, yielded five pounds of gold when smelted and cast into a bar. How extensive this pocket may be they do not know, although they are very sanguine, and believe, with the showing at present, that it will yield more gold than any of the pockets yet discovered on the vein.

Shipment of Quicksilver.—Santa Rosa *Democrat*, August 4: The reports of the Great Eastern mine at Guerneville, started on July the 23d. The capacity of the retort is 2 tons of ore, and 5 flasks of metal. The result is considered extremely satisfactory; the product up to August 3d, from July 23d, was 44 flasks, 33 of which were brought to Santa Rosa by the company teams, and was shipped on Tuesday to San Francisco. And still another source of revenue comes from the great Redwood belt of Sonoma. When the timber is cut from the surface, years hence, the mines will perhaps just be reaching their maximum production. The Great Eastern is constructing an experimental revolving retort on the Wallridge improved patent. This retort will have a capacity of 8 tons a day.

Nevada.

WASHOE DISTRICT.

Consolidated Virginia.—Gold Hill *News*, July 29th: Daily yield, a little over 600 tons, principally from the 1400 and 1500-ft levels. The various stopes and breasts are holding out splendidly, and merely showing more and more ore as farther worked and developed. At the 1500-ft level the great ore deposit is being breasted out further to the southward than heretofore, and the cross-cuts east and west at the 1500-ft level, where it is intersected by the winze from the level above, are both in very high grade ore as yet, of course not defining its extent at that point. The north drift at this level is also driving ahead in rich ore. Work at the joint C. & C. shaft is progressing at the usual energetic rate. It is 547 ft deep, and the foundations for the new and powerful hoisting and pumping machinery are rapidly approaching completion.

Chollar-Potosi.—Ore extraction and hauling to the mill was resumed last Thursday, the daily yield being over 65 tons. Prospecting at the three lower levels is actively going forward, and the main incline is being advanced downward as fast as the hardness of the rock and extreme heat will allow. At the 1150-ft level the drift south is advancing at the rate of two and a half feet per day, in very hard rock. At the 1250-ft level, south, toward the north line of the Bultion mine, the daily advancement is about five feet, in easy working vein material, principally porphyry. At the 1350-ft level drifting south is well started and advancing finely, with the face in porphyry.

California.—The various drifts and crosscuts at the 1400, 1500-ft levels shows no particular change to note since last week's report, except instances for the better. In fact the continued progress of development simply justifies all predictions as to the extent and richness of the portion of the big bonanza contained in this mine, made from the very first.

Crown Point.—Daily yield, 500 tons. The old ore sections hold out finely as yet, and bid fair to do so for some time to come. The main drift east at the 1700-ft level has not reached the ore vein yet, but is calculated to be within 50 ft of it; rock in face of drift very hard and tough. The Rock Island mill, which has been shut down for the past two weeks in order to alter and prepare it for working the ore by the Patchen process, is in running condition again.

Belcher.—Daily yield 450 tons from the old ore producing sections, which continue their regular yield with no particular change to note for better or worse. At the 1,500-ft level the north drift from the winze has reached the Crown Point line and ore extraction from that level will be commenced as soon as thorough ventilation is secured and the requisite arrangements made. At the 1,600-ft level the drift east from the main incline is to-day in 74 ft.

Utah.—The cleaning out and repairing of

the main shaft being completed, the heavy sinking pump has been lowered to its intended position, and is now operating very effectively in keeping the shaft free of water. The repairs to the old hoisting engines and their foundations are nearly completed, and is about a week all will be in readiness to resume sinking the main shaft. Drifting and cross-cutting at the 400-ft level will be resumed at the same time.

OPHIR.—As stated in our last report, ore extracting and all other work in this mine is suspended for the present, until a considerable section of the main shaft is retimbered. This is being actively done, and at the same time the hoisting and pumping machinery at the surface is being arranged for more effective work than ever.

BULLION.—The ore indications and prospects developed by the drift from the 1700-ft level of the Imperial continues to improve as the drift advances northward, following the west wall of the vein. The cross-cut also continues its good showing. Fine progress is being made in cleaning out and repairing the old incline down to the 1400-ft level.

IMPERIAL-EMPIRE.—The ore body developed between the 1750 and 2000-ft levels shows better in value, extent and importance as the drift advances north from the winze. The ore extracted in running this winze is saved for milling. No cross-cutting has been done as yet.

DAYTON.—The heavy shafts and gearing of the new hoisting and pumping machinery are in position, and the hoisting engines will probably start into operation about the middle of next week.

BALTIMORE AND AMERICAN FLAT.—At the 400-ft level the south drift is steadily advancing with no important developments. Sinking the main incline below the 900-ft level progresses well.

NIAGARA.—Twenty-four ft more have been added to the depth of the main incline shaft this week. No change in material. At the 150-ft level a station has been opened and the drift is now in 12 ft with the face in fine ore.

ROCK ISLAND.—The new lower level started from the 550-ft station of the shaft is being pushed ahead at a lively rate. Drifting both north and south at the 450-ft level progresses well.

KNICKERBOCKER.—Excellent work is being done by the pumps.

CALEDONIA.—The old incline having attained a depth of 400 ft below the 1000-ft level, sinking deeper was discontinued last Friday, in order to put in new hoisting cables, and make certain necessary changes in the machinery. The new works will be ready to start by the middle of September.

BEST AND BELCHER.—Owing to an overflow of water, caused by the breakage of the Gould & Curry pump, the work of cutting down and grading the drift connecting this mine with that, at the 1700-ft level, was considerably interfered with.

YELLOW JACKET.—The north drift, at the 1740-ft level, is still advancing in porphyry and quartz. The south winze is down 111 ft to-day with the bottom in porphyry, and a slight increase of water.

NORTH CONSOLIDATED VIRGINIA.—The building is ready for the reception of the new machinery, which has arrived and will be put into position as soon as practicable.

FLORIDA.—During the week the principal work done has been the cleaning out of the main west drift of the 400-ft level, repairing the timbering, etc.

SOUTH COMSTOCK.—Sinking the shaft is discontinued, it being now 295 ft deep, with a good sump completed 20 ft in depth below the 275-ft level. This level is now being opened, and has already cross-cut into the ledge a distance of 25 ft, westward from the shaft.

LEO.—Sinking the winze progresses well, and it is down 195 ft below the main tunnel level to-day. The ground continues favorable for working.

EUROPA.—New shaft down 150 ft to-day, and sinking much facilitated by the rock at the bottom working very favorably. This shaft will intersect the ledge at the depth of 600 ft, but at 400 ft the first level will be opened for the development of the ledge at that depth, which will be 350 ft below the old workings.

SOUTH CALIFORNIA.—Owing to the strong pitch of the ledge to the eastward, it has been decided expedient to suspend sinking the shaft deeper at present, it being now 120 ft in depth, and sink a new shaft about 1500 ft to the eastward.

PHIL. SHERIDAN.—Owing to the favorable nature of the ground, the drift west is progressing faster than heretofore.

ORIGINAL GOLD HILL.—The fine ore body being developed by the cross-cut from the south drift shows even more extensively than was anticipated.

LADY BRYAN—Main south drift at the 380-ft level progressing well, following the east wall of the ledge. Main shaft sinking at the usual good rate of progress, with a slight increase of water.

SILVER HILL.—The shaft is 425 ft deep, and rock at the bottom working favorably; about two feet per day is made in sinking at present.

COSMOPOLITAN.—The stopes above the main tunnel, as well as the face of the main tunnel itself, are yielding a goodly amount of fine paying ore.

HALE & NORCROSS.—Opening the station for the 2200 or lowest level progresses well, and the north winze from the level above having reached its intersection with the lower level, drifting is commenced to connect it with the incline for air circulation.

AMAZON.—Shaft 118 ft deep to-day, with the bottom in favorable working rock, blasting well. The winze, being sunk below the first station level, is 38 ft deep and all in ore. The machinery works well and gives excellent satisfaction.

BUCKEYE.—The new machinery is fast being got into working position. It is of a very substantial description, and will be capable of sinking at least 1000 ft.

GOULD & CURRY.—Repairing and retimbering the recently caved portion of the shaft is about completed.

LEVIATHAN.—Shaft down 404 ft to-day. Seams of clay and quartz at the bottom. Favorable sinking ground. Will commence drifting in a few days.

SIERRA NEVADA.—Drifting both north and south at the 700-ft level, of the old shaft, progresses finely with good prospects.

BROOKS.—Shaft 98 ft deep, with the bottom all in ore which assays well and promises more.

JULIA.—Main southeast drift in 1095 ft. Main shaft 1420 ft deep to-day. Bottom still in hard rock.

DANEY.—Excellent progress has been made in getting the new machinery into working position, and it will be ready to start up next week.

NEVADA.—Some very fine streaks of ore have been passed through this week by the cross-cut.

WOODVILLE CONSOLIDATED.—Excellent work is being done opening out the station or chamber for the head of the incline.

NEW YORK CONSOLIDATED.—Excellent progress is made with the mason work of the foundations for the new and powerful machinery about to be erected.

GLOBE CONSOLIDATED.—The heavy flow of water from the 400-ft level still continues, and prospecting goes forward at the 250-ft level energetically as usual.

UNION CONSOLIDATED.—Work will be resumed in this mine when the repairs to the Ophir shaft are completed.

JACOB LITTLE CONSOLIDATED.—After passing through a horse of country rock, the face of the main west drift is in better ore than ever.

MEXICAN.—This mine being worked through the Ophir shaft.

Oregon.

MINING AT GRANITE CREEK.—*Bedrock Democrat* July 28: The discovery shaft on the Morning Glory ledge is down, we believe, about forty-four ft, and the owners of the mine have contracted with parties to sink sixty-eight ft deeper within ninety days. The vein is 45 inches in width, and all contains mineral—gold and silver bearing. The formation is very similar to that of the far-famed Comstock of Nevada, carrying black sulphurets and stephanite. The news from Granite Creek district is cheering. The Phil Sheridan, a very rich gold and silver-bearing ledge, has been re-located, and work will be commenced on it immediately. Worcester is doing work on his ledge, and running an arrasta on good gold rock. Thomas McDonald is now over there and expresses a very favorable opinion in relation to the Morning Glory mine, and is favorably impressed with the whole country as being rich in minerals.

THE VIRTUE MINE. — The new machinery is now on the road from Umatilla to the Virtue mine. It consists of two boilers, one large engine for hoisting, and two Burleigh drills. The ground to receive the machinery is being prepared as fast as possible. One of the Burleigh drills will be used for sinking the new shaft, which will be started 450 ft east of the ledge, and will intersect the ledge at a depth of 1500 ft. The Burleigh drills will be propelled by compressed air, for which purpose a 40-horse power air compresser has been purchased and is now on the road. It is estimated that the new shaft can be sunk 100 ft per month with the Burleigh drills. The mill is constantly running on good ore. There are about 100 workmen employed at present, and houses, to accommodate more laborers, are being erected.

THE EASTERN OREGON MINES.—The Portladd *Bulletin* of July 16th says: The quartz and placer mines of Eastern Oregon are yielding more precious metals this year than ever before, as the receipts of silver and gold will testify. By far the greater portion of the product goes direct to the mint, the balance remaining in this city for assay, upon account of the owners, who are principally Chinamen.

A RICH LEDGE.—Oregon *Sentinel*, July 31: We were shown this week some fine specimens of polybasite silver ore. The ledge was discovered recently by Mr. Kelley in Josephine county. On the top of the ground it is about a foot wide. The ore assays upwards of $2,500 per ton, being nearly pure silver mixed with a little gold which makes it worth more per ton. They are making arrangements to sink a shaft on the vein. Also some good specimens of gold from the old "Enterprise" ledge, now called "Goldback" near Browntown, in the same county. This ledge was discovered in 1861 by Messrs. Hilyer & Co., but they after spending considerable money sinking shafts, finally abandoned the ledge and left the country during the Idaho excitement in 1862. The vein is now owned by the Oregon quartz mill and mining company. Mr. Kelley thinks he will make it pay $50 per ton with the new inventions and the advance in scientific improvements of the age. This company is building a 5 stamp mill which is nearly completed. They have taken out about 200 tons of rock and will be crushing it soon.

Washington Territory.

RUMORED RICH STRIKES.—Walla Walla *Union*, July 24: It is reported that a rich ledge of gold and silver bearing quartz has recently been discovered on the Swauk; also that a lode of excellent cinnibar has been discovered some ten miles distant from that stream. Crowds of miners are rushing in, and great excitement prevails over there.

British Columbia.

FROM THE CASSIAR DISTRICT.—*Colonist*, July 20: The news from the diggings is not exciting. There had been another freshet, which had delayed mining, but the creeks were falling at latest dates, which are to July 7th. Three or four companies were making from $20 to $50 a day, but the bulk of the companies had not commenced washing. The Chinese had brought the Grant claim for $2,000. Provisions were cheap at Dease creek. In a claim on McDame creek as high as $50 a day to the hand was made. On Trout creek nuggets weighing 8¼ oz. had been picked up. Mr. LeClair, one of the miners referred to, reports that three men, working 13 days on the Thibert's claim on Thibert creek, took out $2,000.

Professions and trades of every kind are well represented. There are three doctors, two lawyers, seven or eight wholesale and retail dealers, two tinsmiths, one bootmaker, two barbers, one dozen or so whisky mills, one Chinese shop, two butchers, three bakers, three restaurants; in fact, everything except a preacher.

Provisions are getting to be cheaper gradually. Flour and beans are now sold at 25c per pound; bacon, 40 to 50 cents; potatoes, 25 to 30 cents; sugar, 40 to 45 cents; but supplies are coming in very slowly, the trail being in an almost impassable condition, so that pack animals can travel on it with light loads only.

General News Items.

THE sensation of the week in San Francisco was the discovery of the defalcation of Kuchel, aged 20, a clerk of C. W. Fox, the stock broker. $60,000 will probably cover Mr. Fox's loss by his enterprising young clerk.

COL. BAKER, of the British army, and a crony of H. R. H., Prince of Wales, has been found guilty of an indecent assault upon a young lady, and sentenced to 12 months' imprisonment and £500 fine.

JUDGE MORRIS, counsel for Tilton, has served notices on Shearman and Sterling, attorneys of record for Henry Ward Beecher, to be prepared to answer in a new trial on the first Monday in September.

IN the Nortou murder case, now on trial at Santa Barbara, Jack Cotton has been found guilty and sentenced to imprisonment for life. The trial of Mrs. Norton is now progressing.

THE sale, under order of the United States Court, of the franchise and property of the Northern Pacific railroad company, has been postponed from the 2d until August 12th.

A young man named Julius Enfurt, bookkeeper in the firm of Smith & Co., Santa Barbara, committed suicide on Saturday morning at Montecito.

EX-PRESIDENT Andrew Johnson died at the residence of his daughter, in Chattanooga, Tenn., on Saturday morning last.

THE Sultan of Turkey, it is rumored, has dismissed his Grand Vizier. We believe Turkey has no tenure-of-office law.

A MAN named Lauren Storey, of Lagrange, Stanislaus county, was drowned while bathing in the Tuolumne river on Tuesday.

THE Oroville and Laporte stage was robbed near Forbestown, on Tuesday last, of Wells-Fargo's box containing $2,300 in treasure.

THE measles are still ravaging the Fiji islands; 40,000 natives have already fallen victims to the scourge.

MOODY and Sankey held their closing service in Liverpool, on the 3d inst., before an audience of 10,000 people.

THE corner stone of the Kern county court house was laid at Bakerfield, on the 2d inst.

THE number of deaths from yellow fever at Fort Barrancas has been 25 out of 72 cases.

Progress at the Sutro Tunnel.

The following is the report of progress in the Sutro tunnel, for week ending July 29, 1875:

Number of feet in tunnel, July 22	10,134
Number of feet driven during week	162
Distance in, July 22	10,296

Details of work performed are as follows, heading being 8x10 feet:

Holes drilled	485
Holes blasted	511
Aggregate depth	3415 feet
Average depth	7.04 feet
Powder consumed	1,346 lbs
Exploders consumed	498
Rock extra ted	2,098 tons

Rock—Porphyry filled with iron pyrites.

[Signed] A. SUTRO, Gen. Supt.

THE Southern Pacific railroad is now in operation as far as Colton, San Bernardino county.

PEOPLE along the proposed line are agitating the building of the Chico and Colusa railroad.

A NEW line of clipper ships has been established between Philadelphia and San Francisco.

English Mint Records.

An examination which has been made of the records at the mint shows many books and papers worthy of preservation. A "Booke for the Dies, of Gold, Silver, etc., 1676, 1677," contains an accounnt of "Dies for the heuling piece with the Angell," and "Dies for the healing piece with the Shipp," which evidently have reference to the practice of touching for the "king's evil." There is a series of account books relating to the great coinage executed between the years 1695 and 1700. The new money required being far in excess of what the mint at the tower was capable of coining conveniently, mints were established at Bristol, Chester, Exeter, Norwich and York. Old money and plate were received at a certain rate, and coin was delivered out in the same manner as in London. There is a volume containing correspondence between the principal officers of the mint in London and their deputies at Chester. Suspected malpractices at Chester in 1697, "whereby," writes Mr. (afterwards Sir Isaac) Newton, then warden of the mint, "the money comes out worse than heretofore," were followed by protracted disputes between the officers at Chester. A remonstrance, addressed to Mr. Clarke, the deputy master, by his two colleagues, charging him with having treated them with contempt and scorn, drew a reply from Mr. Clarke, in which he says: "I never treated either of you with contempt and scorne, not even when one of you did spit in my face in the publique office." Newton and his colleague, Mr. Neale, then master of the mint, wrote that they were resolved to come and hear both sides themselves, adding, "Till we come, let there be no further quarrelling, but let the publick business be peaceably carried on as it ought to be; for the mint will not allow of the drawing of swords and assaulting any, nor ought such language wee hear has been he used any more amongst you." The plant of the Chester mint was shipped to London in 1698, the work for which it was erected having been brought to an end. Another book contains accounts of the recoinage of a large quantity of the old "hammered" gold coin of the reigns of James I, Charles I and Charles II, which had, down to 1733, been current under the name of "hroad pieces." These coins were received under proclamation at the mint at the very high rate of £4 1s per ounce. In 1733 and 1734 this rudely fashioned "hammered" money was in this way withdrawn from circulation. A book of entries of all the "Assaies and Verdicts of the Pixe," taken before the Lords of the Council *ab initio regni Regis Jacobi imi et deinceps* is regarded as one of the most valuable of all the original records remaining in the mint. It appears that during the commonwealth new trial plates were prepared, but they were not recognized after the restoration, as in the first year of Charles II an order appears directing new plates to be again prepared, for the reason that "those standard pieces of gold and silver which were made in the reign of King James are wrought out." The plates made under the commonwealth still remain in the mint almost intact. Some of the trials of the pyx recorded were made in the presence of the sovereign. The "Record Books," extending from 1445 to 1849, contain many documents of great interest and importance.—*London Times.*

New Incorporations.

The following companies have filed certificates of incorporation in the County Clerk's Office at San Francisco:

BEAVER M. Co.—July 29.—Location: Elko county, Nev. Capital, $5,000,000. Directors—W. H. Mills, M. J. McDonald, S. Reinhart, G. H. Willard and W. G. Hughes.

BOSTON CINNABAR M. Co.—July 29. Location: Trinity county, Cal. Directors—Edmond Green, R. E. Brewster, Charles R. Worland, C. C. Palmer and Abraham Halsey. Capital stock, $5,000,000.

ALASKA M. Co.—July 30.—Location: Sierra and Yuba counties, Cal. Capital, $1,000,000. Directors—Stephen Spencer, J. P. Brown, J. R. Meek, Charles Lux and W. C. Belcher. The principal place of business will be in Camptonville, Yuba county.

DARWIN CONS. S. M. Co.—July 30.—Location: Inyo county, Cal. Capital, $10,000,000. Directors—Robert Sherwood, W. H. V. Cronise, G. W. Kidd, E. M. Fryaod B. S. Schmidt.

ANGORA ROBE & GLOVE Co.—July 30.—Location: San Jose, Cal. Capital, $50,000. Directors—John W. Hinds, Jackson Lewis, Henry T. Welch, G. V. Brown and Return Roberts. The principal place of business will be in San Jose.

SONOMA VALLEY WINE & BRANDY Co.—August 2. Location: Sonoma county, Cal. Directors—Wm. McPherson Hill, David Burris, Leonard Goss, A. S. Edwards, O. W. Craig, A. F. Harasthy and George L. Wratten. Capital, $250,000. The principal place of business will be in Sonoma valley.

GREAT WESTERN CONS. M. Co.—August 2.—Location: Inyo county, Cal. Capital, $ 0,000,000. Directors—G. W. Beaver, L. S. Adams, R. Wegener, W. W. Stetson and John Turner.

HILLSIDE G. & S. M. Co.—August 2.—Location: Devil's Gate and Chinatown mining districts, Lyon county, Nev. Capital stock, $6,000,000. Directors—James A. Pritchard, J. Ross Browne, A. S. Peterson, S. J. Corbett and J. P. Jackson.

TASSAJARA COAL M. Co.—August 2.—Location: Contra Costa county, Cal. Capital stock, $1,000,000. Trustees—C. M. Dougherty, L. Atkinson, H. Johnston, F. Saogmaster and George Johnston.

NORTH SAVAGE G. & S. M. Co.—August 4.—Location: Nevada. Trustees—Thomas Ryan, T. P. Riordan, L. J. Mooney, Wm. M. Pierson and Wm. T. Higgins. Capital, $10,000,000.

VULCAN M. Co.—August 4.—Location: Nev. Trustees—O. W. Phillips, Peter Mathews, Wm. Hazelhurst, Wm. E. Hale and Samuel Miller. Capital, $6,000,000.

BUFFALO M. Co.—August 4.—Location: Cal. Trustees—L. C. Fowler, Daniel Cook, Frank Swift, W. H. Porter and E. W. Haskins. Capital, $10,000,000.

CANON CONS. M. Co.—August 4.—Location: Cal. Trustees—Frederick Clay, George R. McKenzie, Joseph C. Ford, James W. Goliy and Henry Raymond. Capital, $10,000,000.

CENTENNIAL G. & S. M. Co.—August 4.—Location: Nevada. Trustees—C. Allenberg, George T. Bromley, Thomas Cole, Paul Moroney, Chas. E. DeLong and J. F. Freeman. Capital, $10,000,000.

Popular Lectures.

Economy of the Vegetable and Animal Kingdoms.

Seventeenth Lecture delivered before the University of California College of Agriculture, on Monday, February 15th, 1875, by Prof. C. E. Bessey.

(Reported and Illustrated for the Rural Press.)

Hybrid and Spontaneous Varieties—On the Limits of Crossing.

It is a question of much importance to the breeder, whether of plants or animals, how far crossing can be successfully carried, or in other words, what forms admit of crossing. Upon this question diverse opinions prevail, and indeed it is most difficult to obtain reliable data. This state of things is, no doubt, due to the fact that most observers have started out with certain erroneous ideas, which prejudiced them in their investigations.

Generally the discussion of the question is introduced by making a distinction between a cross and a hybrid, that is, it is generally stated that when two individuals of the same species unite, the result is a cross, while if the individuals are of different species, the result is a hybrid. Then, to make the matter worse, we have the law laid down that whenever two different forms produce sterile offspring, such forms belong to or constitute different species, while, if they are fertile, they belong to the same species. Should we accept this statement it would be easy to frame an answer to the question as to the limits of crossing; but then as you see, it would be equivalent only to saying that crossing is possible as far as it *is* possible. Such a statement conveys no meaning, and we might as well leave it out of our discussion. If systematic botanists and zoologists wish to adopt fertile crossing as the test for species, we certainly will not prevent their doing so. Our question still remains. Let us see whether we cannot clear away some of the rubbish.

I lay down the following propositions:

I. There is no essential difference between what is called a cross and what is termed a hybrid. The idea of there being an essential difference between a cross and a hybrid has come down to us from the times when the relations between variety and species were not as carefully studied (I will not say *understood*) as now, when naturalists considered species invariable, and when the possibility that a variety might become a true species never was in the thoughts of the student of plants and animals, it was a most natural supposition that the union of two varieties of the same species was a very different matter from the union of two species. To-day, however, we cannot admit of there being any difference.

II. The forms which are alike are, other things being equal, the most successfully mated, for unlikeness implies differences in organization, or function, or both, which must be disadvantageous; and the greater the unlikeness the less the possibility of successful mating. That this is the case in nature is pretty clearly indicated by observations and experiments, which, unfortunately for us, are far too few in number. Some more evident reasons for this last proposition are the following:

1. The varieties may come into bloom at slightly different times and so render crossing difficult. Example—Early and late varieties of cultivated plants.

2. The varieties may become different in size, and so fertilization may become a physical impossibility. Example—Some bantam fowls.

3. They may live in different localities; one may live or grow on the mountains, the other in the plains. Example—Alpine varieties.

4. They may become *exclusive* in habits; in plants, occupying the ground to the exclusion of others; in animals, gathering in herds or flocks by themselves. Example—Pigeons and some grasses.

5. In flowers dependent on insects for fertilization a very slight difference in arrangement or proportion of the parts would prevent cross-fertilization. Example—In the orchids.

6. It is probable that in forms which differ from one another, the reproductive cells are not the exact complements of each other. All these facts point to one result—and that is that as forms diverge from one another they become less and less fertile.

Now, as we well know that the difference between species is not a uniform quantity, we are prepared to expect unequal degrees of fertility. That this occurs, you well know. Some allied species are absolutely barren while in other cases hybrids are readily obtained. In some genera the species seem to be very closely allied and in such cases there is a little difficulty in crossing, as is the case with the species of the horse genus, with the dogs and wolves, and in plants with the members of the grape genus, also the oaks. In other words, the distance so to speak, between the species is so great that crossing cannot occur.

We must cease to expect the limits of crossing to be a fixed line which can be described in taken from our nomenclature. The older investigators attempted to find some definite limit, and hence we find them suggesting that probably no crossing could take place between species belonging to different genera. They expected to discover some simple, short rule which should enable them to express the whole matter in few words. Here again, as elsewhere, ignorance expected what can never be realized.

Nature Draws No Sharp Lines of Separation.

Her methods cannot be expressed in the short "rules" demanded by those who do not understand her ways. Thus far we can say of the limits of crossing, that "the more nearly allied two forms are, the more readily will they cross." If you ask, "how much difference is required to prevent crossing?" I answer that must depend upon the kind of difference. Referring to the list of reasons for infertility of varieties (or species) you will see that a very little difference in the time of blooming would prevent the crossing of some species of plants, while for others a longer time might be allowed. Difference in size is more or less important according to circumstances. In plants, the staminate plant may increase very considerably in size over the pistillate one without decreasing materially its power to fertilize it, but no great increase in the opposite way is permissible. In the majority of animals the same rule seems to hold, while in some groups it is reversed, as in the raptorial birds; in some cases size of body alone; in others, size of reproductive parts, *i. e.*, large or small flowers, large or small pollen. I need not run over all

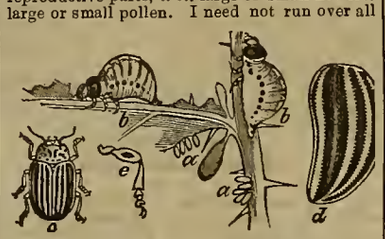


Fig. 1 The Bogus Potato Beetle.

the differences before pointed out. You can readily see the need there is of a careful examination of the whole subject and the need there is of a thorough study of each particular species.

The Sterility of Hybrids.

If we cross a succession of forms which gradually diverge, we find that before the point of absolute sterility is reached, there is a point where hybrids are produced which are imperfect, hence they are sterile, and cannot reproduce their hybrid kind. This is exactly what we should expect from what I have said before. The mule and the hinny are familiar examples. Domestication frequently reduces this tendency to sterility of crosses.

[To be Continued.]

Insect Enemies.

Prominent among the insect pests which are raising havoc in some of our agricultural sections is the *Doryphora junota*, which has been named

The Bogus Potato Beetle,

From its close resemblance to the Colorado beetle; but if the reader will compare the sub-

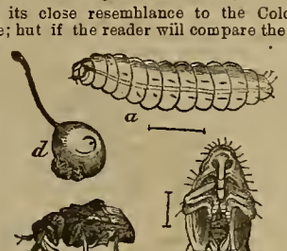


Fig. 3. The Curculio.

ject of the accompanying illustration—Fig. 1—he will observe some striking differences in markings. The eggs, *a a*, are very nearly like those of the regular potato beetle. The larvæ, *b b*, are lighter colored, and have light colored heads instead of black ones. The mature insects are also lighter colored, and in them the *second and third* black lines counting from the side of the body, are united posteriorly; this is shown at *d*, which represents one of the wing-covers. The leg, *e*, is seen also to differ from that of the other species, in the black spot on the thigh. This species does not feed upon the potato; its chief interest lies in its close resemblance to the potato beetle.

Fig. 2 in our illustration is the

Sheep Bot-Fly.

It is also known as the "Head Maggot" and "Grub in the head." The accompanying cut shows the different stages of its growth. 1 and 2, the fly; 3, pupa; 4 and 5, full grown grubs; 6, a young grub. All are somewhat enlarged.

The fly is described as being somewhat larger than a common house fly; of a dull yellow color above, marked with brown; eyes purplish-brown; under side of head puffed out and white; feet brown; wings transparent and extending beyond the body. It is viviparous; that is, instead of laying eggs, as most insects do, it retains them in its body till they hatch, when they are laid as minute grubs.

In early summer the flies—Fig. 1 and 2—appear and begin laying their young in the nostrils of the sheep. These grubs, or maggots, are quite lively, and soon wriggle their way upward through the nasal passages into what is known as the *frontal sinus*. If the egg were deposited here there would be more likelihood of its being discharged or blown out by the sheep; but the active maggot obtains a living hold, commences at once to work upward into the head of the animal, and ejectment is not likely to occur.

When the fly deposits larvæ in the nostrils they crawl back through the nasal cavities, and through these canals into the sinuses, where they live until the following spring, by which time they have attained their full size. During this time the grubs feed upon the mucous matter in the sinuses, and thus cause irritation of the membrane which lines them. It is declared by some that the grubs eat their way into the brain; but it is now generally conceded that the injury arises from the communication of the irritation of sinuses to the other membranes of the head.

The grubs, when full grown, crawl down the canals and through the nostrils, falling to the ground, in which they bury themselves. Here they undergo their final transformation, changing first to the pupa state, Fig. 3, and in early summer emerge as the perfect winged fly, Figs. 1 and 2.

Various modes of treatment are practiced for sheep affected with the sheep hot-fly. Tar is a very common remedy, and is used by daubing the nose of the sheep during the time of the deposition of the young grubs. Or the sheep will tar their own noses if it is placed in the troughs or places where they go after salt. If the sheep can get at dry dirt or dust, at the time when the flies are depositing their eggs, they will thrust their noses into it and thus, in a measure, frustrate the designs of the insect. Other simple remedies are used with partial success, but some modes of treatment are applied which are about as hard on the sheep as on the parasites.

We have reserved for the last of this week's group an insect whose name has more terrors for the fruit grower than that of any other pest.

The Curculio.

Millions of dollars would not square the account charged against this little insect by the

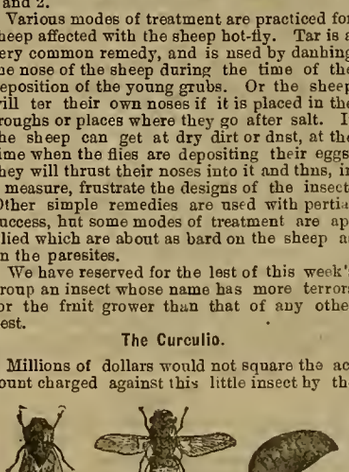


Fig. 2. The Sheep Bot-Fly.

fruit growers of the Atlantic States. Its destructive and persistent attack upon the plum seems like a war of extermination; and for a term of several years the apprehension was quite common that this fruit would have to succumb. Even now the curculio's assessments on the plum orchards are enormous; but the legitimate owners are less disposed than formerly to be "froze out." The cherry and the peach have also suffered severely from the ravages of the curculio. The damage to the latter has been less than to the former; and the area of its cultivation being restricted in the Eastern States, the loss was less generally felt; but cherries were formerly nearly as standard a fruit as apples, and were as little restricted to localities; but now they are considered among the fruit delicacies. With this result the curculio is chargeable.

Fig. 3 in our illustration shows this insect in its four stages—*a*, the larva or worm; *b*, the pupa; *c*, the beetle about half grown; *d*, at the right, the beetle, natural size; *d*, at the left, the plum with the crescent shaped sting of the insect.

The mature insect is about one-fifth of an inch long; rough, and of a dark brown color. It belongs to the family of "Snout beetles;" characterized by the anterior part of the head being prolonged into a proboscis or snout. Like the cucumber bug and some other insects it "plays possum," or feigns death when disturbed, folding its legs and dropping from the tree.

The eggs are white, oval and barely large enough to be seen with the naked eye. In laying them the beetle first makes an incision with its snout in the young fruit, as seen on the plum, *d*, and then deposits in it a single egg, which soon hatches into the grub, *a*. This is at first very small, but grows rapidly while feeding upon the flesh of the fruit; and when full grown measures about three-eighths of an inch, being of a whitish color. When the grubs are full grown—which may happen at different stages of the growth of the plum or peach—the fruit falls from the tree and the insect goes into the ground. As the cherry occupies less time in maturing than the plum or peach, the grub does not attain its full size in this fruit until it is about ripe; and, therefore, it does not fall from the tree as early as the others.

The grub soon leaves the fallen fruit and hides itself in the ground, where it is transformed to the pupa, as seen at *b*, and remains in this state about three weeks, when it is again transformed to the mature or beetle state. In this State it remains in the ground until spring comes, when they commence their life task of destroying the season's plums, peaches and cherries.

Different modes of warfare, some of them laborious and expensive, have been practiced against the curculio, with scarcely perceptible results. We had the honor of serving in the campaign against this destroyer when it first invaded New York, about thirty years ago, and have met him on many succeeding occasions, employing all sorts of tactics, but have never pretended to be a match for this, the second great destroyer that has spread ruin and devastation under the banner of the crescent. The most efficacious mode, in our opinion, is to gather the infested fruit as soon after falling as possible, and feed it to hogs, or destroy it by burning.

The Woodside Mine.—Cor. El Dorado Co. *Republican*, July 22: I notice in your last week's paper that you say the Woodside mining company of this place was still sinking. This is incorrect. I have taken the trouble to examine this mine within the last few days, and can give you a true statement of its operations during the last year. About one year since the company erected buildings and put up a 40-horse power engine, together with suitable hoisting works, and steam pump to clear the shaft of water. At this time the shaft was 130 ft deep, and after pumping about 6 weeks cleared the mine of water and began sinking, but soon found the water so strong that they put in another steam pump, (Knowles' patent) 14-inch cylinder, capable of throwing 35 miner's inches of water. The shaft was continued down to a depth of 264 ft. During the time small drifts were run to cut the ledge, which seemed to dip to the east. At 254 ft, the first regular working level is now being run, rather more in the shape of a cross-cut, which will tap the ledge some 80 ft east from the shaft. This cross-cut is now in about 70 feet, with a fair prospect of finding a good ledge. During the time this work has been going on, a 5 stamp mill has been erected, with the wood and iron work so arranged that five more stamps can be set up at any time. During the last six months, considerable money has been taken out of the mine, but the company have turned their attention more to opening and developing the mine than to taking out money. The formation is now very regular, and soon large sums of money will be taken out, as of yore. The mine is mostly owned in San Francisco, and a large number of shares are owned by our citizens, who have great faith in the future of the mine, and their beautiful mountain town.

Illustrating Our Ethnology.—The Smithsonian Institute of the United States proposes to secure as complete a collection as possible to illustrate the Ethnology of the United States to be exhibited at the Centennial Exhibition in Philadelphia next year, and solicits contributions for this purpose. The object of the collection is to exhibit as complete a series as possible of everything tending to illustrate the past and present history of the aboriginal races now or previously inhabiting the continent of North America, thus including both what is strictly pre-historic in its character or relating to a long past age, and what belongs to the present day.

Ruby Hill.—The town of Ruby Hill is really the busiest looking little place in all Eastern Nevada. Passing through it yesterday for the first time in several weeks, we were most favorably impressed with the spirit of improvement and business activity on all sides observable. A large number of new dwellings have been erected lately and families are arriving and settling there in great numbers. Ruby Hill will yet be an important point. As things are, it is a lively little business place, and it would be still better if it was only a few miles further from Eureka. We of the county seat, however, would prefer having it just where it is.—*Eureka Sentinel.*

Coal Fields of Spain.—M. Grand in describing the coal fields of Spain to the Paris Society of Engineers, estimated their area at 150,000 hectares (the hectare being about 1.47 acres) from which only 500,000 or 600 000 tons are annually extracted, while Belgium, with the same area, yields 10,000,000 tons. The Spanish coal fields are situated in Castille, Leon, and the Asturias. The processes are described as very rough and imperfect. M. Delesse stated that the coal of the Asturias was chiefly used for gas making.

An Opinion.—Prof. Frank Stewert gives it as his opinion that the mines of Ruby Hill, when sufficient depth is attained, will produce free milling ores instead of base metal ores as now. This may be true, but we hardly think the change need be expected this year or next. It is a fact though, we believe, that the ores in some portions of the hills are gradually growing more "quartzy," so to speak, and richer in gold as a greater depth is reached. That the Ruby Hill mines, however will last for ages, one form or another, does not admit of a doubt. —*Eureka Sentinel.*

A Governor in Limbo.—The Governor of Kentucky was marched into the police court at Frankfort, a few days ago, and fined $1. The offense was that he had played croquet on the State House grounds.

Useful Information.

Protection Against Flies.

If any information or suggestion can be given which will tend to reduce the discomfort arising from the prevalence of house flies, that information or suggestion will benefit at least one-half the people of this country, particularly at this season of the year, when the pests are being armed and equipped for the summer campaign. On this subject there are a few things worth publishing and knowing. One is that the eggs of flies are never laid or hatched in the house, and scarcely ever in the shade. There are a few favorite localities where the eggs are deposited, which can be easily discovered. One is upon the lower side and along the main rib of the leaves of certain kinds of trees and shrubs. If the leaves curl, and upon examination a mass of minute insects are found, of color from dusky brown to black, and flies small to full grown are about the tree, one may know that that tree or shrub is the hatching place for flies. A small tree is sufficient to produce millions of them. I have at different times been compelled to dig up a beautiful purple-leaved beeberry and an English cherry of the yellow Spanish variety for the reason that they were breeding ground for flies, and in too close proximity to my house, which they were yearly filling with this filthy insect. Another favorite place for depositing their eggs is where the flow from a sink is allowed to stand and grow putrid on the surface of the ground. Where favorite food is furnished them and light is freely admitted they will be attracted a long way, but in dining rooms and kitchens all sweet and moist food should be secured as soon as the table is left by the family and the light excluded. If these few suggestions are heeded the annoyance of flies and the consequent reputation of a slovenly house can be easily avoided to a great extent. This will pay good interest, first in a reputation for cleanliness, and secondly in being relieved of a nuisance which is often past human endurance.

Utilizing Silk Rags.—It is stated, in *Les Mondes*, that one of the wealthiest English velvet manufacturers, Mr. Listar, worked his way to success by years of patient labor in search of a way to utilize silk rags. He began by buying up all such waste at less than a cent a pound, and up to the year 1864 he had expended the immense sum of over $1,300,000 in fruitless efforts to find a process. Nothing daunted, however, he continued his experiments, and within the past ten years has discovered a method of converting such refuse into velvet of the finest quality. He now carries on this industry in England, in an establishment which employs some 4,000 workmen, and hundreds of travellers are also employed whose sole business is to buy the silk waste, and this they do in all parts of the globe. The factory is said to have cost nearly $3,000,000.

Cement for Fastening Marble.—1. Melt four ounces of bleached rosin with a half ounce of white wax, and stir into the melted mass one ounce of plaster of paris. To use, clean the surfaces to be joined, heat them sufficiently to melt the cement, and after applying it, press the parts well together so as to have only a thin layer of the cementing material at the joint. 2. Add half a pint of vinegar to an equal quantity of skim milk, and mix the separated curd with the whites of five eggs, well beaten, enough quicklime being sifted in to form a stiff paste. This cement is more suitable for small articles of marble, or stonework in general.—*Druggists' Circular.*

Improved Starch.—A beautiful finish can be given to articles to be starched by taking one-fourth of a pound of starch, and working it over and kneading it with a little water, then placing five or six pints of water in a pan, and adding to this a very small quantity of powdered borax, a small piece of sugar, and a fragment of white wax about the size of a hazel nut, and heating the whole sufficiently. This water is then to be added to the starch, with continual stirring, mixing the two together until the whole is as thick as is convenient for application. If the articles are to be made quite stiff, the strength of the starch may be increased two or three fold.

How to Test a Safety Valve.—When you have no steam in the boiler, secure the valve stem to the lever, and attach a spring balance to the lever just over the center of the valve stem. Then raise the lever slightly, so as to get the valve clear of the seat, and note the reading of the spring balance. Then divide this reading by the area of the valve in square inches, and the quotient will be the pressure in pounds per square inch at which the valve opens. The attention of all who wish to test their safety valves is invited to this extremely simple and accurate method.—*Scientific American.*

If mosquitoes or bloodsuckers infest our sleeping rooms at night, we uncork a bottle of the oil of pennyroyal, and these insects leave in great haste, nor will they return while the air in the room is loaded with the fumes of that aromatic herb. If rats enter the cellar, a little powdered potash thrown into their holes or mixed with meal and scattered in their run ways never fails to drive them away. Cayenne pepper will keep the buttery in store rooms free from ants and cockroaches.

A Singular Specimen.—The Erie (Penn.) *Dispatch* says that when Dr. Germer, of that city, was in the great West a few months ago he was presented at Cannon Ball river, Dakota, with a ball about three inches in diameter, covered with dust, and having the appearance of being partially fused on a portion of the surface. He threw it into a box of relics, and thought no more of the matter until a week or two ago, when he was overhauling the pile and discovered the ball. Taking it to a machine shop he thought he would smooth up the ragged edges a little; but upon putting it upon a grindstone he discovered that the ball was not iron, but a material harder than hardened steel, and that the stone had little effect upon it, and that it would scratch glass readily. He has come to the conclusion that it is an aerolite or meteoric stone, nearly round, and resembling a cannon ball, with the exception that it is heavier than iron.

Cleaning Tubes in Tubular Boilers.—R. Weinlig, of Magdeburg, recommends the following apparatus for sweeping the tubes in locomotive and other tubular boilers. A copper tube, about one-fifth of an inch in diameter, and contracted a little at one end, is provided with a wooden handle, and also with a hole where steam may be introduced through a rubber tube. The handle should be a yard long or more, the copper pipe long enough to reach through the fire box or smoke chest and project a short distance into the tubes to be cleaned. The firemen takes the wooden handle under his arm, inserts a pipe into a tube, admits the steam by means of a suitable stopcock attached for that purpose, and rotates the tube round the side of the tube. The escaping steam cleans the tube in a short time, and in a very convenient manner, without disturbing the working of the boiler, or exposing the fireman to heat, smoke or dirt.

Driving Tacks.—A correspondent of the *Building News* writes to that journal as follows: "I had to put a number of small tacks into a piece of work I was engaged upon, and the positions into which they were to be driven were so awkwardly situated that I found the greatest difficulty in getting them into their proper places. After many unsuccessful trials I hit upon the following plan, which answered perfectly. I magnetised a common brad punch, and then by simply placing tacks one after another on the end of the little bar magnet thus formed, I found I could insinuate them into their places with a facility and grace which I could not even dream of when trying any other plan. This dodge may not be new, but it saved me a lot of time, and may in a like manner prove useful to some other of your readers."

Varnishes to Protect Iron from Rust.—Sterling prepares a varnish for this purpose by dissolving gum copal in paraffine oil, placing the iron in it and heating it under increased pressure. Iron vessels, tinned inside, which can be hermetically sealed, are heated by superheated steam. Scott uses the following mixture:

Coal tar	6 gallons.
Black varnish	3 "
Wood tar oil	2 "
Japanese glue	1 "
Red lead	28 lbs.
Portland cement	14 "
Arsenic	14 "

Good Health.

Injurious Effects of Oil-Cloths.

In comparing the deadly effects of animal and vegetable substances in a state of decomposition, it is claimed that a decaying potato is equal to a decaying ox. Perhaps, in view of the fact that the aroma arising from a dead ox would absolutely force itself upon the attention of a community and demand abatement of the nuisance, while the more delicate gas of the defunct potato would admit of inattention or delay on the part of its threatened victims, the potato might be considered the most dangerous of the two. But a still more insidious enemy to health, which most people fail to recognize at all, is dead water. Confined moisture in contact with wood, at a temperature between forty-five and seventy deg. Fah., which is the ordinary temperature of houses in this climate, slowly decomposes and produces a gas which is one of the most fertile causes of the whole class of typhoid and malarial fevers. It is a cause which acts so silently that it is left, unnoticed and unsuspected, to do its work.

One of the most common haunts of this imperceptible gas is in wood covered by impervious material, such as oil-cloth. Water-proof floor-cloths are among the first of the household comforts the tidy housewife desires. They go down in all haste, and the consequences are not apparent till the discovery is made that they are becoming rotten. Water has penetrated through nail holes or cracks underneath them, and, being prevented from evaporating, is absorbed into the wooden floor and gradually decomposes, with the result which has been stated.

Of course it is not necessary that this effect should attend the use of painted floor cloths. Sanitarily considered they are admirable from their quality of refusing to harbor dust or contagion, and being good conductors of heat, they are capital for summer; but when painted floor-clothe and those impervious to moisture are used, there should be the greatest care taken to let no water get into the wood underneath. —*Ex.*

Eating.

As so much of man's happiness and usefulness in life depends upon eating correctly, and as the housekeeper has so much control over this part of our living, we have thought that a few suggestions on the science and art of eating might not be inappropriate to this department.

Every emotion of the heart, every operation of the mind, every motion of the body, or of any organ or member thereof, consumes power which must be supplied by the food we eat; and while it is of the utmost importance that our food shall be wholesome, nutritious and digestible, it is of scarcely less importance that it be eaten correctly, at the right time and with our systems in the right condition.

As first in order we would say, never eat when the body is exhausted. Under judicious management, farmers and farmers' wives need never have dyspepsia, for their plain, fresh diet and free exercise should prevent that terrible disease; but statistics we think prove that they are no more exempt from it than other classes. That they are not, we think, is attributable to the fact that they too often eat when they ought to rest; when their powers are too much exhausted to perform the functions of digestion.

The housewife does her own work, or at least assists about it, works hard to hurry up dinner and have it ready promptly on time, calls the men before dinner is ready, hurrying to the last moment, and then, when she ought to lie down and rest, she sits down to the table and eats. She is so much exhausted that hunger has ceased, her organs of taste are inactive, her salivary glands do not perfectly perform their functions, she does not masticate well, and the food enters a stomach not prepared to perform the work of digestion.

The farmer hurries from the field and his severe labor, and while yet weary and exhausted, sits down and swallows his food, hurrying back to his labor. Is it surprising that, after a few years, the digestive organs become impaired and so many farmers and farmers' wives have wrecked their health before arriving at middle age.—*Rural Home.*

What is Perfect Sleep?

Perfect sleep is always dreamless, while dreaming implies disturbed or an agitated state of brain and mind. This is not rest, or repose, which is "nature's sweet restorer." When retiring with the hope for sound sleep, we should reverently prepare ourselves for it. The following from the *Science of Health*, seems appropriate here, and a fitting conclusion to these curiosities:

"Going to Bed.—We should never go to bed with a hope for rest, sleep and perfect repose until "all ready." The *preliminaries* for retirement are all just as important as are those for the day's duties. We must not go to bed with an overloaded stomach, in an anxious or troubled state of mind, with cold extremities, or without anticipating and respondiug to the calls of nature in all respects. Standing over a register, before a fire, or in a stove-heated room, is not the best way to get warm for a night's sleep. We should take such vigorous exercise as will give quick circulation to the blood, and not depend on artificial, but on natural heat. Attention to all these things, followed by such devotional exercises as will bring all the feelings, emotions and sentiments into accord with the Divine will, subduing passion, removing hatred, malice, jealously, revenge, and opening the portals of heaven to all who seek rest, peace and sweet repose."

It is a happy custom with many to conclude the evening's proceedings by singing a sweet, quiet hymn—"The Day is Past and Gone," etc.—which brings all present into delightful union with each other, and with "Our Father who art in Heaven."—*Ex.*

Don't Worry About Yourself.—To retain or recover health, persons should be relieved from anxiety concerning disease. The mind has power over the body. For a person to think he has a disease, will often produce that disease. This we see effected when the mind is intensely concentrated upon the disease of another. It is found in hospitals that physicians and surgeons who make a specialty of certain diseases are liable to die of them themselves, and the mental power is so great that sometimes people die of the diseases which they only have in imagination. We have seen a person seasick in anticipation of a voyage, before reaching the vessel. We have known people to die of cancer in the stomach, when they had no cancer or other mortal disease. A blindfolded man, slightly pricked in the arm, has fainted and died from believing that he was bleeding to death.

Therefore, well persons, to remain well, should be cheerful and happy; and sick persons should have their attention directed as much as possible from themselves. It is by their faith that men are saved, and it is by their faith that they die. As a man thinketh so is he. If he wills not to die, he can often live in spite of diseases; and if he has little or no attachment to life, he will slip away as easily as a child will fall asleep. Men live by their minds as well as by their bodies. Their bodies have no life of themselves; they are only receptacles of life—tenements for their minds, and the will has much to do in continuing the physical occupancy or giving it up.

Rubbing Warts, night and morning, with a moistened piece of muriate of soda, is said to cause their disappearance without pain or a scar resulting.

Domestic Economy.

A Model Kitchen.

It is a cheerful room, sunny in winter and shaded in summer. It has pictures on the wall, white curtains at the windows, a few blooming house plants at the southern exposure; it has a commodious polished range or cooking stove, a large kitchen table, a pantry, a sink with pump leading into it, and a waste pipe leading from it; a small case of shelves for books, a hanging lamp, a good reg carpet, hooks for hats and coats, shelves for tins, the scales and the dish pan. The pantry has a window in it, shelves on two sides of it, the lower one being broad enough to cover the flour and meal barrels. Here the housewife finds everything required for meals, save such articles as need to be kept in the cellar. There is a spice box in this pantry, a chopper, a sieve, a colander—all the conveniences required in plain cookery, each in its appropriate place.

A shelf behind the stove is a capital place to set bread to rise, or to hold the batter dish when one is trying cakes, or to iron on in cold weather. The table in the corner by the sink may be taken away and the cradle set there when the thermometer is below thirty-two deg. There should be a lounge in the kitchen of every woman who does her own work, that she may drop down on it and rest while waiting for the tea kettle to boil, or the bread to take on a brown crust, or the men to come to dinner. One can rest a great deal faster lying down than setting up.

The foregoing, taken from the Vermont *Farmer*, contains many excellent suggestions, to which, however, the following may be added: The woodhouse should be connected with the kitchen, so that one corner of it could be partitioned off for a bathroom, arranged so that a good supply of tepid water could be obtained from the kitchen by simply turning a faucet. The wood box (and every kitchen should be supplied with one) should project into both the kitchen and the woodhouse. It should project into the kitchen within a couple of feet of the stove to a distance of eighteen inches, and should be about three and a half feet in length, eighteen inches in hight on the front side and twenty-four on the side next the wall. This box should have a close fitting cover, that would exclude the cold in winter; the cover should be fastened to the wall with hinges. The wood box, which has no cover in the shed, is left open so that as fast as the wood is split it can be tossed directly into the box. This is a good plan for saving steps, which will be duly appreciated by many good housekeepers.

Injurious Management of Dishes.—A good set of dishes will last for ages, if properly handled. We have heard of an excellent housekeeper whose bridal dishes, thirty years old, are in excellent condition to-day, although they have been in use every week, more or less, during all the time alluded to. In a common dinner service it is a great evil to make the plates too hot, as it invariably cracks the glaze on the surface, if not the plate itself. We all know the result. It comes apart. Nobody broke it. "It was cracked before" or "cracked a long time ago." The fact is that when the glaze is injured, every time the "things" are washed the water gets to the interior, swells the porous clay, and makes the whole fabric rotten. In this condition they will also absorb grease, and when exposed to further heat the grease makes the dishes brown and discolored. If an old, ill-used dish be made very hot indeed, a teaspoonful of fat will be seen to exude from the minute fissures upon its surface.

Strawberry Ice Cream.—This dish forms a delicious dessert on a hot day, and is easily made wherever the berries and cream can be had in sufficient quantities. Take a quart of berries after they have been hulled, and sprinkle over them one large coffee cup of fine white sugar; let them stand two or three hours, and then mash them up fine, and squeeze out the juice through a strong cloth. Add another large cup of sugar to this juice, and then stir in one quart of pure sweet cream, or a pint and a half of cream and the beaten whites of three eggs. Mix all together and freeze, and when half frozen, turn in one pint of fresh berries and freeze stiff. The juice needs to be made very sweet or else it will curdle the cream.

A Good Dish for Tired People.—Beat two or more eggs, the whites and yolks separately, add a little sugar and, if you wish, crumb crackers into the dish and eat. This will often agree with the stomach when it rejects other food; it is easily assimilated and can be taken without an appetite and without hindering the organs of digestion. Excessive mental or bodily fatigue renders the stomach incapable for the time of performing its office, and this simple dish will recuperate the strength until the person is rested enough to eat heartily.

Trifle.—In the bottom of a deep glass bowl place bits of sponge cake, it matters not how stale, cut into squares or strips; a small piece of preserved citron, also cut into very thin slices, interspersed with the cake. Soak these in a gill of some sort of pleasant sweet wine. Then fill up the bowl to within half an inch of the top with boiled custard, rich and cold. Lastly heap the bowl up high with whipped syllabub.

MINING AND SCIENTIFIC PRESS.

W. B. EWER.....SENIOR EDITOR.

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San Francisco:

Saturday Morning, August 7, 1875.

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Monthly List of Scientific Books.

[Published the first issue in every month.]

AUTHOR.	TITLE.	PRICE.
Croff,	Progressive Amer. Architectura, 97 plates..	10 00
	Monumental Designs, Containing 40 Plates, for Headstones, Monuments, Etc., Half Russ.....	12 00
Lakey,	Village and Country Houses, or Cheap Homes for all Classes, 84 Pages of Designs....	6 00
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ECONOMY IN RAILROADING.—While the gross earnings of all the railroads in the United States in 1874 were $6,000,000 less than in 1873, the net earnings were $5,500,000 more—the operating expenses having been reduced to the extent of $11,500,000. This eleven and a half million dollars, as the annual savings in the cost of running the railroads of this country, means just so much money kept out of the pockets of dishonest contractors and managers and divided among the shareholders in dividends, or the people in the reduction of transportation. The improvement in the management may be fairly attributed to the clamor which has been raised within the two years just past against dishonest management, and the determined efforts manifested to inaugurate a reform in past abuses.

THE agent of the Central Pacific railroad company has succeeded in obtaining right of way of the branch line to Woodland, with the exception of two landholders who hold out for better prices.

Percentage of Gold.

There is one very marked defect in our system of gold mining that does not exist in silver mining, and which the sooner remedied the better. We refer to an entire absence of all positive knowledge as to what the ores being worked contain. The skillful silver miner, becomes daily, and often hourly, acquainted with the value of the ores being worked, and at the end of every run can figure up the percentage obtained and lost. If a large lose he immediately begins to investigate the cause and seek a remedy.

This is not the case with gold miners, who are usually perfectly oblivious of what their ore contains, contenting themselves in cleaning up what they can and considering it the best they can do. In this they may be right and may not, as they have no reliable data to work from. Possibly were they to adopt the course pursued in silver mining, they would often be aroused to an effort for bettering their results, if they found a serious loss was being sustained.

It is asserted by Mr. Almarin B. Paul, the inventor of the Paul process of dry amalgamation, that the gold mills of California do not on the average obtain over one-third of the value of the ores. This conclusion is arrived at after ten years' experience on ores from all sections of the State, and hundreds and hundreds of assays and other tests which he has made during this time. Mr. Paul is not alone in this opinion, but other of our oldest and most practical men hold to the same belief.

The *opinion* of many quartz miners is that they save from fifty to sixty per cent., but opinions as against positive critical investigations are not to be received.

Which view may be correct, we hope our gold miners will endeavor to determine by adopting such a system of assays as is used in silver mining. It is this close critical investigation into what they are doing, which not only makes silver mining popular but makes the silver miner the best possible gold miner. His education is such that he investigates, and thinks it very singular that our gold miners know so little of the value of their ores except by comparison.

Gold miners may say gold assays are unreliable. It is not so much its assays as the manner of selecting the rock which is to be assayed. If it is desired to take the trouble to get at the value of the ores being worked, it can easily be done. But ores must not be selected from specimen pieces, or one piece made to answer for a whole batch. Several methods may be suggested. One is to have your feeder take a piece of ore of given size from every shovelfull he fills for the battery, and after these pieces have accumulated to a hundred pounds or more, have the entire lot pulverized, *dry* sampled and assayed. To be certain, have half a dozen assays made and average the lot.

Another and possibly easier, but not so correct way will be, to collect every half hour a bucketfull of material as it flows from the battery, being as careful to retain the water as the crushed ore, for the reason that the water often contains as much as the sands. Continue this during a run. Allow the whole to settle well and then draw off the water carefully, dry the whole, mix well and properly sample for assay. This is but little trouble, and we think will tend to give our gold quartz miners some different views as to their loss and the value of their property.

Considerable data might be presented to support the belief in an unwarrantable loss of gold and lack of intelligent investigation in this direction among even our best gold miners; but, there now seems to be a general desire to better the past working, and we think that in endeavoring to awaken a renewed interest in investigation, considerable benefit will be the result.

The Southern Pacific railroad has made a reduction of fifty per cent. from the rates heretofore charged for freight transported between Los Angeles and San Pedro. The rate for general merchandise is now $2.50 per ton, and on grain, wine, etc., $1.50 per ton. Fare from Los Angeles to steamer, fifty cents.

IN the trial of Lee for participation in the Mountain Meadows massacre, the evidence has been closed and on Tuesday the 3d inst. the judge charged the jury. The result is being looked for with interest.

The Bay Sugar Refinery caught fire last Saturday morning; $25,000 damage to building and stock was done.

A BRIGANTINE 156 keel, thirty-nine feet beam fourteen feet hold and of 800 tons measurement will be launched at North Bend, Coos Bay, next Monday.

THE Columbia, Tuolumne county, marble mills have another contract for 500 tons of marble for the Palace hotel.

A NEW weekly paper called the *West Shore* has made its appearance, published at Portland, Oregon.

THE Capitol woolen mills, at Sacramento, have been rebuilt and are now in operation.

THE Galt and Ione railroad will be finished and running by the 1st of December next.

Notices of Recent Patents.

Among the patents recently obtained through Dewey & Co.'s SCIENTIFIC PRESS American and Foreign Patent Agency, the following are worthy of mention:

AERIAL AND MARINE GYRATOR.—Peter B. Fernandez, San Francisco. By means of a novel device and arrangement of mechanism, the inventor is enabled to govern and direct the motion of a propeller wheel, used either in the air or water, to guide either a balloon or a vessel, dispensing entirely with the use of the rudder or other appliance for steering. The invention patented also relates to the construction of a gasometer and the manner of attaching the car and propeller in such manner that the weight of the former shall be suspended from the most buoyant part of the gasometer, while the propeller is operated in front of the smaller and less buoyant end where its action will be most easily felt, and where also it will break the force of a head wind. In order to drive the propeller with facility in any of its positions, the inventor employs a peculiar jointed shaft which connects it with the motive power within the car. The gasometer or balloon is made in an elongated, conical form having its front end reduced as near a point as possible, while the rear end has a hemispherical head, similar to the ordinary balloon. The suspending netting is so arranged that the balloon will stand with its major axis in a horizontal position, and from that portion being the most buoyant, the car is suspended. This retains it in this position unless changed by the action of the propeller. The propeller is mounted upon a short rigid shaft which turns in boxes upon a frame or bar. The rear end of this bar is connected by a hinge link admitting of motion in any direction, with the forward end of an inclined bar which extends down to the car and by means of which the whole device is suspended along the lower side of the gasometer. The shaft upon which the propeller is mounted is driven by a suitable power within the car, and in order to admit of a free movement of the propeller, a flexible connecting shaft is employed. This shaft is made by using short sections, similar in size to the rigid part of the shafting. These sections are made so as to be hinged together, each section having the sections at its opposite ends bending at right angles to each other, so as to form a strong shaft which will at the same time work freely and smoothly whatever angle the propeller may stand at.

In order to move the frame and the propeller with facility, four arms are employed which project from the frame and are slightly curved backwards. Each arm has an eye at its outer edge, to which cords are secured and lead through fair leaders down to two windlasses, or drums, which are mounted upon the front end of the car, or boat. The cords are led to these windlasses in such a manner that on each windlass one set of cords passes around in opposite directions, so that when one cord is pulled the other will be slacked off, and one of the arms will be drawn down while the other will be allowed to move in the opposite direction; and the propeller can be operated so as to stand at any desired angle, at the same time being easily rotated by means of the flexible shaft. When it is desired to apply this arrangement to vessels the windlass can be so arranged as to allow their operating shafts to pass water-tight into the hold of the vessel and the flexible shafts must also pass through a stuffing box.

In the formation of his gasometer for aerial machines the inventor proposes to make a horizontal diaphragm extending through it from end to end. The space above this diaphragm will contain gas, while the space below may be filled with air. Whenever the gas expands it is allowed to enter the lower compartment and drive out the air; but when it contracts into the upper compartment, air is again admitted to the lower one so as to keep the gasometer always distended.

In attaching the propeller to a sub-marine vessel water, and air take the place of air and gas in the aerial machine, for the purpose of raising and depressing the vessel.

ROAD SCRAPER.—Abijah McCall, Saratoga, and James T. Watkins and Jasper F. Scott, of Santa Clara, Cal. This is an improvement in road scrapers, more especially that class of scrapers in which the scraper is suspended between two pair of wheels, so as to extend across the line of travel. The axles of two pair of wheels are connected by a single coupling beam, near the middle of which is constructed a turn table from which the scraper is suspended, so that it hangs below the beam and transversely to the travel of the wagon. The turn table is constructed by securing a circular plate by a bolt upon a circular section which is secured to the connecting beam. This circular plate has an arm extending out on each side, to which a metal plate is secured, extending out and beyond their ends. To the projecting ends of this plate are hinged hand levers constructed like a bell crank. A curved rod is secured to the turn table near each lever, so that it can be shifted to raise or lower the scraper at either or both ends, and fixed at any required position. A strong semi-circular metal plate has its ends secured to the rear side of the scraper and connected to it in the middle. Directly in front of the rear axle and parallel to it is secured a rod, the ends of which are supported in braces. The rods extend forward from each end of the curved rod before referred to, so that their forward ends will unite near the scraper and there secured to the bar, thus providing a pushing arrangement which acts from the rear of the machine against the middle of the scraper. The semi-circular plate before referred to, is provided with numerous holes and a brace having one end secured to each end of the curved rod ontside of the braces, while the opposite end is formed into a hook. When the scraper has been adjusted, the hook ends of these braces are secured in a convenient hole in the plate, so as to hold it in place. Any tendency to a side draft when the scraper is set is counteracted by an ingenious contrivance of the journals of the axles.

SODA BOTTLE CARRIER.—A. F. Knorp, San Francisco, Cal. This is a case or carrier especially for bottles which contain liquids under pressure, such as soda water, ginger beer, etc. Inside of the box is constructed a horizontal partition, through which are tapering holes in which the bottles are held. These holes are wider at the top than at the bottom, and their sides are concaved so that the shoulders of the inverted bottles will fit snugly in them. The holes are made close together so as to prevent the bottles from knocking against each other. The ordinary method of holding these bottles in place is to employ two partitions, one above the other. In this case, the holes in the upper partition are made large enough to admit the body of the bottle, while the holes in the lower one are only large enough to admit the neck of the bottle. This arrangement is not so simple and compact as that above described, and when soda bottles which were provided with automatic stoppers were used, the stoppers were frequently displaced by striking against the lower partition when placing the bottles in the rack, because the lower partition was concealed from view. By this arrangement this trouble is avoided. In one end of the case is made an opening near the bottom and below the partition, through which any broken pieces of glass or other rubbish which may get below the partition may be removed, and which will also allow liquid to run out. The case is provided with a lid, which is secured by a peculiar latch lock. The lock consists of a plate secured to the inside of the cover, to which a latch is secured by a bolt, which passes through its center and through the cover of the box. The latch extends on both sides of its central bolt. A curved slot is made in the plate near its edge and a pin on the under side of one end of the latch enters the slot. This pin enters the slot and limits the movement of the latch. A key serves to turn the latch from the outside when the lid is down, so as to cause its free end to enter a notch on the upper edge of the front side of the box.

PAPER FILE.—F. B. Alderson, San Jose. This invention relates to an improvement in paper files or holders, such as are need to temporarily retain newspapers. It consists of two parallel bars, which are connected by standards, having rule joints in the centre. Springs at each end of the two bars draw them together, when the joints are bent, and the standards will hold the bars apart for the introduction of papers, when they are straight, but will shut up and lie concealed when the bars are closed together.

The Toughened (Bastie) Glass.

Notwithstanding so much has recently been said upon the subject of the Bastie (toughened) glass, the general reader seems to be still eager to scan every new paragraph that finds its way into the public prints. Yielding to this general desire we note that another series of experiments with regard to the character of this glass has recently been tried in New York by Prof. Egleston of Columbia College before the New York Academy of Sciences.

The most wonderful characteristic of this glass, as developed by the Professor, was its marvelous power of resisting heat. In several of his experiments two thousand degrees of heat were directed on the center of a plate of prepared glass eight inches square, until at the point of contact with the flame the glass became red hot. The first plate was a poor one, and broke after being subjected to this heat for three minutes. The others were not broken by it. Ordinary glass stood such tests only eight seconds. The practical application of this was, that if a fire was started in a room with windows of this glass, the frame work of the window would burn out and allow the glass to fall before a draft would be created.

Lamp chimneys were then tested by using kerosene lamps with a combination of Bunsen burners, which threw a blue flame, showing that the heat was intense along the whole length of the tube and six or eight inches above it. Water was boiled in a vessel of this glass. The water boiled out and the vessel remained uninjured. The temperature of the vessel was then raised to 150 or 160 degrees and cold water was poured in with the expectation that it would crack the glass. But the water began immediately to boil, and the glass was unhurt.

THE Southern Pacific have graded forty miles beyond San Gorgonio on the desert, but have temporarily suspended work on account of intense heat.

Tempering Mining Tools.

In our issue of July 17th we inserted an article on this subject, and calling for further information has drawn forth the following suggestions from William Teal, our correspondent in Bingham, Utah. He says: I see in the issue of the PRESS of July 17th an excellent editorial on the above subject. Now, however expert the great majority of smiths may think themselves in this line, badly manipulated and tempered tools is still the rule. Charcoal, all coucnr, is preferable to hard coal, yet the latter, if free from sulphur, will answer very well if the mode of tempering which I shall mention is adopted. The heating, you correctly remark, should not be carried above the point of full redness. I will add, a rich cherry red without any approach to a yellow shade, and this makes the description perhaps a little more definite. Any amount of heat above this point produces some injurious chemical change in the steel, very likely a decarbonization, more or less according to the excess of heat. Heat the pick far enough back, say four inches, to allow time enough to complete the drawing before it has wholly lost or gone much below redness. A quick, skillful, smooth hammering is very important.

And now comes the tempering, which, if properly done, will avoid a great smount of needless annoyauce and loss of valuable time as well as nseless profanity. The following method, which I can most confidently vonch for from experience, I have known followed by two blacksmiths who made a specialty of this branch ot business, with notable success.

They first supplied the tnh with the purest water obtainable, into this threw about a peck of waste stnff from the forge, consisting of fine coal, cinders, and probably some horax, and after stirring, poured off the floating portion. Whether these constituents imparted anything to the water, and if so, whether the steel is affected thereby in tempering, is a question that may be correctly answered, I think, in the affirmative. This water they never changed, but replenished as occasion required. Heat the emplement as before, but not over halt as far back, immerse the point (if a pick) ahont an inch and with drsw regularly in ahont the time yon wonld be in counting five or six moderately. Wait till the heat has run down and blued to the point, then lay the pick on the fire, just ontside the flame *in the smoke*, where the temperature will not increase much, this for two or three minntes. Then remove, and with the hammer handle or other dry stick of hard wood, drew across the pick near the poiut. When the heat will gently ignite the little portion of wood scraped off thereon, immerse into the water, until nearly cold.

Although this description is minnte and prcs", it is easily understood and will pay, for it brings the steel to the highest point of efficiency in toughness and durability, excelling the ordinary method at loast a hundred per cent. A little practice will impart the necessary skill. More diversity exists in sharpening and tempering drills than with picks. Heat as in the case of picks, let the point in hammering rest firmly on the anvil, and in giving the bevel, project as little as possible, and do not strike after the redness has left, then heat as before and plunge into the water until cold. After trying many plans I find this the most satisfactory, and the great annoyance of drills checking is entirely avoided.

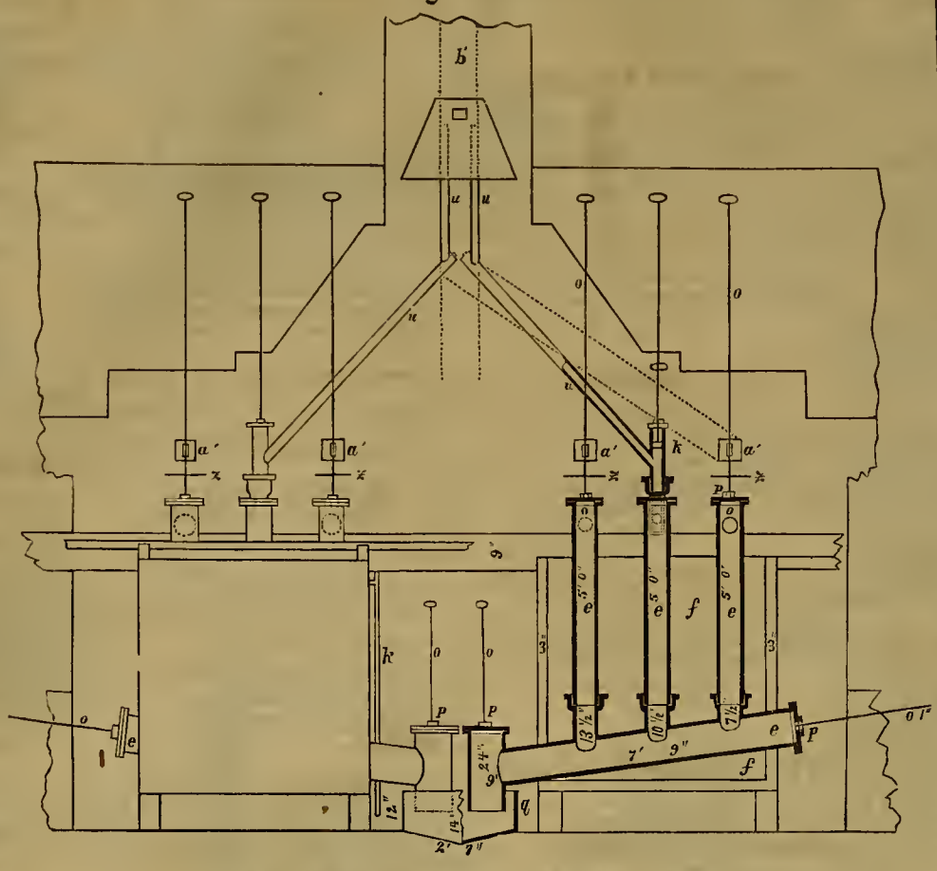
WHERE THE GOLD GOES.—It is estimated that $100,000,000 in gold and silver is paid annually by this country as interest to foreign bond-holders of national, state, city and railroad bonds; and at least $40,000,000 more is taken ont of the country, every year, by tourists. Moreover ourexports of miscellaneous products come short ot our imports by several millions, which balance must also be added to the enormous sum of $140,000,000 to meet our annual payments abroad. Were our gold and silver mines to cease producing for two or three years, we should become bankrupt as a nation; whereas, by a little more economy in our exports, or by a little more determined effort to produce at home that which we now buy abroad, the United States might soon become the richest and most properous nation on the globe. These facts are repeated year after year by the public prints; but the thriftless work of monetary depletion still goes on. The gold and silvor mines of the Pacific coast seem to be the only medium by which the catastrophy of national bankruptcy can be warded off. The nation can well afford to hold them free to all comers, and in every way to encourage their being worked to their utmost capacity.

PROSPERITY AT HOME.—It is a noteworthy fact that despite of the alarming depression in the iron interest throughout Europe, the eight Bessemer steel establishments in this country are every one of them running to their fullest capacity, with orders still coming in upon them; while at the same time three new establishments are nearly ready to go into operation. It may be further remarked that the iron interest, generally, in this country is unusually prosperous in all its departments.

The above, taken in connection with the facts that American iron and steel are both beginning to out-rank in quality the English product, and that certain brands ot American pig iron are finding a market in England, at rates profitable to American producers are most encouraging, and point to the probability that the United States will soon be independent of Europe for this important commodity.

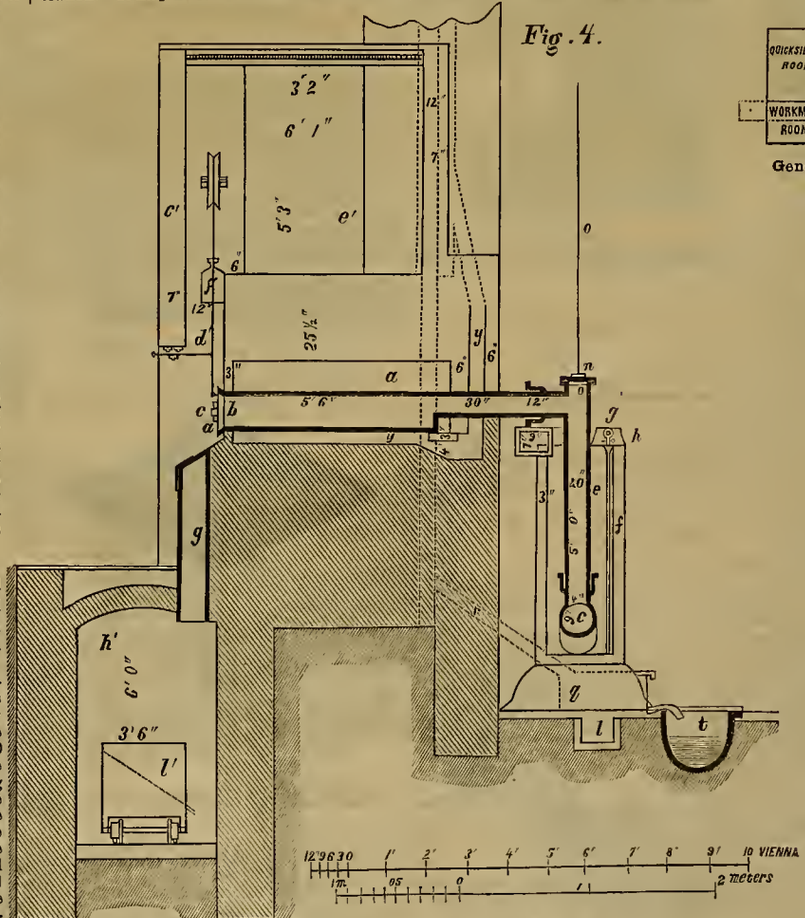
FOREIGN ORDERS.—The Providence (R. I.) Tool Company, have received an order from the Turkish government for a sufficient quantity of Henry rifles to keep the works running for two years exclusively upon that order.

Fig. 3.



Vertical Section and Elevation of the Condensing Pipes.

Fig. 4.



Vertical Longitudinal Section of the Furnace.

MUFFLE FURNACES AT THE QUICKSILVER MINES IN IDRIA, AUSTRIA.

Annealing Glass in Oil Nothing New.

As is well known, very important characteristics are imparted to glass by a process of annealing in oil, by means of which quite a high temperature can be attained and kept atwill. But this tempering in oil is not new, and no patent can be held except for the appliances by which it is done, and which may be different from those hitherto employed.

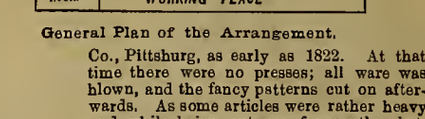
Prince Rupert drops, with which Bastie glass has been compared, are generally temnered by being dropped in water; but they were also dropped in oil a hundred years ago; those so prepared presenting quite different characteristics from those prepared in the ordinary way. More than halt a centnry ago the *Gentleman's Magazine*, in an article on tempering glass, gave the following: "If the glasses are to be exposed to a higher temperature than boiling water, boil them in oil."

Those who contemplate taking stock in the Bastie process at the high price at which it is held by the inventor, will do well before purchasing to recollect the above mentioned fact and to furthermore consult the agents and other processes of a similar character, which are now represented in New York or in Europe. If the papers are to be believed, Baur in Vienna, Pieper in Dresden, Stahl in Berlin, and Meuse in Geiersthal are busy with their processes of tempering glass.

In these times of wonderful discoveries it will not do to snppose that any one man can take and hold every avenue to any coveted result. Hence glass makers and steam engine manufacturers may possess their souls in peace notwithstanding the claims of either Bastie or Keeler.

A prominent Pittsburg glass manufacturer remarked, in reference to the Bastie process: "This new invention possesses little practical importance. The glass trade will not in any way be injured by the new article. Infact it would seem of benefit only as applied to window glass, and time is required even to demonstrate that idea. Although the *mode of application* is original with M. La Bastie, the tne principle of annealing glass in oil was in use at the works of Bakewell, Pears & Co., Pittsburg, as early as 1822. At that time there were no presses; all ware was blown, and the fancy patterns cut on afterwards. As some articles were rather heavy and while being cutwere frequently shattered by the vibration, it was desired to so anneal the ware as to obviate that serious difficulty. As a consequence the following idea was adopted:—A large iron kettle was filled with ware and fish oil poured over the whole until all the space was occupied. A fire was then started nnder the kettle and kept np until the highest attainable heat was secured, when the fire was allowed to die out and the glass cool gradually. In this way, the object was effected and there was no more trouble by the breaking of ware on the cutter's stone."

Fig. 5.



General Plan of the Arrangement.

WAKING UP THE BRITISH IRON MASTERS.—A correspondent writing the *Colliery Guardian* from Wolverhampton, under date of June 4th, says: "Samples of American iron have this week been shown in Wolverhampton, produced by Danks' puddling machine, and the quality of the iron and the comparatively low price at which it is sold, have excited not a little surprise. The whole question of mechanical puddling has been once again revived by this circumstance, and leading South Staffordshire ironmasters affirm that it will be necessary, if the district is to hold its own against rivals, not only to have puddling of iron done by machine, but also to apply the blast to the puddling furnace, by which means it is said, slack, instead of coal, can be used equally well for the process, at an obvious great saving in the cost of fuel."

JOHN R. SIMS, manufacturer of iron doors and shutters, jail and bridge work, cast and wrought iron railways, burglar proof bank vaults and safes, and all that class of iron work, is about removing from his old place on Oregon street, to the premises which have been so long occupied by the San Francisco boiler works, Nos. 123 and 125 Beale street. The buildings are now being put in order.

THE railroad from Colfax to Nevada city is rapidly approaching completion.

IMPORTANT

—TO—

MINE OWNERS.

LATEST INVENTION.

New Method of Working Rebellious Ores Without the Aid of Quicksilver.

R. J. KOHLER REDUCTION AND REFINING WORKS CO.

Incorporated April 27, 1874, with a Capital of $5,000,000, in 50,000 Shares of $100 Each.

ESTABLISHED FOR THE PURPOSE OF SMELTING ORES IN AN IMPROVED MANNER, and for the reduction and refining rebellious ores; also, by a newly patented process, producing the precious metals without loss or the use of quicksilver. These improvements have been fairly tested, and proved successful.

Location of the Worke,

At Damon's Landing, six miles east of Oakland, in Alameda county.

The Company's Property

Consists of just four acres of land, bounded on the east by the C. P. R. R. track (with a switch of 500 feet in length and telegraph at the works), on the west by San Leandro Bay, where the company's wharf can receive all water freights from foreign places.

Buildings.

A frame building, 60x100, well built, divided into business, assayer's office and laboratory, leaving ample room for the manufacture of concentrators.

A one-story brick building, 26x60, with an artesian well in it capable of throwing 45 gallons a minute, a 60-horse power engine and suitable boiler in place, with all necessary appurteuances.

Brickwork.

So far, about 600,000 bricks have been laid on the works, including with the above named brick buildings a chimney, 25 feet square at the base, and roasting, smelting and refining furnaces,

For the Concentration of Ores.

As far as practicable, particularly sulphurets, they will be concentrated at the mine before shipment to the company's works, thereby greatly reducing the cost of sacking and freight; thus enhancing the production of bullion at the works. Among the inventions belonging to the company is a portable and inexpensive concentrator of galvanized iron, capable of being worked by one-horse power and attended by a boy. By means of this concentrator in many cases ten tons of ore can be diminished to one.

Say that five tons of ore yield one ton concentrated, four-fifths of the freight is saved, and ore worth $200 per ton becomes worth.....$1,000
$150 per ton, worth..... 750
$100 per ton, worth..... 500
$50 per ton, worth..... 250

Profits.

It would be difficult to estimate the enormous profits which it is likely this company will realize when the works are complete and in full operation.

Numerous offers have been made to sell ores to the company, which assay very high, that cannot be worked by any process hitherto in use, but can by this company's new process. It follows the company can make their own price on such ores, taking their portable concentrator to the mine and reducing the ores previous to the shipment to the company's works. From one locality, there is a mountain of rebellious ore; the offer has been made to transfer at the rate of 500 tons per day, if required, and to sell the ore, assaying at from one to three hundred dollars per ton, at the rate of 20 per cent. of assay value to the company. The freight on the ore from this locality to the company's works will not exceed $20 per ton.

Capacity of the Works.

Ore can be reduced at the rate of 50 tons per diem until more furnaces are constructed. Taking 50 tons as a basis, at only $33⅓ profit, for 30 days (one month), would give the company $50,000.

All ores can be assayed at the works; orders taken at the office.

As an evidence of the superiority of the Kohler process of reduction over all others, it may be stated that before the incorporation of this company a quantity of mispickle ore, the most rebellious ore to be found in California, was taken and worked by said process, in the presence of a well known metallurgist, and made to yield at the rate of $52.20 per ton.

In many instances the result of working gold-bearing sulphurets exceeds the rate of the most carefully made assays.

Money Expended.

Up to the present time, about $45,000 has been laid out, and only those interested can tell the struggle the inventor has passed victoriously through, amid the cold shoulder from nearly every one. The present state of the works has only been reached by the sacrifice of stock to a large amount; some shares disposed of at par (originally), and others at lower figures, as necessity required. The principal holders of the stock donated about ten thousand shares to fully complete the works, some three thousand of which have been sold at various prices, and the remainder, when sold, will furnish ample funds to enable everything to be in full working order by September 1st. In fact, the roasting and smelting could be commenced by the middle of August.

Looking at these works in a mere hard business view, even as an ordinary smelting R. and R. W., the investment would be a secure one. Costing in all, say some $60,000, when well known smelting works in San Francisco have made a large fortune on the old plan, the various new Kohler inventions give a wide margin for profits.

The fact of reducing rebellious ores in our own State without shipping the same to England, or having the alternative of abandoning the mine, is a strong point; and the Kohler concentrator can be obtained by mine owners at about $3 000 each, in place of paying from $30,000 to $50,000, as they have been doing heretofore.

A few thousand shares remain for working purposes, and can be obtained at the office, southwest corner of Pine and Sansome streets.

There is not the slightest possibility of any assessment ever being made on this stock.

(Signed) H. P. EAYRS,
Secretary.

THE NEVADA

QUARTZ MINING PROPERTY FOR SALE,

With a new 15-stamp mill, now running. Has its own water power, with houses, shops, etc. Government title; joins the Providence mine, on Deer Creek, Nevada City, Cal. For sale or to bond.

Address, I. S VAN WINKLE,
413 Market street, San Francisco.

WIRE ROPE

For Mining, Shipping, and General Purpoees.

All kinds and sizes on hand, or made to order; guaranteed of unsurpassed quality, and manufactured of any length. FLAT ROPES, ROUND ROPES and TAPER ROPES, of IRON OR STEEL.

Patent Endless Wire Ropeway

(WIRE TRAMWAY,)

FOR THE RAPID AND ECONOMICAL TRANSPORTATION OF ORES AND OTHER MATERIAL OVER MOUNTAINOUS AND DIFFICULT ROADS.

This system has been in use for over three years, and given thorough satisfaction.

PATENT GRIP PULLEY,

For transmission of power by means of wire ropes

WIRE.

Fencing Wire and Staples,
BALING WIRE,
SPRING WIRE,
GALVANIZED WIRE,
BROOM WIRE,
STEEL WIRE,
COPPER WIRE,
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And Wire of all kinds, on hand or made to order.

SOLE AGENT FOR

Richard Johnson and Nephews' Celebrated Telegraph Wire.

Full stock on hand in bond, or duty paid.

Wire Cloth and Wire Netting.

FULL ASSORTMENT ON HAND FOR ALL PURPOSES, AND

All Kinds of Goods in the Wire Line.

Send for Circulars, Etc., to

A. S. HALLIDIE,
2am 113 and 115 Pine Street, S. F.

Mining Works For Sale.

—THE—

U. S. GENERAL SMELTING & MINING CO.

(LIMITED),

Spanish Bar, Colorado Territory,

Offer their entire estate for sale at AUCTION, SATURDAY, AUG. 28th, A. M., 1875, between

10 o'clock A. M. and

4 o'clock P. M.

We would call especial attention to this sale. For particulars, address HENRY WILLIAMS, as above.

SANBORN & BYRNES,

STAIR BUILDERS.

Mechanics' Mills, Mission Street,

Bet. First and Fremont, San Francisco. Orders from the country promptly attended to. All kinds of Stair Material furnished to order. Wood and Ivory Turners. Billiard Balls and Ten Pins, Fancy Newels and Balusters. 25v8-8m-bp

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Capital, Five Million Dollars.

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Allow interest at the rate of Four per cent. upon daily balances of Gold and Currency.
Receive consignments of Gold, Silver and Lead Bullion, and make Cash advances thereon.
Invite Correspondence from Bankers, Mining Companies, Merchants and Smelting Works.

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AMMONIA!

For Washing and Cleaning Purposes.

For Sale by all Grocers.

This article is universally used in Europe, and, recently introduced for general family use in San Francisco and neighborhood, is already in great demand. It is now the intention of the manufacturers to introduce it all over the Pacific Coast, at prices which will bring it within the reach of every household.

It is unequalled for cleansing Woolen Fabrics, Cutlery, Carpets or Crockery; for Scrubbing Floors, Washing Paint, Removing Grease Spots, Shampooing or Bathing.

It renders water soft, and imparts a delightful sense of coolness after washing.

DIRECTIONS.—For Laundry, use two to four tablespoonfuls to a washtub of water. For bathing, use one tablespoonful in the bath tub. For removing grease spots, apply with a brush, undiluted, and wash with water afterward. For stimulating the growth of plants, use a few drops in every pint of water used in watering.

PRICE.—Per Pint Bottle, 25 cents; per quart Quart Bottle, 40 cents; per Half Gallon, 75 cents.

Also, SULPHATE OF AMMONIA for chemical purpose, fertilizing, and the preparation of artificial manures. AMMONIACAL PREPARATION, for the prevention and removal of boiler scale. CRUDE AMMONIA, for general manufacturing, and PURE LIQUOR and AQUA AMMONIA for chemical and pharmaceutical purposes.

☞Manufactured by the

SAN FRANCISCO GAS-LIGHT CO.

eowhp

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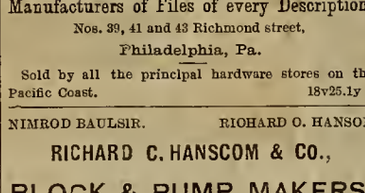

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Manufacturers of Files of every Description

Nos. 39, 41 and 43 Richmond street,

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Sold by all the principal hardware stores on the Pacific Coast. 18v25.1y

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BLOCK & PUMP MAKERS,

IMPORTERS OF ALL KINDS OF

Patent Bushings & Gearing Apparatus,

STEEL FRICTION ROLLERS,

MINING BLOCKS OF ALL DESCRIPTIONS,

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jn5-2am

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Druggists Glassware and Sundries,

PHOTOGRAPHIC GOODS, ETC.,

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Ores worked by any process.
Ores sampled.
Assaying in all its branches.
Analysis of Ores, Minerals, Waters, etc.
Plans furnished for the most suitable process for working Ores.
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Mining Engineers and Metallurgiete.

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On all kinds of Ores, and particular attention PAID TO

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FOR QUARTZ MILLS,

Made by our improved process. After many years of patient research and experiment we have succeeded in producing STEEL SHOES AND DIES for QUARTZ MILLS, which are unequalled for *Strength, Durability and Economy.*

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Emery Wheels
Are the best. Try them.

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Of Every Description, at Reasonable Prices.
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IMPROVED ADJUSTABLE CRANK PIN.
STRIKES BLOW HEAVY OR LIGHT, FAST OR SLOW.
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Superior Design and Workmanship, Extra Heavy (1400 lb.)
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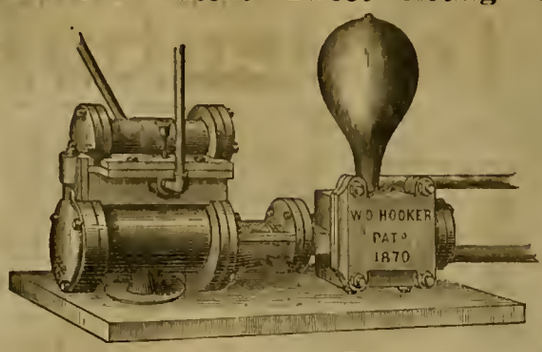

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For hard and wet Rock, Iron, Copper, etc., and Submarine Blasting.

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For medium and seamy Rock, Lime, Marble, Sulphur, Coal, Pipe Clay and Gravel Bank Blasting, Wood, etc.

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Rotary Pressure Blower,
Warranted superior to any other, Rotary or Reciprocating. T. WILBRAHAM & BROS.,
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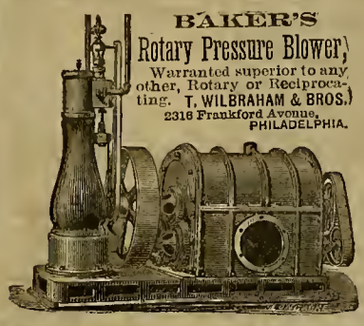

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Wanted, by a thoroughly practical mill man, a situation as First Engineer, Foreman, or General Manager. Is an engineer and machinist by trade, and has a fair knowledge of assaying, melting, etc.
Apply to A. M. KRUTTSCHNITT,
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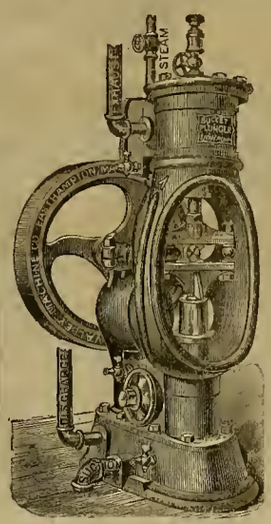

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Manufacturer of perforated sheet metals of every description, at reduced rates. Mill owners using Battery Screens extensively, can contract for large supplies at favorable rates. This is the only establishment on the Coast devoted exclusively to the manufacture of screens.

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The undersigned, owners of LESCHOT'S PATENT for DIAMOND POINTED DRILLS, now brought to the highest state of perfection, are prepared to fill orders for the IMPROVED PROSPECTING and TUNNELING DRILLS, with or without power, at short notice, and at reduced prices. Abundant testimony furnished of the great economy and successful working of numerous machines in operation in the quartz and gravel mines on this coast. Circulars forwarded, and full information given upon application.

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24v26-tf

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MANUFACTURED BY THE
Cal. Chemical Paint Co.

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This Paint is prepared in liquid form, READY FOR APPLICATION—requiring no thinner or dryer, and will not spoil by standing any length of time.
It is Cheaper, more durable, more Elastic, and produces a more Beautiful Finish than the best of any other Paint.
It will not Fade, Chalk, Crack, or Peel off, and will last twice as long as any other Paint.
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Put up in ¼, ½, 1, 2 and 5 gallon packages, and in Barrels. Sold by the Gallon.
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CATARRH AND COLDS—Dr. Evory's Diamond Catarrh Remedy never fails; perfect cure; try it; fifty cents per bottle. Depot, 608 Market street, San Francisco, Cal., opposite Palace Hotel. Sold by all druggists.

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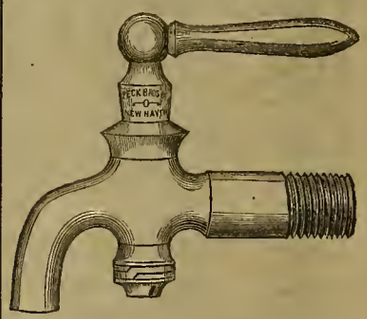

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STEAM PUMPS, STEAM ENGINES,
And all kinds of Machinery.
REPAIRING PROMPTLY ATTENDED TO.

Sales at S. F. Stock Exchange.

FRIDAY, A. M., JULY 30.

210 Alpha.....20½@20
300 Baltimore Con..4⅜@4⅝
295 Belcher.....30@29½
1315 Best & Belcher...55@57½
100 ...do.....b 5..57½
490 Bullion.....53@53½
980 Crown Point.....33@35
100 ...do.....h 30..35
500 Confidence.....23@23½
290 Con Virginia.....34@33⅞
25 ...do.....b 30..34⅛
2130 California.....65@65½
450 Caledonia.....28@28½
250 Daney.....1
110 Empire.....7⅝@7⅞
15 Exchequer.....200
2350 Gould & Curry.21½@19½
225 ...do.....19¼
100 ...do.....b 30..66
115 Globe.....16
1385 Hale & Norcross.....48@48½
1600 Imperial.....11¼@11
20 Justice.....140
615 Julia.....21@22
40 ...do.....b 30..22½
210 Knickerbocker.....4
210 Kentuck .....15½@15½
1130 Lady Bryan.....1
1945 Mexican.....23@22½
3635 Ophir.....55@57
830 Overman.....81@82
400 Savage.....145@143
1580 Sierra Nevada...20@19¾
105 Seg. Belcher.....100@98
100 Sneeor.....b 30..22½
200 Union.....10@9⅝
100 ...do.....b 5..10
70 Yellow Jacket.....90@89

AFTERNOON SESSION.

85 American Flag.....1½
130 Am Flat.....3⅞@4
3270 Andes.....5½@5¾
150 ...do.....h 10..5½
150 ...do.....b 5..5⅝
300 Belmont.....3⅜
300 Chief of Hill.....45
1010 Challenge.....6½
500 Consumpolitan.....55c
465 Daytan.....3
920 Eureka Con.....49@43½
75 Empire I.....37½c
400 Florida.....3@2½
430 Gila.....
600 Golden Chariot..1½@1⅝
50 Fleece.....2
300 Illinois Central..5⅜@5⅞
200 Jackson.....2@1⅞
1135 Jefferson.....4
50 K K Con.....55@57
640 Kosenth.....2½@2⅝
220 ...do.....e 30..2½
890 Leopard.....11
200 Lady Wash.....2½
920 Leviathan.....
700 Leo.....1¾
1130 Meadow Valley..6⅝@6½
2200 Manefield.....1@¼
200 Mahogany.....
600 Mint.....80c
510 New York.....1@1¼
609 Niagara.....10@15c
350 O G Hill.....1¾@1⅝
175 Occidental.....1
200 Phoenix.....
50 Panther.....1½
700 Panper.....2½c
200 Pacific.....2¼
140 Poorman.....3⅜@3½
350 Prospect.....
635 Phil Sheridan.....1½@1⅝
295 Raymond & Ely..47@47⅛
20 ...do.....b 5..48
400 Rye Patch.....1¾@1⅝
1790 Rock Island.....3⅜@3⅞
200 ...do.....b 30..4
20 St Patrick.....1½
500 South Chariot.....15c
300 S Monntain.....2¼@2⅝
380 S Hill.....1¼@1⅜
200 ...do.....h 5..11
50 Tyler.....75c
510 Utah.....14½@16
480 War Eagle.....40@25c
829 Woodville.....@3⅜
250 Whitman.....2½
710 Wells-Fargo.....55@60c

SATURDAY, A. M., JULY 31.

230 Alpha.....21½@21
1205 Best & Bel.....56@58½
100 ...do.....h 5..58
325 Belcher.....30@29½
10 ...do.....h 10..30
140 Bullion.....53@52
610 Baltimore Con...5⅞@5⅝
100 ...do.....h 5..5¾
1380 California.....65@64
1000 ...do.....h 10..64⅜
120 ...do.....b 30..65
100 ...do.....b 5..64⅜
720 Caledonia.....28@27½
35 Chollar.....84@8
130 Confidence.....24⅜@24½
695 Crown Point.....35@33½
125 Con Virginia.....33⅜@35
5 Exchequer.....200
565 Eureka Con.....50@51
1590 Gould & Curry.22½@21½
20 ...do.....b 10..22½
980 Globe.....16@15c
540 Hale & Nor.....47½@48
375 Imperial.....11@11¼
320 Julia.....22@22½
20 Justice.....140@137½
200 Knickerbocker.....3⅞@4
40 Kentuck.....86@81
265 Lady Bryan.....1½@1⅝
170 Meadow Valley..6⅞@6¾
620 Mexican.....22@23½
9300 Ophir.....56@56½
570 Overman.....80@81
10 ...do.....h 30..85
235 Savage.....140@143
10 ...do.....s 30..140
1785 Sierra Nevada...17½@18
100 Seg Belcher.....88½@99
300 Succor.....1
665 Union Con.....9¾@9⅝
125 Yellow Jacket.....88@87

MONDAY, A. M., AUG. 2.

80 Alpha.....21⅜
3020 Best & Bel.....61@59½
550 ...do.....b 5.....60@61
100 ...do.....b 30..61½
115 Belcher.....29½
290 Bullion.....54⅜
860 Bal Con.....9¼@
575 Caledonia.....8@2⅜
2650 California.....70@68½
284 Confidence.....25@25½
325 Con Virginia.....34⅝@35
625 Crown Point.....33⅜@34
600 Chollar.....90@92½
135 Empire Mil.....7
10 Exchequer.....200
100 Globe.....55@57½c
2725 Gould & C.....21½@20
420 Hale & Nor.....54@52
20 ...do.....b 30..54½
745 Imperial.....11¾@12
5 Justice.....3
335 Julia.....22@23
490 Knickerbocker.....4@4½
90 Kentuck.....15½@16
1130 Lady Bryan.....1½@1⅝
300 ...do.....b 5..1⅜
1380 Mexican.....23@23½
2100 Ophir.....59¾@60½
40 ...do.....b 30..61
440 Overman.....83@84
50 ...do.....h 5..90
270 Savage.....150@148
80 ...do.....b 5..150
500 Seg Belcher.....102@104
870 Sierra Nevada...19@18¾
210 Silver Hill.....11¾@11½
300 Sneeor.....1@1⅛
755 Union Con.....10⅞@10½
150 ...do.....b 10..10
745 Utah.....11¾@12
80 Y Jacket.....91½@93

AFTERNOON SESSION.

10 Am Flag.....3
525 American Flat.....4⅜@5
300 Alta.....2
210 Andes.....6@5⅞
200 ...do.....b 30..6
115 Belmont.....3½
465 Cosmopolitan.....60@55c
1000 Challenge.....6½@6⅝
360 Dayton.....5½@5¾
100 Eureka Con.....1½
100 El Dorado South.....50c
15 Eureka G Y.....4
60 Empire I.....50c
40 Eclipse.....9
150 Florida.....2¾
400 Gila.....4½@5
870 Golden Chariot...1½@1⅝
170 Illinois Cen.....6
160 Jackson.....2½@2¾
690 Jefferson.....4½
1130 Kossuth.....2½@2⅝
160 K K Con.....5⅞@6
100 Leopard.....1@1⅛
260 Lady Wash.....2½@2⅝
100 Meadow Valley..6¾@7
150 Mint.....80@85c
220 Maryland.....1
395 New York.....4¾@4½
400 Niagara.....80c
400 Occidental.....3⅝@4¼
100 O G Hill.....1⅝
500 Pauper.....75c
2015 Prospect.....5
70 Poorman.....3½
100 Prussian.....1@1⅛
230 Phil Sher.....1½@1⅝
1030 Pacific.....2½@3
220 Raymond & Ely..47@47½
210 Rye Patch.....1¾@1⅞
1355 Rock Island.....5¼@5½
5 St Patrick.....2½@3
200 So Cheriot.....75@80c
300 S Monntain.....2½
1720 S R Island.....1¾@1¾
500 South Cal.....
2080 Tyler.....90c@1
100 Utah.....2½
1030 Woodville.....3¼@3½
200 ....do.....h 30..3¾
1715 Wells-Fargo.....55@56c

TUESDAY, A. M., AUG. 3.

2070 Alpha.....23½@25
880 Belcher.....33@31½
50 ...do.....h 30..32½
405 Bullion.....55@57
2712 Best & Belcher...14@10½
100 ...do.....b 30..74@74½
100 ...do.....b 10..72½
580 Chollar.....92@95
1740 Crown Point.....38@39½
100 ...do.....h 30..40½
10 C G Hill.....4
560 Confidence.....27
205 Con Virginia.....36¼@36½
815 Empire Mill.....8½@9
4035 Gould & Curry.....27@3⅛
210 ...do.....b 5.....28
50 Hale & Nor.....57@61
1665 Imperial.....12@13
515 Kentuck.....16@18½
2490 Mexican.....26@28
2010 Ophir.....68@70
5 ...do.....h 5..68½
280 Savage.....157½@149
1065 S Nevada .....20½@21
270 Y Jacket.....93@96
10 ...do.....b 5..92
10 ...do.....h 10..95

AFTERNOON SESSION.

265 Am Flat.....4⅝@5
105 Alta.....3½
3370 Andes.....6@5⅞
200 ...do.....b 30..5¾
300 Belmont.....3½@3⅝
100 ...do.....b 30.....3⅞
1140 Baltimore Con.....6⅝@7
700 Cosmopolitan.....9½@50c
605 Caledonia.....28@27½
380 Knicker.....4@5
1080 Leopard.....17⅜@17½
395 Lady Wash.....2½
1130 Lady Bryan.....1½@1⅝
740 Leo.....1¾@1⅞
1080 Leviathan.....1
320 Mahogany.....1
620 Mansfield.....1½@1⅝
1080 Meadow Valley..6½@6¾
260 Maryland.....1
100 ...do.....b 10..1
850 Mint.....80@85c
745 New York.....4¾@4¾
740 Overman.....86@81
650 Occidental.....4½@5
130 O G Hill.....2@1½
2550 Pacific.....3½@2½
10 Eclipse.....b 30..3
200 Florida.....2¾
835 Gila.....4½@4¾
465 G Chariot.....1½@1⅝
790 Globe.....81½@80c
135 Jackson.....1½@2
525 Jefferson.....4¾@4⅞
125 Justice.....150@145
20 ...do.....b 5..145
455 Julia.....22@22½
100 K K Con.....5½
1000 Kossnth.....2½@2¾
380 Knicker.....4@5
1080 Leopard.....17⅜@17½
410 Dayton.....5½@6
505 Eureka Con.....49@47½
240 Empire I.....37¼@37½
40 Exchequer.....210
10 Eclipse.....b 30..3
200 Florida.....2¾
835 Gila.....4½@4¾
465 G Chariot.....1½@1⅝
790 Globe.....81½@80c
135 Jackson.....1½@2
525 Jefferson.....4¾@4⅞
50 Tyler.....75c
1500 Wells-Fargo.....40@39½
535 Woodville.....3@3¾

1080 Lady Bryan.....1½@1⅝
1710 Mexican.....23½@22
300 ...do.....s 30..23½
250 ...do.....b 5..23½@23⅝
2015 Ophir.....64@63
200 ...do.....e 30..63
10 ...do.....b 10..64½
50 ...do.....h 5..64
500 ...do.....b 30..65
405 Overman.....78@77
215 Savage.....145@143
825 S Nevada.....18½@19
100 ...do.....h 20..19½
200 ...do.....100@98
20 ...do.....h 30..10½
135 Silver Bill.....10½@11
400 Succor.....1½
1215 Union Con.....10@9⅝
2175 Utah.....15@15¾
135 Yellow Jacket.....83@9
20 ...do.....h 5..89
10 ...do.....b 10..90

AFTERNOON SESSION.

190 American Flag.....2
705 Andes.....5½
100 ...do.....b 30.....5⅝
220 Am Flat.....4½@4⅝
200 Alta.....3½
425 Belmont.....3½
100 Challenge.....6¾@7
820 Cosmopolitan.....25c
1120 Leo.....1¾@1⅞
440 Eureka Con.....48@46
200 Eclipse.....8
150 Florida.....2¾

SALES OF LAST WEEK AND THIS COMPARED.

THURSDAY, A. M., JULY 29.

310 Alpha.....20½@21
970 Best & Belcher..52½@5⅞
885 Baltimore Con.....4@4⅛
435 Belcher.....29@29⅝
85 Bullion.....50½
725 Chollar.....84@85
330 Caledonia.....27@27½
735 Crown Point.....32@33⅜
170 Confidence.....21
2430 California.....62¾@63
100 Daney.....1
5 Exchequer.....200
440 Empire.....7@7⅛
840 Imperial.....9⅞@10
10 Justice.....140
680 Julia.....22@22½
285 Kentuck.....15¾@16
40 Knickerbocker.....3¾
2160 Lady Bryan.....1⅜@1⅝
2135 Mexican.....21½@22
2435 Ophir.....51⅜@53
640 Overman.....77@80
135 Savage.....130@133½
1085 Sierra Nevada...19@20¼
470 S Hill.....10¾@11½
10 Seg Belcher.....91
1725 Union Con.....9@9⅝
385 Utah.....16@16½
155 Yellow Jacket.....85@86

AFTERNOON SESSION.

100 Alta.....2⅞
400 Am Flat.....3⅞@4
2100 Andes.....5¾@6
130 Belmont.....3½@3¾
680 Challenge.....6¼@6½
500 Dayton.....4½@5
180 Eureka Con.....55½@56
400 Florida.....2¾@3
90 Gila.....4@4¼
490 Golden Chariot...1½@1⅝
350 Illinois Cen.....6
140 Jackson.....2½@2⅝
140 Jefferson.....4½@4¾
500 Kossnth.....2½@2⅝
100 K K Con.....6
140 Leopard.....15¾@17
140 Lady Washington.....2
70 Meadow Valley..6½@6¾
700 Mansfield.....75c@80c
40 Mahogany.....75c
550 Mint.....49@50c
140 New York.....3¾@4
500 O G Hill.....1½@1⅝
20 Pioche.....3½
200 Phil Sher.....1¾@1⅞
225 Poorman.....4@4¼
50 Panther.....1½
100 Challenge.....1½
150 Raymond & Ely..46½@47
160 Rye Patch.....1⅜
850 Rock Island.....3⅞@4
458 S Mountain.....3¼
100 S R Island.....2
200 South Chariot.....80
30 St Patrick.....1½
50 Tyler.....75c
450 Tiger.....62½@75c
1500 Wells-Fargo.....40@39½
535 Woodville.....3@3¾

THURSDAY, A. M., AUG. 5.

640 Alpha.....24@25
2755 Best & Belcher..11¾@14
385 Belcher.....31½@32
915 Bullion.....60@61
455 Baltimore Con.....5½@6
2134 Best & Curry.28½@30
720 Chollar.....115@128
185 Confidence.....25½@26
340 Caledonia.....27@28
50 Con Gold Hill.....4
200 Con Virginia.....35½@36
4010 California.....74⅜@76
300 Daney.....1⅛@1¼
525 Empire Mill.....8¼@8½
40 Exchequer.....205
2634 Gould & Curry.28½@30
775 Hale & Norcross..76@76½
1800 Imperial.....11¾@12
435 Justice.....155@160
410 Julia.....28@24
200 Kentuck.....17½@18
305 Knickerbocker.....4¾@5
2640 Lady Bryan.....1¾
2940 Mexican.....29@30
2660 Ophir.....72½@76
2930 Overman.....83@85
145 Savage.....155@159
1805 Sierra Nevada...19¾@21
660 S Hill.....11½@12
90 Seg Belcher.....99@100
850 Union Con.....11½@12¾
200 Utah.....15@15½
590 Yellow Jacket.....90@95

AFTERNOON SESSION.

335 Am Flat.....4@4⅜
1300 Andes.....5¾@5⅝
300 Alta.....3¾
100 Cornucopia.....1
710 Challenge.....7¼@7⅝
100 Eureka Con.....43
1555 Gould & Curry.....12@13
180 Golden Chariot...1½@1⅝
5 Illinois C.....6
200 Jacob Little.....1½
80 Jackson.....1¾
160 Jefferson.....4¾@4⅝
120 K K Con.....5¼@5½
390 Koseuth.....2½@2⅝
225 Leo.....1¾@1⅞
900 Lady Wash.....2½@2⅝
300 Leopard.....17½
100 Mides.....5@6
500 Meadow Valley..6¾@7¼
735 Mansfield.....87½@1
170 Mint.....60@75c
700 New York.....3¾@4
20 N Belle.....6
800 Occidental.....5½@5¾
170 Pioche.....
100 Prussian.....2½@2¾
50 Panther.....1½
540 Poorman.....3
200 Panper.....25c
100 Prussian.....2½@2¾
800 Phil Sher.....1¾@1⅞
620 Raymond & Ely...47@48
100 Rye Patch.....1½
440 S R Island.....1¾@1¾
520 S R Island.....1¼@1⅜
35 South Monntain.....2
500 South Chariot.....75c
1300 Tyler.....1½@1¾
1245 Woodville.....3@3¾

The Mining Share Market.

Since our last issue the stock market haa shown a much stronger feeling. Saturday the market closed qnietly, but the preaent week opened very firmly and except a short lull during Tueaday, prices have steadily advanced. Wsdnesday afternoon especially, the excitement increased to fever heat, and California street was alive with an eager throng until well into the evening. This morning, (Thnrsday) the market was a little off and during the day there has been a tendency towards softness. It is the general impression, however, that the market will continue firm and prices will stsadily appreciate.

UNITED STATES

Mineral Land Laws, Revised Statutes,

And Instructions and Forms Under the Same.

We have just issned a pamphlet containing the general mineral land laws of the Unit·d States, with instnctions of the Commi-sioner of the Land Office The contents of this pamphlet comprise all of the Government laws with relation to mineral lands of interest to the mining community, as follows: Mining Statute of May 10th, 1872, with Instructions by the Commissioner of the Land Office; Mining Statute of July 26th, 1866; Mining Statute of July 9th, 1870 Forms required under Mining Act of May 10th, 1872, as follows: Notice of Location; Request for Survey; Application for Patent; Pr. of of Posting Notice and Diagram of the Claim; Proof that Plat and Notice remained Posted on Claim during Time of Publication; Registers' Certificate of Posting Notice for Sixty Days; Agreement of Publisher; Proof of Publication; Affidavit of $500 Improvements; Statement and Charge of Fees; Proof of Ownership and Possession in Case of Loss or absence of Mining Records; Affidavit of Citizenship; Certificate that no Suit is Pending; Power of Attorney; Protest and Adverse Claim; Non-Mineral Affidavit; Proof that no Known Veins Exist in a Placer Claim, etc. There is also given the U. S. Coal Land Law and Regulations thereunder. The work comprises thirty pages, and will be sold, post-free, for 50 cents. It should be in the hands of every one having any mining interests.

DEWEY & CO.,
Publishers of MINING AND SCIENTIFIC PRESS, S. F.

N. B.—We have also added to the above publication the REVISED STATUTES OF THE UNITED STATES, so far as relates to Mining Laws.

MINING SHAREHOLDERS' DIRECTORY.

Compiled every Thursday from Advertisements in the Mining and Scientific Press and other S. F. Journals.]

ASSESSMENTS.—STOCKS ON THE LIST OF THE BOARDS.

Company.	Location.	No.	Amt. Levied.	Deling'nt.	Sale.	Secretary.	Place of Business.
Baltimore Cons M Co	Washoe	9	1 00	June 30	Aug 3	Aug 23	C A Sankey	331 Montgomery st
Belcher G & S M Co	Washoe	14	25	July 1	Aug 2	Aug 26	C A Sankey	330 Montgomery st
Caledonia S M Co	Washoe	13	3 00	July 7	Aug 11	Aug 31	R W Wegener	414 California st
Chariot Mill & M Co	San Diego Co	Cal	4	25	June 24	July 27	Aug 17	F Swift	419 California st
Cherry Creek M & M Co	Nevada		4	50	July 15	Aug 19	Sept 14	D F Verdenal	409 California st
Condor M Co	Ely District		4	50	July 9	Aug 16	Sept 7	G T Grimes	240 Montgomery st
El Dorado South Cons M Co	Nevada		6	1 00	July 6	Aug 3	Aug 31	W Willis	419 California st
Empire M Co	Idaho		10	50	July 7	Aug 12	Sept 1	W Willis	419 California st
Europa M Co	Washoe		4	25	July 23	Aug 27	Sept 14	R B Noyes	419 California st
Florida S M Co	Weshoe		2	75	June 15	July 20	Aug 10	L Hermann	330 Pine st
Globe Cons M Co	Washoe		6	75	July 20	Sept 1	Sept 13	Joseph Maguire	419 California st
Golden Fleece G & S M Co	Washoe		10	June 16	July 16	Aug 16	J P Moore	220 California st
Ida Ellmore M Co	Idaho		18	1 00	July 20	Aug 27	Sept 18	C S Higgins	402 Montgomery st
Imperial S M Co	Washoe		22	1 00	June 29	Aug 3	Aug 20	W E Dean	419 California st
Justice M Co	Weshoe		15	3 00	June 19	July 19	Aug 19	Jas Kennedy	Merchants' Ex
Kossuth M Co	Washoe		4	1 00	June 12	July 15	Aug 21	E F Stone	419 California st
Lady Bryan M Co	Washoe		8	50	July 9	Aug 12	Sept 3	F Swift	419 California st
Mahogany G & S M Co	Washoe		16	2 00	July 15	Aug 21	Sept 11	C B Higgins	402 Montgomery st
New York Cons M Co	Washoe		14	50	June 22	July 27	Aug 16	H C Kibbe	419 California st
New York M Co	Washoe		5	50	June 22	July 27	Aug 16	H C Kibbe	419 California st
North Bloomfield G M Co	Cal		38	1 00	June 16	July 26	Aug 13	Thos Derby	320 California st
Omega Table Mt M Co	Cal		7	50	July 31	Aug 31	Sept 20	David Whilder	Merchants' Ex
Overman S M Co	Washoe		32	3 00	June 25	July 30	Aug 19	R Wegener	414 California st
Pauper M Co	Idaho		5	30	July 24	Aug 30	Sept 23	W F Bogart	402 Montgomery st
Pictou M Co	Washoe		8	25	July 2	Aug 6	Aug 23	S Phillipe	408 California st
Pioche West Ex M Co			8	2 00	July 12	Aug 18	Sept 10	T L Kimball	409 California st
Rye Patch Cons M & M Co	Nevada		4	50	July 20	Sept 6	Sept 20	D F Verdenal	409 California st
Savage M Co	Washoe		19	5 00	June 24	July 28	Aug 17	D B Holmes	419 California st
Silver Central Cons M Co	Nevada		2	10	Aug 3	Sept 8	Sept 29	Lucien Hermann	330 Pine st
Silver Cord M Co	Idaho		10	1 00	July 20	Aug 28	Sept 20	C B Higgins	402 Montgomery st
War Eagle M Co	Idaho		10	1 00	June 30	Aug 5	Aug 25	L Keplan	Merchants' Ex
Ward Beecher Cone M & M Co	Nevada		5	50	July 14	Aug 25	Sept 22	D A Jennings	401 California st
Wells Fargo M Co	Washoe		2	10	June 23	July 26	Aug 13	R H Bogart	402 Montgomery st
Woodville Cone M Co	Washoe		2	60	June 25	July 29	Aug 18	W M Helmann	401 California st
Woodville G & S M Co	Washoe		10	60	June 25	July 29	Aug 18	W M Helmann	309 California st

OTHER COMPANIES—NOT ON THE LISTS OF THE BOARDS.

Bandereta M & M Co	Cal	1	25	June 17	July 17	Aug 2	J W Tripp	408 California st
Black Hawk Coal M Co	Cal	1	5	June 23	July 30	Aug 16	H A Powell	520 Montgomery st
Blue Jacket M Co		2	1 00	July 30	Aug 31	Sept 18	C J Eaton	721½ Market st
Cascade Blue Gravel M Co	Cal	3	10	July 20	Aug 23	Sept 11	J M Buttington	311 California st
Edith Q M Co	Cal	4	25	June 3	July 19	Aug 11	Wm Stuart	113 Leidesdorff st
Emma Hill Cone M Co	Utah	2	50	June 14	July 19	Aug 19	L C Fowler	302 Montgomery st
Enterprise Cone M D Co	Cal	4	10	July 29	Sept 6	Sept 24	F J Hermann	418 Kearny st
Excelsior Q M Co		1	10	June 30	Aug 9	Aug 19	E Von Pfister	Merchants' Ex
Fresno Q M Co	Fresno Co	Cal	2	25	June 14	July 24	Aug 17	R Wegener	414 California st
Georgia S M Co	Washoe		1	10	July 29	Sept 2	Sept 22	B Wegener	414 California st
Gold Mountain M Co	Amador Co	Cal	4	25	July 1	Aug 7	Aug 23	W A Knapp	116 Leidesdorff st
Green Valley Blue Gravel M Co	Cal		4	30	July 7	Aug 9	Aug 27	A D Carpenter	605 Clay st
Hartford M Co	Washoe		3	30	June 26	July 28	Aug 14	E F Stone	419 California st
Hoosier Hill G M Co			3	35	July 28	Aug 31	Sept 16	F J Hermann	418 Kearny st
Jackson M Co	Eureka	Nevada	7	50	June 25	July 29	Aug 19	H C Kibbe	419 California st
Lady Washington M Co	Washoe		4	50	June 16	July 20	Aug 9	H C Kibbe	419 California st
Mieere Dream S M Co	White Pine	Nev	2	40	June 21	July 31	Aug 19	W F R S Hindler	Cor Cal & Spring
Missouri Q M Co	Cal		2	50	July 22	July 26	Aug 24	F H Rogers	330 Pine st
Morning Star G & S M Co	Cal		25	1 00	June 21	July 24	Aug 12	O H Bogart	402 Montgomery st
Moequito Hydraulic M Co	Cal		2	31½	June 28	July 31	Aug 19	O S Heely	Merchants' Ex
Monntain View Cone M Co	Nevada		1	50	June 24	July 29	Aug 16	C S Healy	419 California st
Mount Savage M Co	Utah		2	10	June 12	July 26	Aug 17	D F Verdenal	409 California st
Omega Table Monntain M Co	Cal		6	5	June 8	July 13	Aug 2	David Whilder	Merchants' Ex
Omega Table Mt M Co	Cal		7	5	July 27	Aug 31	Sept 20	D Whilder	Merchants' Ex
Orleans M Co	Cal		6	1 00	July 23	Aug 28	Sept 13	Geo P Thurston	315 California st
Pioche M & M Co	Cal		1	10	Aug 2	Sept 13	Oct 18	Ford H Rogers	330 Pine st
Silver Sprout M Co	Cal			5	July 3	Aug 10	Sept 1	T B Wingard	318 California st
Tolman & Miller M & M Co	Cal		2	30	July 14	Aug 16	Sept 6	O H Bogart	402 Montgomery st
Union Travel M Co	Cal		11	1 00	July 16	Aug 23	Sept 13	T Derby	329 California st
Victoria & Imperial Tun'l & M Co	Utah		5	10	July 8	Aug 12	Sept 2	W H Watson	302 Montgomery st
West Point G & S M Co	Cal		1	10	July 23	Aug 24	Sept 13	J O'Connel	400 Montgomery st
Woodside M & M Co	Cal		2	25	July 17	Aug 17	Sept 2	J Glessman	335 Montgomery st
Wyoming G M Co	Nevada Co	Cal	1	35	July 13	Aug 17	Sept 4	J M Buttington	311 California st

MEETINGS TO BE HELD.

Name of Co.	Location.	Secretary.	Office in S. F.	Meeting.	Date.
Caledonia S M Co	Washoe	R Wegener	414 California st	Annual	Aug 18
Alta Mining Co	Utah	Wm H Watson	302 Montgomery st	Annual	Aug 19
Caledonia S M Co	Washoe	Called by Trustees	414 California st	Special	Aug 18
Carrie Hale Hydraulic M Co	Cal	F W Van Reynegom	531 Californiats	Annual	Aug 14
Chief of the Hill M Co	Ely Dietriot	Chas S Neal	419 California st	Annual	Aug 19
Hasloe M Co	Nevada	W A M VanBokkelen	419 California st	Annual	Aug 11
Josephine Cons S M Co		A C Hammond	103 Montgomery st	Annual	Aug 19
Julia G & S M Co	Washoe	Called by Trnstees	419 California st	Special	Aug 23
Kohler R & R Works Co	Cal	H P Eayrs Cor Pine & Saneome ete		Special	[Aug 13
New York M Co	Washoe	Called by Trnstees	419 California st	Special	Aug 24
Oakland G & S M & M Co	Cal	W F Swanton	302 Montgomery st	Adjourned	Aug 21
Occidental M Co	Cal	A K Durbrok	438 California st	Annual	Aug 12
Oceanic Quicksilver M Co	Cal	O G Funk	438 California st	Annual	Aug 2
Savage M Co	Washoe	Called by Trustees	419 California st	Special	Aug 17
South Comstock M Co	Washoe	J M Buffington	311 California st	Annual	Aug 16
Sutro M Co	Washoe	Called by Trustees	324 California st	Special	Sept 8
Tolman & Miller M & M Co	Arizona	O H Bogart	402 Montgomery st	Annual	Aug 9

LATEST DIVIDENDS (within three months)—MINING INCORPORATIONS.

Name of Co.	Location.	Secretary.	Office in S. F.	Amount.	Payable.
Black Bear Quartz	Cal	W L Oliver		25	July 19
Cons Virginia M Co	Washoe	Chas H Fish	401 California st	10 00	July 12
Empire G M Co	Sierra Co	Cal O Collischon		2 Dividends—$5 Each	July 8
Empire M Co	Nevada Co	Cal D A Jennings	401 California st	50	June 15
Eureka Consolidated M Co	Nev	W Traylor	419 California st	1 00	Aug 5
Excelsior M & M Co		Frank Swift	419 California st	1 00	April 10
Gila S M Co	Nevada	W Aug Knapp	116 Leidesdorff st	25	July 15
Jefferson S M Co		C A Sankey	331 Montgomery st	50	May 15
Leopard M Co		R H Brown		50	July 15
Manhattan S MCo	Nevada	Chas S Neal	419 California st	1 00	June 15
Northern Belle M & M Co		W Willis	419 California st	1 00	July 15
Oneida M Co		L Kaplan	Merchants' Ex	50	July 23

METALS.

[WHOLESALE.]

WEDNESDAY M., August 4, 1875.

American Pig Iron, ₰ ton	38 00	@	39 00
Scotch Pig Iron, ₰ ton	40 00	@	44 00
White Pig, ₰ ton	— —	@	38 00
Oregon Pig, ₰ ton	— —	@	38 00
Refined Bar, bad assortment, ₰ lb	— —	@	— 3½
Refined Bar, good assortment, ₰ lb	— —	@	— 4
Boiler, No. 1 to 4	— —	@	— 5½
Plate, No. 9 to 9	— —	@	— 5½
Sheet, No. 10 to 14	— —	@	— 5¾
Sheet, No. 16 to 20	— 5¾	@	— —
Sheet, No. 22 to 24	— 6	@	— —
Sheet, No. 26 to 28	— 6¼	@	— —
Horse Shoes, per keg	7 50	@	8 00
Nail Rod	— 10	@	— —
Norway Iron	— 9	@	— —
Rolled Iron	— 6	@	— —
Other Irons for Blacksmiths, Miners, etc.	— —	@	— 4½
COPPER.—			
Braziers'	— 35	@	— —
Copper Tin'd	— 37½	@	— —
O'Niel's Pat	— 37½	@	— 40
Sheathing, ₰ lb	— 24	@	— 25
Sheathing, Yellow	— 24	@	— 25
Sheathing, Old Yellow	— —	@	— 12½
Composition Nails	— 24	@	— —
Composition Bolts	— 24	@	— —
STEEL.—English Cast, ₰ lb	— 20	@	— 25
Anderson & Woode' American Cast	— —	@	— 16½
Drill	— —	@	— 16½
Flat Bar	— 18	@	— 22
Plow Steel	— 9	@	— 10
TIN PLATES.—			
10x14 I C Charcoal	11 50	@	12 00
10x 4 I X Charcoal	13 50	@	14 00
Roofing Plate I C Charcoal	10 50	@	11 00
Banca Tin	— 25	@	— 30
Australian	— 25	@	— 30
ZINC.—By the Cask	— —	@	— 10
Zino, Sheet 7x3 ft No 7 to 10 ₰ lb	— —	@	— 11
do do 7x3 ft, No 11 to 14	— —	@	— 11½
do do 8x4 ft, No 8 to 10	— —	@	— 11½
do do 8x4 ft, No 11 to 14	— —	@	— 12
NAILS Assorted sizes	— —	@	— 4 0
QUICKSILVER nerb	— —	@	— 70

Gold, Legal Tenders, Exchange, Etc.

[Corrected Weekly by CHARLES SUTRO & Co.]

SAN FRANCISCO, August 4, 3 P. M.

LEGAL TENDERS in S. F., 11 A. M., 83½ to 89¼.
GOLD IN N. Y., 113
GOLD BARS, 890. SILVER BARS, 6½ and 7½ per cent. discount.

EXCHANGE on N.Y., 60-10 per cent. premium for gold; on London bank-rs, 48; Commercial, 49¼; Paris, five francs per dollar; Mexican dollars, two and three per cent. discount.

LONDON — Consols, 93 to 93⅛; Bonds, 102⅝
QUICKSILVER in S. F., by the flask, per ₰, 70c.

LEATHER.

[WHOLESALE.]

WEDNESDAY M., August 4, 1875.

City Tanned Leather, ₰ lb			26@29
Santa Cruz Leather, ₰ lb			26@28
Country Leather, ₰ lb			24@29
Stockton Leather, ₰ lb			25@29
Jodot, 8 Kil., per doz	$50	@	$54 00
Jodot, 11 to 13 Kil., per doz	68 00	@	79 00
Jodot 14 to 19 Kil., per doz	82 00	@	94 00
Jodot, second choice, 11 to 16 Kil. ₰ doz	57 00	@	74 00
Cornellian, 12 to 16 Ko	57 00	@	67 00
Cornellian Females, 12 to 16 Kil	63 00	@	67 00
Cornellian Females, 14 to 16 Kil	71 00	@	76 50
Simon Ullmo Females, 12 to 13, Kil	60 00	@	63 00
Simon Ullmo Females, 14 to 15, Kil	70 00	@	72 00
Simon Ullmo Females, 16 to 17, Kil	73 00	@	75 00
Simon, 8 Kil., ₰ doz	61 00	@	63 00
Simon, 20 Kil. ₰ doz	65 00	@	67 00
Simon, 24 Kil. ₰ doz	72 00	@	74 00
Robert Calf, 7 and 9 Kil	35 00	@	40 00
French Kips, ₰ lb	1 00	@	1 35
California Kips, ₰ doz	40 00	@	48 00
French Sheep, all colors, ₰ doz	8 00	@	16 00
Eastern Calf for Backs, ₰ lb	1 00	@	1 25
Sheep Roans for Topping, all colors, ₰ doz	9 00	@	13 00
Sheep Roans for Linings, ₰ doz	5 50	@	10 50
California Russett Sheep Linings	1 75	@	4 50
Seat Jodot Calf Boot Legs, ₰ pair	5 00	@	5 25
Jood French

PATENTS & INVENTIONS.

A Weekly List of U. S. Patents Issued to Pacific Coast Inventors.

FROM OFFICIAL REPORTS FOR THE MINING AND SCIENTIFIC PRESS, DEWEY & CO., PUBLISHERS AND U. S. AND FOREIGN PATENT AGENTS.]

By Special Dispatch, Dated Washington, D. C., August 3d, 1875.

FOR WEEK ENDING JULY 20TH, 1875.*

CHISEL FOR STONECUTTING.—Chas. C. Simpson, Santa Clara, Cal.

WOOD PAVEMENT.—Henry W. Stow, S. F., Cal.

FIRE ESCAPE.—Andrew J. Culberton, San Andreas, Cal.

SHARPENING RIFLES.—Sharron P. Doane, S. F., Cal.

BOILER FOR PORTABLE ENGINES.—Joseph Enright, San Jose, Cal.

CRUCIBLE.—John Feix, S. F., Cal.

BAR LOUNGE.—Wm. H. L. Gabbs, S. F., Cal.

MACHINE FOR CUTTING PRINTERS LEADS.—J. A. T. Overend, S. F., Cal.

HEADER AND FEED PUMP FOR BOILERS.—J. A. T. Overend, S. F., Cal.

CUTTER HEADS.—Simon P. Raudolph, Tehama, Cal.

WASHING MACHINE.—Orville V. Roe, Chico, Cal.

BENCH PLANE.—Hans Shogren, Portland, Oregon.

REISSUE.

ORE STAMP FEEDERS.—James Tullock, Jamestown, Cal.

TRADE MARKS.

FOR WHISKEY.—Daniel T. B. Henaire, S. F., Cal.

FOR TEA.—C. Adolphe Low & Co., S. F., Cal.

FOR WHISKEY.—E. Martin & Co., S. F., Cal.

*The patents are not ready for delivery by the Patent Office until some 14 days after the date of issue.

NOTE.—Copies of U. S. and Foreign Patents furnished by DEWEY & Co., in the shortest time possible (by telegraph or otherwise) at the lowest rates. All patent business for Pacific coast inventors transacted with perfect security and in the shortest possible time.

A LETTER from the Superintendent of the Sonoma Meadows reclamation company, says the work is progressing satisfactorily and rapidly.

THE proprietors of the "Hamman" are sinking an artesian well in this city. Sand is still found at 170 feet depth.

SAN LUIS OBISPO will soon be illuminated with gas.

THERE are 15,000 idle operatives in Fall River, Mass.

The Mechanics' Fair opens on the 17th inst.

MODERN WOMEN.

It is a sad commentary upon our boasted civilization that the women of our times have degenerated in health and physique until they are literally a race of invalids—pale, nervous, feeble and back-achy, with only here and there a few noble exceptions in the persons of the robust, buxom ladies characteristic of the sex in days gone by. By a very large experience, covering a period of years, and embracing the treatment of many thousands of cases of those ailments peculiar to women, Dr. Pierce, of the World's Dispensary, Buffalo, N. Y., has perfected, by the combination of certain vegetable extracts, a natural specific, which he does not extol as a cure-all, but one which admirably fulfills a singleness of purpose, being a most positive and reliable remedy for those weaknesses and complaints that afflict the women of the present day. This natural specific compound is called Dr. Pierce's Favorite Prescription. The following are among those diseases in which this wonderful medicine has worked cures as if by magic, and with a certainty never before attained by any medicines: Weak back, nervous and general debility, falling and other displacements of internal organs, resulting from debility and lack of strength in natural supports, internal fever, congestion, inflammation and ulceration, and very many other diseases incident to women, not proper to mention here, in which, as well as in the cases that have been enumerated, the Favorite Prescription effects cures—the marvel of the world. It will not do harm in any state or condition of the system, and by adopting its use, the invalid lady may avoid that severest of ordeals—the consulting of a family physician. Favorite Prescription is sold by dealers in medicines generally.—*Com.*

Every Mechanic

Should have a copy of Brown's

507 MECHANICAL MOVEMENTS,

Illustrated and described.

Inventors, model makers and amateure mechanics and students, will find the work valuable far beyond its cost. Published by DEWEY & Co., Patent Agents and publishers of the Mining and Scientific Press. Price, post paid, $1.

WOODWARD'S GARDENS embraces an Aquarium, Museum, Art Gallery, Conservatories, Tropical Houses, Menagerie, Seal Ponds and Skating Rink.

SUBSCRIBERS who are troubled in getting their papers regularly from the P. O. should be particular to mention the name of the paper.

TENTH
Industrial Exhibition
UNDER THE AUSPICES OF THE
MECHANICS' INSTITUTE,

Will be opened to the Public at the INDUSTRIAL FAIR BUILDING, EIGHTH STREET, FROM MARKET TO MISSION, on

TUESDAY, AUGUST 17, 1875,

At eleven A. M., with the usual ceremonies.

THE HON. W. J. SHAW

Will deliver the Opening Address. By the addition of the New Horticultural Department 20,000 feet exhibitors' space have been added to the building.

There is no charge for exhibitors' room, and steam power is furnished free.

J. H. GILMORE, Superintendent, or J. H. CULVER, Secretary, at Mechanics' Institute, 27 Post Street, will promptly answer all inquiries, personally or by letter.

Double Season Tickets, (Gent. and Lady) $5 | **Children's Season Tickets, - - $1.50**
Single Season Tickets, - - - - - 3 | **Single Admission, - - - 50 cts.**

Fair open from 10 A. M. to 5 P. M., and from 7 to 10 P. M., each day, except Sundays.

By order Board of Managers,

A. S. HALLIDIE, PRESIDENT.

Mining and Other Companies.

Eagle Mine and Mill Company—Location

of works, Lander county, State of Nevada. Location of principal place of business, San Francisco, California.

NOTICE is hereby given, that at a meeting of the Directors, held on the tenth (10th) day of July, 1875, an assessment, No. 1, of fifty (50) cents per share was levied upon the capital stock of the corporation, payable immediately, in United States gold coin, to the Secretary, at the office of the company, room 8, No. 533 Kearny street, San Francisco, California.

Any stock upon which this assessment shall remain unpaid on Monday, the sixteenth day of August, 1875, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on the 5th day of September, 1875, to pay the delinquent assessment, together with costs of advertising and expenses of sale.

H. L. BYRNE, Secretary.

Office—Room No. 8, 533 Keerny street, San Francisco, California.

Electric Mining Company—Location of

principal place of business, San Francisco, State of California.

NOTICE.—There are delinquent upon the following described stock, on account of assessment levied on the 22d day of June, 1875, the several amounts set opposite the names of the respective shareholders, as follows:

Names.	No. Certificate.	No. Shares.	Amount.
J Mullen	362	425	$21 25
G W Haskell	375	50	2 50
G W Terrell	51	500	25 00
A Briggs	66	1334	66 70
A Briggs	220	200	10 00
T B Wingard, Trustee	357	100	5 00
A H Putnem	351	78	3 90
E Walleh	433	730	36 50
E Welleh	363	638	31 90
F W Lawlor	377	200	10 00
F G Northam	427	2775	138 75
R Smith	420	1000	50 00
W M Kerr	428	202	10 10

And in accordance with law, and an order of the Board of Directors, made on the 22d day of June, 1875, so many shares of each parcel of said stock as may be necessary, will be sold at public auction at the salesroom of Maurice Dore & Co., No. 320 Pine street, San Francisco, on the 16th day of August, 1875, at the hour of 12 o'clock M. of said day, to pay said delinquent assessment thereon, together with costs of advertising and expenses of sale. A. B. PAUL, Secretary.

Office—No. 318 California street, San Francisco. Room No. 13.

Gold Mountain Mining Company—Principal

place of business, San Francisco, Cal. Location of works, Lower Rancheria, Amador County, Cal.

Notice is hereby given, that at a meeting of the Board of Directors, held on the 1st day of July, 1875, an assessment (No. 4) of twenty-five cents per share was levied upon the capital stock of the corporation, payable immediately, in United States gold and silver coin, to the Secretary, at the office, No. 116 Leidesdorff street, San Francisco, Cal.

Any stock upon which this assessment shall remain unpaid on the 7th day of August, 1875, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Monday, the 23d day of August, 1875, to pay the delinquent assessment, together with costs of advertising and expenses of sale.

W. A. KNAPP, Secretary.

Office—116 Leidesdorff street, San Francisco, Cal.

Hope Quicksilver Mining Company—Location

of principal place of business, San Francisco, California. Location of works, Cinnabar Mining District, Sonoma County, State of California.

Notice is hereby given, that at a regular meeting of the Board of Directors, held on the 2d day of August, 1875, an assessment (No. 2) of Five cents per share was levied upon the capital stock of the corporation, payable immediately, in United States gold coin, to the Secretary, at the office of the company, Room 2, No. 408 California street, San Francisco, Cal.

Any stock upon which this assessment shall remain unpaid on the 9th day of September, 1875, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Thursday, the 30th day of September, 1875, to pay the delinquent assessment, together with costs of advertising and expenses of sale.

JACOB HARDY, Secretary.

Office, Room 2, No 408 California street, San Francisco, California.

Morning Star Gold and Silver Mining

Company. Location of principal place of business, San Francisco, California. Location of works, Great Mogul District, Alpine County, California.

NOTICE—There are delinquent upon the following described stock, on account of assessment, No. 25, levied on the 21st day of June, 1875, the several amounts set opposite the names of the respective shareholders, as follows:

Names.	No. Certificate.	No. Shares.	Amount.
W F Bowen	144	10	$10 00
Mery E Oulvor, belance, Cert. No. 021,40 shares sold, for assessment No. 24	988	1	1 00
S S Dunmire	908	3½	3 50
O R Fossen	399	5	5 00
Alameda Harvey, halance, Cert. No. 939, 20 shares sold, for assessment No. 24	990	1	1 00
William Kolly, halance, Cert. 657, 15 sheres sold, for assessment No. 24	992	1	1 00
Wm Hyndmann	505	20	20 00
Phillip Meegher	277	10	10 00
Phillip Meegher	393	7	7 00
Phillip Meagher	702	20	20 00
Phillip Meagher	703	13	13 00
Phillip Meagher	705	10	10 00
Fred'k Mansell	708	10	10 00
H A Mayhew	224	10	10 00
H A Mayhew	225	10	10 00
H A Mayhew	226	5	5 00
J Penniman	146	5	5 00
J Penniman	912	2	2 00
J Penniman	948	4	4 00
A H Post	846	10	10 00
Margerot Palmer	728	15	15 00
Wm Robinson, Jr	884	11	11 00
H M Shnte	985	115	115 00
Joseph Soper	907	20	20 00
Mrs. A Swartz, balance, Cert. 151, 10 shares sold, for assessment No. 24	994	1	1 00
Louis Vesaria	942	30	30 00
Louis Vesaria	958	23	23 00
David Wally	986	38	38 00
George Wegetern, halance, Cert. 749, 10 shares sold, for assessment No. 24	996	1	1 00
Herman Wenken	647	5	5 00
Herman Wankon	091	5	5 00
Herman Wanken	718	1	1 00
Horman Wanken	748	5	5 00

And in accordance with law, and an order of the Board of Directors, made on the 21st day of June, 1875, so many shares of each parcel of such stock as may be necessary will be sold at public auction, at the office of the company, room 1, No. 402 Montgomery street, San Francisco, on Saturday, the 14th day of August, 1875, at the hour of 1 o'clock P. M., of such day to pay delinquent assessments thereon, together with costs of advertising and expenses of the sale.

O. H. BOGART, Secretary.

Office, Room 1, No. 402 Montgomery street, San Francisco, California.

Silver Sprout Mining Company—Principal

place of business, San Francisco, State of California. Location of works, Kearserge Mining District, Inyo County, California.

Notice is hereby given, that at a meeting of the Board of Directors, held on the third day of July, 1875, an assessment of five cents per share was levied upon the capital stock of the corporation, payable immediately in United States gold coin, to the Secretary at the office of the company in San Francisco.

Any stock upon which this assessment shall remain unpaid on the tenth day of August, 1875, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Wednesday, the 1st (first) day of September, 1875, to pay the delinquent assessment, together with costs of advertising and expenses of sale. T. B. WINGARD, Secretary.

Office—No. 318 California street, San Francisco, (Room No. 13.)

Silver Wave Mining Company—Location

of principal place of business, San Francisco, California. Location of works, White Pine Mining District, Nevada.

Notice is hereby given, that at a meeting of the Board of Directors, held on the 31st day of July, A. D., 1875, an assessment, No. 12, of twenty-five cents (25 cts) per share was levied upon the capital stock of the corporation, payable immediately, in United States gold coin, to the Secretary, at the office of the company, No. 418 California street, San Francisco, California.

Any stock upon which this assessment shall remain unpaid on the 10th day of September, 1875, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Friday, the 8th day of October, 1875, to pay the delinquent assessment, together with costs of advertising and expenses of sale. By order of the Board of Directors.

J. W. CLARK Secretary.

Office, room 2, No. 418 California street, San Francisco, California.

Orleans Mining Company—Location of

principal place of business, San Francisco, Cal. Location of works, Grass Valley Mining District, Grass Valley, Nevada County, Cal.

Notice is hereby given, that at a meeting of the Board of Trustees of said company, held on the 23d day of July, 1875, an assessment, No. 6, of one dollar per share was levied upon the capital stock of said company, payable on the 23d day of July, 1875, in gold coin of the United States of America, to the Secretary, at the office of the company, room 8, No. 315 California street, in the city of San Francisco.

Any stock upon which said assessment shall remain unpaid on the 28th day of August, 1875, will be advertised on that day as delinquent, and unless payment shall be made before, will be sold on the 13th day of September, 1875, to pay the delinquent assessment, together with costs of advertising and expenses of sale.

GEO. P. THURSTON, Secretary.

Office, room 8, No. 315 California street, San Francisco, Cal.

Tolman and Miller Mill and Mining Company.

Location of principal place of business, San Francisco, California. Location of works, West Point, Calaveras County, California.

Notice is hereby given, that at a meeting of the Board of Directors, held on the 14th day of July, 1875, an assessment, No. 2, of thirty (30) cents per share was levied upon the capital stock of the corporation, payable immediately, in United States gold coin, to the Secretary, at the office of the company, room 1, No. 402 Montgomery street, San Francisco, California.

Any stock upon which this assessment shall remain unpaid on the 16th day of August, 1875, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Monday, the 6th day of September, 1875, to pay the delinquent assessment, together with costs of advertising and expenses of sale. By order of the Board of Directors.

O. H. BOGART, Secretary.

Office, room 1, No. 402 Montgomery street, San Francisco California.

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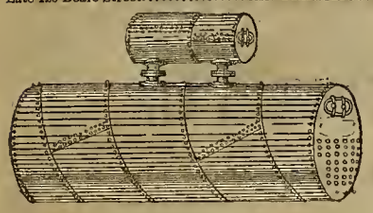

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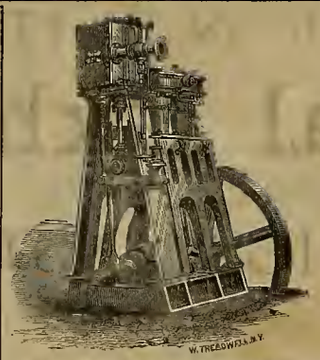

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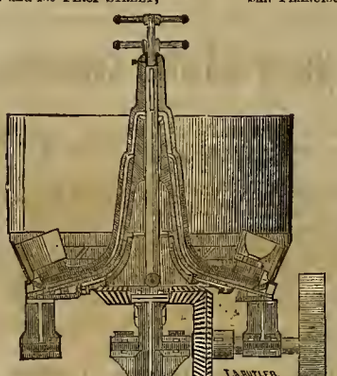

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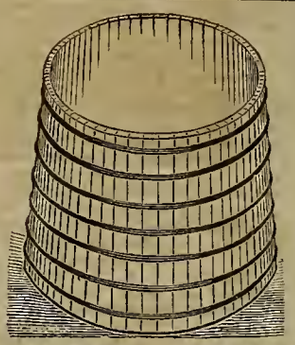

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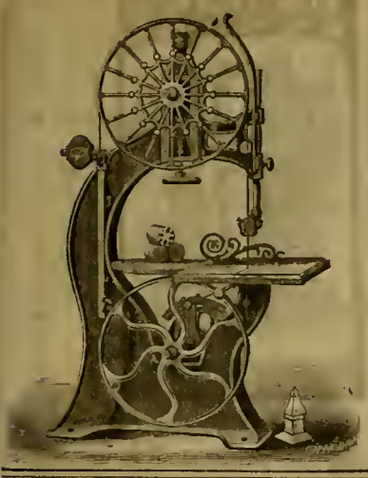

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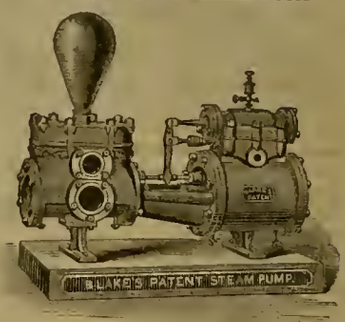

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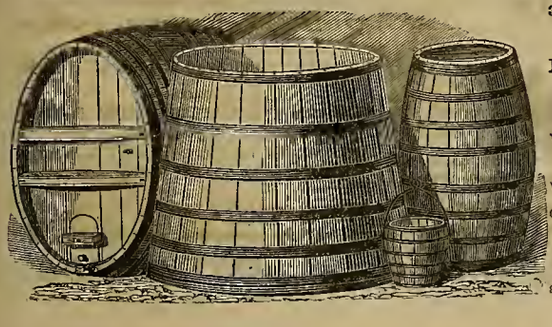

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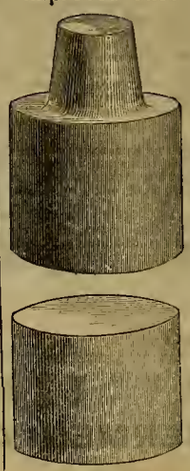

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SAN FRANCISCO, November 10th, 1874.

To Supts. of Quartz Mills and Mining Men generally:

We take pleasure in stating that owing to the rapid increase in our orders, our Pittsburg Manufacturers have been compelled to add largely to their works—a new gas furnace and heavier trip hammer—and are thus enabled to reduce the cost of steel and at the same time produce SHOES AND DIES superior to any yet manufactured. We have consequently reduced the price to 16 cents per pound and solicit a trial order, guaranteeing that you will find them at least 10 per cent. cheaper than the best iron. There are no STEEL SHOES AND DIES made excepting under our patent and sold at this office, or by our authorized agents, though certain Eastern manufacturers advertise STEEL SHOES AND DIES which are only cast iron hardened by the addition of a composition. They will not out-wear two sets of common iron, though called steel. They are very brittle and are not capable of being tempered, flying from under the hammer like cast iron. Our STEEL SHOES AND DIES are in use in many of the largest mills on the Pacific Coast, and all who have tried them pronounce them cheaper and far superior to iron in every respect, even at the old price of 20 cents per pound. Their advantages over iron are cheapness on first cost, increased crushing capacity, time saved in changing and in setting tappets, increased value of amalgam by absence of iron dust and chippings, and a saving of 75 per cent. in freight. It takes 60 days to fill orders from the manufactory East. Price 16 cents per pound shipped at San Francisco. Terms liberal.

Address all orders, with dimensions, to

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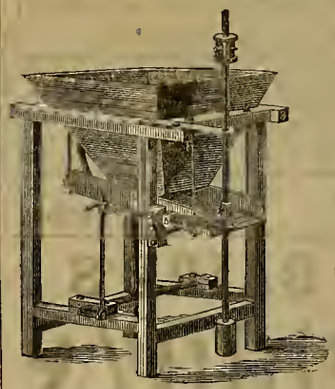

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Will Increase the Quantity from One to Two Tons Per Day.

Are Durable, Compact and Cheap.

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By blowpipe, chemicals, crucible, scorifier, water and assaying machine.

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Price of the machine, with tools, fluxes and instructions, $100.

San Francisco Cordage Company.

Established 1856.

We have just added a large amount of new machinery of the latest and most improved kind, and are again prepared to fill orders for Rope of any special lengths and sizes. Constantly on hand a large stock of Manila Rope, all sizes; Tarred Manila Rope; Hay Rope; Whale Line, etc., etc.

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STEAM ENGINES AND BOILERS.

From 3 to 75-horse power. Shafting, Pulleys, Hoist Gears Quartz Mills, Water Tanks, Spanish Arastras, Pumps and Pipes, Hepburn and Belden Pans, and all kinds of Machinery for sale at lowest prices by

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Clear Creek Co., Col. Territory,

And now owned by the

United States General Smelting and Mining Company,

(Limited,)

—WILL BE OFFERED—

For Sale at Public Auction

On the 28th day of August next, unless previously disposed of by private contract:

BRICK BUILT MILL,

Main building 140x80, two wings, each 75x50, containing Reverberatory Furnace (capacity 10 to 12 tons per diem) and double hearthed Calcincr, two Dodge Crushers, Ball Pulverizer, Sample Grinding Machine, two Force Pumps, Circular Saw, and all other necessary implements for smelting. Laboratory and assay tools, house and office furniture. Machinery run by water power. Large, well hnilt

BOARDING HOUSE,

(Furnished,) and two small detached dwelling honses.

Extensive Water-Power Flumes, Etc.

Mill Site, Containing about 10 Acres.

Valuable Pyrites Mine,

Adjoining mill property, claim owned to the extent of 1,900 feet. Ore, copper and iron pyrites carrying gold and silver, a most valuable flux in smelting.

Situation of property on main road, midway between the silver ore district of Georgetown and present terminus of the Colorado Central Railroad, at Floyd Hill. Several gold and silver mines in the immediate vicinity. Supply of water unlimited. Good wood in abundance within three miles. Works most conveniently situated in every respect. Further particulars to be had by application to

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Spanish Bar, Colorado Territory.

The Ingersoll Rock Drill.

This Drill is used extensively in the Eastern States and all Foreign Countries.

IT CAN BE RUN WITH

LESS POWER, LABOR AND REPAIRS,

—AND—

DO MORE WORK

THAN ANY OTHER DRILL IN THE MARKET. THE

Automatic Feed

Is an important feature, as it saves labor. We ask for a trial against any competitor. For information regarding the same, send for circular to

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TREADWELL & CO.,
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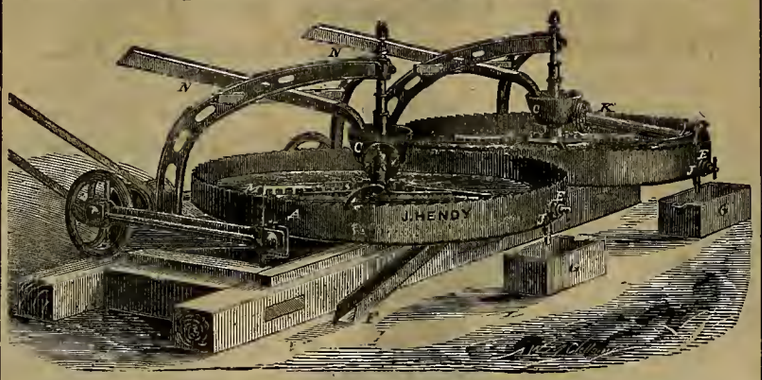
Thursday Noon our last forms go to press. Communications should be received a week in advance and advertisements as early in the week as possible.

OVER $3,500 PER MONTH SAVED

BY THE USE OF

Hendy's Improved Amalgamator and Concentrator



Can be seen at the Manufactory, No. 32 Fremont Street, San Francisco.

SAN FRANCISCO, April 27, 1872.

JOSHUA HENDY, Esq.—*Dear Sir:*—As a practical miner and millman, I take pleasure in recommending the use of your Concentrators in all mills where gold or silver ores are reduced. No mills should be without them, for the following reasons:

1st. They are good sizers (no perfect concentration in pulverized ores can be effected without first sizing).
2d. The best Concentrator I have ever known—(the concentrated stuff only containing 5 per cent. of sand).
3d. They are good amalgamators, light (feathery) particles of amalgam and particles of coated gold by attrition are brightened, and from their specific gravity and the action of the pan, fall to the bottom and adhere.
4th. They require but little power and attention to run them, and with ordinary care will last for years.

I have been familiar with the workings of your Concentrators for four years past; have run them myself in the North Star Mine, Grass Valley; am familiar with their practical workings on the Empire Mine, Grass Valley; St. Patrick, Placer Co.; St. Lawrence, El Dorado Co.; Oaks and Reese, Mariposa Co., and most cheerfully give you this testimonial. For further information you are at liberty to refer to,

Yours respectfully,
JAS. H. CROSSMAN, M. E.
409 California street, or Cosmopolitan Hotel.

SAN FRANCISCO, February 10, 1874.

OFFICE SUPERINTENDENT OF KEYSTONE CON. M. CO., AMADOR, AMADOR COUNTY.

MR. J. HENDY—*Dear Sir:*—In answer to your inquiries as to your Concentrators furnished our company last July, I would say that I am more than pleased with them; and the saving to the company has been over $3,500 per month more than with the blankets and huddles formerly in use. O. C. HEWITT, Supt.

OFFICE SUMNER MINE, KERNVILLE, April 27, 1874.

J. HENDY, Esq.—*Dear Sir:* Having four of your Concentrators in use at our Mills for four or five months, which for saving Amalgam and for concentrating Sulphurets, are a success, beyond a doubt, I feel it a duty due you and those interested in Quartz Mills, to recommend them.

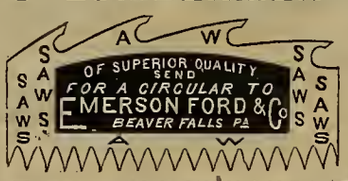
As further evidence of their worth, I now order TWELVE more of your Machines for our new Mill, now in course of erection. E. R. BURKE, Superintendent.

For description send for Circular.

JOSHUA HENDY, San Francisco.

Office and Works, 32 Fremont street. 9v28-1m-tf

TO LUMBERMEN OF THE PACIFIC.



We were awarded the $100.00 *Gold Prize*, First Prize *Silver Medal* in the Great National Sawing Contest, held at Cincinnati, September, 1874, and *First Prize Silver Medal* for the *Best Cross-Cut Saw;* two First Prize Medals for the *Best Saw Swage* and *Cross-Cut Saw Attachment;* also the First Premium in the Great Sawing Match at the Provincial Fair, in Canada, and several First Premiums in State and County Faire wherever any Celebrated Damascus Tempered Saws have been tested. Emerson's Patent Planer Toothed Saws for General Work. Emerson's Patent Clipper Toothed Saws for heavy feed, and our Solid Toothed Sawe of all descriptions, AT GREATLY REDUCED PRICES, and sold UNDER FULL WARRANTEE. We cannot afford to make a poor saw. *Only seven days by mail from San Francisco.* Send your address on postal card for illustrated circular and price list.

16p EMERSON, FORD & CO., Beaver Falls, Pa.

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Iron and Wood-working Machinery, Wood Planers, Lathes, Mitre and Cutting-off Saws, Iron Turning and Screw Cutting Lathes, Planers, Shapers and Drilling Machines, Screw and Scroll Chucks, from the best makers, always on hand and for sale cheap by

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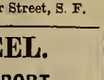

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HASKINS ENGINES AND BOILERS,

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They have proved to be the most durable and economical Saws in the World,

Each Saw is Warranted in every respect;

Particular attention paid to construction of

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At the lowest Market Prices,

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Church and Steamboat BELLS and GONGS,
BRASS CASTINGS of all kinds,
WATER GATES, GAS GATES,
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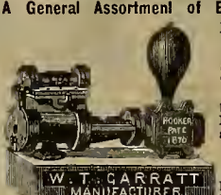
A General Assortment of Engineers' Findings

Hooker's Patent Celebrated

STEAM PUMP



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For Mining and Farming Purposes.

ROOT'S BLAST BLOWERS,

For Ventilating Mines and for Smelting Works.

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IMPORTER OF

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MINING AND SCIENTIFIC PRESS.

An Illustrated Journal of Mining, Popular Science and General News.

BY DEWEY & CO., Patent Solicitors.

SAN FRANCISCO, SATURDAY, AUGUST 14, 1875.

VOLUME XXX Number 7.

The State University.

We have received a copy of "Bulletin No. 18" of the University of California, containing programme of instruction in the College of Agriculture for the coming session, as well as the plan of operations adopted for the purpose of rendering instruction in that department more directly useful in its application to practice. Prof. Hilgard is untiring in his efforts to render the Agricultural Department of the University a success. In addition to the collections belonging to the University, the Professor has deposited in the lecture room of the Agricultural College, for the use of the students, his own private collection of specimens of plants, arranged and classified expressly for the purpose of instruction and investigation.

An Important Movement.

The Regents of the University, on the recommendation of Prof. Hilgard, have initiated an important movement to the following effect: They have made an appropriation and authorized the appointment of an assistant analytical chemist, with a view toward the inauguration of a system of thorough investigation of the agricultural and industrial resources of the State, or what might be termed an industrial survey of the same. Such a work is the needful complement of the geological and topographical surveys already made, the results of which it will utilize and expand, and render practically available to the people by their direct application to everyday life.

In carrying out this work, the investigation of soils and their relations and adaptations to crops will necessarily form an important matter. The proposed plan for the accomplishment of this work will be to obtain, first, a full knowledge of the occurrence, location, extent, natural peculiarities and climatic position of each prominent variety of soil, by examination in the field; and at the same time to elicit, by inquiry from those cultivating it, whatever information or experience they may possess in regard to it—thus gaining practical suggestions as to the most immediately important points to be investigated.

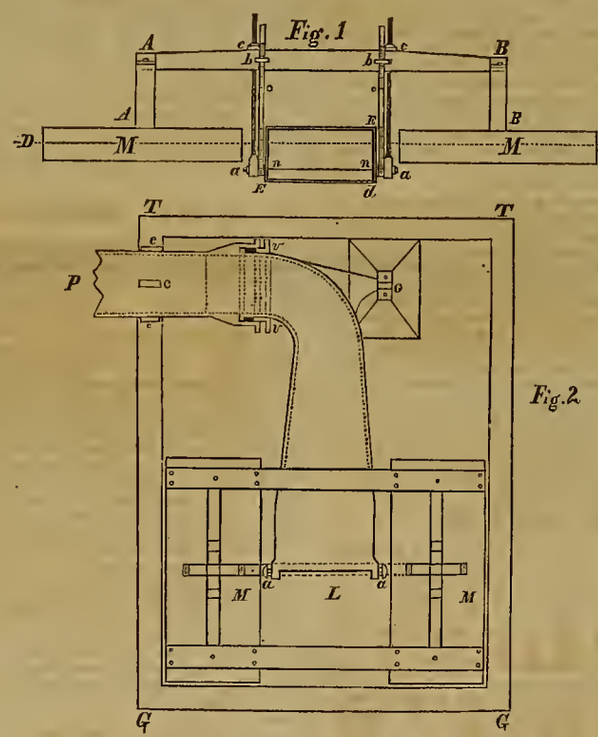
Such tests, remarks the "Bulletin," should most properly be made at local experimental stations, established in the various agricultural subdivisions of the State, as is done in Europe and some of the Eastern States. The co-operation of agricultural societies and individuals, willing to aid in this work, is most earnestly requested.

The knowledge thus obtainable of the leading agricultural features of the State would enable farmers to purchase and cultivate more intelligently and profitably; and will render possible the publication of an important class of information, not now attainable, though greatly desired by every immigrant, which at the same time would prove the best possible advertisement of the agricultural advantages of the State. The students of our Agricultural College, possessed of this information in addition to that acquired in the regular course of studies and practice, would go out with a definite knowledge of what they will have to meet with in actual life, and be thus prepared to turn their knowledge to the best practical advantage.

A thorough knowledge of the agricultural features of any State is an important condition precedent to instruction of a truly practical character in its Agricultural College, as well as of a judicious selection and execution of experiments in culture. Nor is such knowledge less important in its bearing on the general interests of progressive agriculture, and in the promotion of immigration. Hence it is desirable that all intelligent agriculturists throughout the State will aid in the important work about to be inaugurated. The work cannot be carried out without their co-operation, unless undertaken with vastly greater means than those now at the command of the University Board of Regents. The "Bulletin," containing a more detailed description of the work, together with an earnest appeal for co-operation, will soon be forwarded to all agricultural societies throughout the State, to the different Granges and to all individuals who, it may be thought, will take an active interest in this matter.

Guerin's Water Distributor and Meter.

Thomas Guerin, resident engineer of the Oakland harbor improvement, has invented an instrument for measuring and distributing water for irrigation and mining purposes, a sketch of which is given herewith. Figure 2 is a plan of the instrument as it appears by looking at it vertically. *P*, *L* is a right angled pipe divided at the joint, *v*, *v*, into two sections, *P*, *v*, and *v*, *a*, *a*, *v*. The section, *v*, *a*, *a*, *v*, forms a right angle, and at the joint, *v*, *v*, extends for a short distance into the section, *P*, *v*, and is capable of revolving therein. The section or portion, *P v*, is stationary, being imbedded in masonry and held by the flanges, *e*, *e*. At the angular bend of the pipe is a projection, forming a heel which



Guerin's Module or Irrigation Meter.

terminates in a gudgeon or journal at o, and is supported in a journal box, thus securing in a horizontal position that portion of the pipe between *P* and *o*. At the entrance, the pipe has a rectangular section, Fig. 1, which it preserves for a short distance as in Fig. 2, and then tapers to a circular form.

Figure 1 is a vertical section at the entrance of the pipe. The floats are connected by a frame *A*, *B*, *B*, *A*. The entrance of the pipe is suspended from the cross beam, *A*, *B*, by two screw rods, *c a*, and is raised or lowered by means of the nuts, *c c*, on the upper surface of the beam. A portion of the entrance of the pipe is closed at *E*, *n*, *n*, *d*. Adjacent to the screw rods there are two graduated scales on which are registered the number of cubic feet of water per minute which is entering the pipe. There are two graduations on each scale, all four registering alike. The figure at which the water line, *D*, *D*, stands, will indicate the number of cubic feet per minute passing into the pipe. On the beam, *A*, *B*, there are two brass keepers, *b*, *b*, which serve to keep the scale in an upright position and which answer also as indices, showing on the upper scale what is registered on the lower. These upper graduations are useful, as they register correctly when the lower registering may be disturbed by the agitation of the water.

When it is necessary to discharge a certain quantity of water, the nuts, *c*, *c*, are screwed up or down until the indices are at the required figures on the scale; the figures on the lower scales will then also be in the required positions.

The instrument is inclosed in a box of masonry or wood (*T*, *G*, *G*, *T*, Fig. 2), which has sluices or apertures at the back to admit water to the instrument. The water is delivered at *P*. It is evident that however high the water will rise in the box, or outside the box in the supply reservoir, the floats, *M*, *M*, will keep the orifice, *E*, *E*, at the same level with respect to the surrounding water, and nothing can increase or diminish the flow through the pipe but the action of the nuts at *c*, *c*. The box inclosing the instrument is covered on the top with iron or wire grating, so as to enable any one to reach the scales. This grating is secured with a lock and key, and will prevent the observer from meddling with the instrument.

Mr. Guerin claims for this instrument, that wherever placed the quantity of water it discharges will not vary, however the level of the canal or reservoir of supply may vary. It will be impossible for any person but the party in charge to increase or diminish the flow therefrom. The machine is self acting and requires attention only when the discharge is to be increased or diminished; and the discharges can be increased or diminished to the required amount by the mere adjustment of the apparatus, no calculation being necessary. The nominal discharge being once agreed upon the apparatus can insure constancy from large or small outlets, thus insuring a method of distribution without any loss of head, injury to navigation or loss to consumers.

The instrument can be constructed of wood or metal at a small cost, and its manner of working is so simple as to require no more than the most ordinary intelligence to adjust it, thus avoiding risk of its being injured by awkwardness or ignorance. The recipient of the water, without being able to meddle with the instrument, can see at all times whether he is receiving his proper quantity; and it effectually opposes all fraud or alteration, by which a greater quantity could be obtained than agreed upon. The instrument can be made of any desired size, so as to discharge a small or large quantity of water. In a country like this, where so much water is used for mining and irrigation purposes, an instrument of this character is very desirable, as it serves as a check on both seller and buyer, and the latter can tell whether he gets what he pays for. Mr. Guerin will furnish further information to those wishing it, who may address him at Oakland.

Influence of Mechanics' Fairs.

[From Advance Sheet of the Mechanics' Fair Daily.]

No plan has ever been devised of such direct and immediate efficacy for the cultivation of the mechanical, inventive and artistic genius of a people, as local mechanics' fairs. These exhibitions have had much to do in giving the United States its proud position in the van of all nations for the inventive skill of its artisans, the superiority of workmanship, and the manufacture of machinery for so wide a range of purposes.

In our own young State, who will deny that such fairs have accomplished important ends in giving an impetus to arts and manufactures by offering the incentive of reputation and reward for excellence in every branch of local industry. The high value of labor among us has doubtless considerably retarded the progress of all branches of manufacture, and has prevented many of our valuable natural productions from being brought into commercial importance. But, with this severe drawback to contend against, the advance of California in the arts, agriculture and manufactures, as exhibited by specimens at the Mechanics' Fair, is gratifying and important. One very important lesson these fairs have taught the people with incalculable advantage to the country, has been the intimate relationship between art and science.

There were good artificers to brass and iron, before the principles of true science were conceived by man; but it was left until they were understood to invent the steam engine, the electric telegraph, and the sewing machine. The mighty pyramids of Egypt were erected without this knowledge, but the agencies that quarried the rock and piled up these works of labor without art or science, to be a wonder to all future generations, could not send mens' messages of business or love around the world, with greater speed than light itself, through the air, the earth, or the waters beneath.

There is a singularly beautiful illustration of this fact presented in the department of machinery. Here we find engines constructed with marvelous ingenuity, in beautiful proportions, and seeming to work almost automatically. The very nature of the inventions introduced at this Fair speaks volumes for our mechanics. We see powerful and effective machines for crushing the hardest rock to the finest powder, for pumping large volumes of water from vast depths, sawing the largest logs that grow in the world, to save the inpalpable particles of the precious metals, to sow, reap, gather and separate the immense grain crops of the State, to force a way through solid rock in tunnels and shafts, and to do a multiplicity of things which a century ago were done at the expense of great labor and time, and without the aid of machinery. The very building that contains all these trophies of the victory of mind over matter is a work of mechanical art, and a casket worthy of containing the many gems of human thought, wrought into forms of power, utility and beauty, more glorious than the diamonds, rubies, emeralds and pearls of the Orient and Occident combined.

Work on the line of the Sonoma and Marin railroad is progressing satisfactorily and there is every probability that the contracts for grading will be completed within the stipulated time.

The San Francisco and North Pacific railroad have indicated a purpose to soon build a branch from Fulton to Guernsville. The route was surveyed and the right of way secured last year.

The Cochice mills at East Rochester, and the shoe factory at Great Falls, N. H., which have been closed the past month have started up again.

The Chico mills have been repaired and fitted with improved machinery.

An experimental artesian well is to be bored by parties in Ukiah city.

They talk of starting a basket factory in Healdsburg.

Fatal Accident in the Eureka Consolidated Mine.

The Enreka *Sentinel* of the 31st ultimo gives the particnlars of a fatal accident which occurred in the Eureka Consolidated mine the previons day:

About two o'clock in the morning of July 30th Reane Atkins, who was acting temporarily as shift boss, noticed a slight crumbling of earth overhead near the end of the drift which opena into the seventh level. While the occurrence did not cause him any serious apprehensions, his hnbitual caution, the natnral result of a mining experience of many years, caused him to watch the place closely, and in abont an hour afterward he discovered that a piece of gronnd about twenty feet square was gradually settling. He immediately called the men who were working on the level—twenty-seven in number—to come inside the drift while he went up in the cage to call Mr. Congdou, the foreman. Mr. Atkins at that time did not anticipate an extensive cave, as the rest of the ground seemed secure, nnd only called the men from the chamber for fear they would he shut in from the closing up of the end of the drift. Upon being called, Mr. Congdon came down into the mine and immediately began making preparations for placing extra supports under the settling ground; but before the timbers could he procured the crash came, extending from the fifth down to the seventh level and completely closing up their entrances. The lights were blown out in the drift where the men had collected, and a scene of indescribable confusion and panic ensued. Several were knocked down by concussion of the air, and we understand a nnmber were slightly injured in the rush which was made for the station at the other end of the tunnel. Finding, however, that the drift was secure, in a short time light was struck and order restored, when it was fonnd that five men were missing—C. R Gates, Patrick Leary, Edward Duffy, Timothy Leahy and Henry Beckstead. These nnfortunate men were working in a chamber between the sixth and seventh levels, and were warned by Wm. Jolin and David Foote, who urged them to come down into the drift as the ground was caving helow; but everything appearing so secure in their vicinity, the men, four of whom at least were experienced miners, ridiculed the idea of danger and contiuued their work until the crash came, when it was too late to escape, and they were buried beneath the overwhelming mass of earth and ore which came down upon them from the upper levels. As soon as the men in the drift had recovered from their panic, they set to work with a will to recover the bodies of their dead comrades, and in the course of an hour the remains of Gates and Leary were exhumed. They were found in a chamher below the one in which they had been working and near a man-hole which connected the two compartments. There was but a small amount of earth on their bodies, which were scarcely bruised, and it is supposed that they were either thrown or jumped through the aperture and were killed by the concussion of the air. The search has since heen continued without intermission for the other bodies, but up to the present writing without result.

C. R. Gates was an American by birth, about fifty years of age, and leaves a wife aud two children residing in Virginia City. Patrick Leary was a native of Ireland, aged about twenty five, and leaves a wife and three children at Ruby Hill. Edward Duffy was a native of Ireland, aged about thirty-five, and single. Timothy Leahy was also an Irishman by birth, nnd, we believe, leaves a family in the East. Henry Beckstead was a native of Matilda, Canada West. He was unmarried. The disaster appears to have heen one of those which could not have been foretold or averted by human foresight. The gronnd, with the exception of a small portion before described, appeared perfectly firm aud secure, and no blame can be attacbed to those having the management of the works. As the openinga are blocked up, no estimate can be formed of the extent of the cave. The Coroner's jury rendered a verdict in accordance with the facts.

Railroad Cars.—The number of cars now running on the railroads in the United Stateais 400,000, supported by nearly 4,000,000 caat-iron wheels, most cars have eight, while some have twelve wheels. The maximum load each wheel is expected to he ahle to carry is four tons. Thoy cannot, however, run forever, but crack by the continuous vibration to which they are exposed while rolling rapidly on the rails, after having run a distance averaging 12,000 milea. The railroad companiea are therefore coustantly on the watch to detect any crack, in which case a car is directly withdrawn from the train, aa its breaking down while in motion endangers the whole train, iuvolving perhapa the destruction of life aud property.

The Jetty at the Mouth of the Mississippi. —Profeaaor William Hagan, of the Academy of Civil Engineera, Berlin, predicts the fnilure of the jetty ayatem, now being constructed at the mouth of the Missiasippi, and declares that the large amount of money appropriated by Congreas for that work will be a total loaa.

It ia said that aweet oil rubbed on the skin is a snre antidote for ivy poiaon.

Adulteration.

The skill of the sophisticators is hy no means confined to articles of food and drink. This is well illustrated by a controversy that has been recently taking place between the wool manufacturers and the Secretary of the Treasury. The wool mannfacturers complain that a certain class of goods is being imported at a low rate of duty which should pay a much higher duty. They say that these contain wool, whereas they are imported as containing only hair and vegetable fibre. The Treasury Department is at a loss what to do in the matter. They have employed experts to examine the goods, and they have failed to decide the question; the fact being that sheep produce both hair and wool, and that it is impossible to distiuguish between the hair of a sheep and the hair of certain other animals. Further, the fine hair found next the skin of many animals closely resembles wool; so that the microscope fails to distinguish whether the article is made of hair or wool. Chemistry is equally at a loss, the ultimate composition heing the same.

Linen is extensively adulterated with cotton. The microscope will nt once show this mixtnre, hut it fails to distinguish betweu linen and certain other fibres.

The mixture of cotton and wool has passed bayond the point at which it can he called an adulteration. Certain goods, such as flannels, are regularly made partly of cotton, and are more desirable than if made entirely of wool, as they do not shrink so much in washing.

The adulteration of woolen goods wifh second-hand wool has become so notorious that it has supplied a new word to the language, and the "shoddy" business has become large and respectable. Old woolen rags were formerly of little value, heing used maiuly for making cyanides or as a fertilizer for hops. Now they are ron through a machine, torn to piecas, carded, and the longest and hest of the wool nsed for mixing with new wool to make cloth. The shortest of the fibres, or dust, is used for making velvet or flock paper for covering walls, and for various other purposes. This shoddy cloth looks well at first, bnt it soon wears out aud becomes nseless. The shoddy made from old carpets is nsed for making wool mattressea.

Recently, considernhle attentiou has been called to the habit of weighing black silks. Some of the heavy silks are said to he fully one half dye-stuff and mordaut. Nor do cotton cloths escapé this process; they are "finished" with starch and china clay.

In the conrse of a receut discussiou of this subject before the London Society of Arts, some of the members claimed that pnre unweighted cloths could not be sold in the Indian and Chinese markets, and that in order to sell their goods at a profit they must be weighted. This is a plea that ia frequently brought forward by such gentlemeu, but it ia radically and totally false. The public will buy whatever they find in the market, and they are not slow to learn where they get the best goods for their money. In this connection the recent discussions in the New York Dairy Association iu regard to coloring butter and cheese is worth notice. They decided it was justifiable, or, in other words, that a man who makes a white, unsalahle article is entitled to color it, so as to mislead people into thinking it good and rich.

A Lake Superior Silver Mine.

The *Mining Journal*, published at Marqnette, Michigan, gives an interesting account of the first test of the amalgamating works on Iron river. The result is a brick of silver bullion weighing thirty-six pounds and 950 fine. The *Journal* says:

This result was obtained from the manipnlation of twenty-two tons of rock carelessly mined more than two years ago, and which has since been picked over by hundreds of people in search of the richest specimens of native silver. The fact that the rock, containing as it does a sulphuret, has been exposed for over two years to the actiou of the atmosphere, proves also that the test was far from being the best that might have been obtained from the same mine had the ore been taken direct from the vein. As it is, however, the result is of the most gratifying character, and proves beyond a doubt that the vein is not only a paying one but one that will eventnally, should it prove durable, rival some of the far-famed argentiferous deposita of Colorado and Nevada. The average of the teat, not taking into acconnt the amalgam absorbed by the pans, which were new, and the slag which remaius to be smelted—figuring the result only from the amount of silver in the brick now in the posaession of the Ontonagon company—showa a yield of $33.28 per ton, which, in our opinion, is about half the average yield of the vein. However, it is claimed that a yield of $25 per ton will pay large dividends over the cost of mining and milling the ore, which last we are assured will not exceed $9 per ton, including incidentals. Taking $25 per ton aa the basis, and it is easy to arrive at an approximate eatimate of the value of the vein, which at most places where opened, carries a width or thicknesa of between three and four feet, and gradually widening as greater depth ia attained. A mine capahle of raiaing fifty tons per day, a product which can easily he achieved at either the Scranton, Ontonagon or Collins, and also at aome of the more recently developed locations, would thns be assured a net profit of $800 per day.

The mill started on the 2d, and one ton of rock per day was stamped and amalgamated until the 9th, when the amount was increased, though the largest quantity treatad in any one day was three tons and a half. The run was as follows: On the 3d, 4th, 5th, 6th, 7th and 8th, one ton per day; on the 9th, 1½ tons; 10th, 2 tons; 13th, 1½ tons; 14th and 15th, 3 tona each; 16th, 3½ tons; 17th, 1¼ tons—22 tons in all. The amalgam which weighed 220 lhs., was placed in the retort at noon on the 18th, the result being forty pounds, which was again placed in the crucible and smelted, turning ont a brick weighing 523 ounces of the value of $732.20, currency. It is estimated that at least $300 was lost by the amount of amalgam absorbed in the coating of the pans and the slag caused by the loosening of particles of iron from the stamps, so that the yield computed from the weight of the brick is far below the actual result, which, allowing for the loss aa stated, would he at least $45 per ton—a result that we confidently anticipate on the next test, when, by reason of the pans being already coated, a similar loss will not he sustained. We make this estimate upon the same character of rock as that from which the first test was mnde, and desire to here place upon record the prediction that rock taken directly from the vein will show a yield twice as large as that already ahown.

A test will next be made of rock from the Scranton and Superior mines, and we confidently anticipate a mnch more favorable result, for the reason that the ore was more carefully miued, and has not been culled over and robbed of its richest specimens as was the case with the Ontonagon. We hope to receive the result of the test of the Scranton vein before going to press with this issue.

Altogether, we think that the first test proves conclusively the very great value of the Iron river silver vein or veins, subject only to the contingency of their extent and durability. On this noint, the developments nt the Scranton mine wonld seem to put at rest all fears. Where the vein outcrops in the river it carries a width or thickness of only fiftaen inches; at n depth of 300 feet, reached by sinking a perpendicular shaft at a point 250 feet in the rear of the outcrop, it is found to widen out to the width of over three feet. The same is also trne of the Ontonagou, which are the only two points at which the vein has been opened to any considerahle depth. These facts would seem to warrant the conclusion that the veiu is uot only durable, but that it will be fonnd to increase in siza the deeper it is worked, as it certainly has been found to grow richer in the percentage of silver.

Tar and Oil for Furnaces.

The Indianapolis *Sentinel* has the following: For more than a year past, Mr. Henry Staoy has been endeavoring to perfect plans by which coal tar, crude oil, etc., could be practically utilized for the purpose of making heat enough to melt iron (of all descriptions), brass, generate steam, etc. * * * The gas company have had these heaters on their furnacea for nearly six months, and so well have they done the work that during this time the company have saved daily, on ten furnaces, six hundred bushels of coke, and in making this saving have consumed a portion of coal tar that would otherwise have rnn into Pogue's run. One of these heaters was placed on a furnace at the Malleable iron works last week, where it reqnired eight days and nights to anneal the iron with coal, but the heater did the work better in six days and nights, consuming but two and a half harrels of tar, costing $1.50 per barrel. Mr. Stacy thinks he can run a locomotive a distance of 100 miles without a fireman, at a cost of but 50 cents. Arrangementa have beeu made, already, for the speedy introduction of this great invention, and, as the men interested have means and ability, there seems to be no reason why it will not be adopted by all those needing furnace heaters at a saving of abont ninety per cent. over wood or coal. The cost of the heater is not to exceed two dollars for each furnace, and it is so simple in its construction that a child can easily understand its operation. The tar, oil, etc., passes from the barrel, tnnk, or reservoir through a small pipe, and is deposited in front of a steam and cold air injector that forces it into the furnace in form of spray, making a perfect mass of flame, but no smoke nor sparks.

[Thia method of injecting crnde oil into a furnace is the aame as that invented by a Californian about two years ago.]

Sunflower for Fuel. — In the Weatern States a good deal of corn is nsed to make fires, and it is proposed to grow sunflowera for this purpose inatead. A carefully grown sunflower will stand ten or twelve feet high, and have half a dozen good heavy blossoms. These blossoms are great favoritea with bees, who get from them a good supply of honey. The aeeds when crushed furnish a very clear and pure oil, and in their natural state are the chosen food of domestic poultry. Above all, the very substantial stalk and branchea, and leavea, if put away under cover, will make admirable fuel for kindling even the hardest of American coal, or even for hurning by itself. Thus honey, fat poultry, eggs, oil and fuel are the chief recommendations of the sunflower. Having all these substantial qnalities, she can afford to part with the fiction that makes her "turn to her god when he aets the same look that ahe gave when he rose." Constancy ia a virtue, of conrse, bnt in the sunflower the American looks rather for a tall stem and a good head-full of oil.

A Venerable War Ship.

The frigate *Constitution*, or "*Old Ironsides*," as she has been familiarly called, after having lain on the stocks at the Philadelphia navy yard for several years a dismantled and apparently rotten hulk, has, at last, by apecial order from the Navy Department, been placed in the hands of the carpenters, and is now undergoing repairs, with a view, it is aaid, of being exhibited during the Centennial year. There is nothing remaining of the vessel except the bare hull, and workmen are now engaged in erecting the necessary stagging in order to begin the work of replanking her ribs. After she has been got in a condition for the water, she will be launched, and the rest of the fitting up will be done after she is in the water. It is the intention of the government to have the original appearance of the vessel, both inside and outaide, reprodnced as nearly as possible. The hull is already coppered, and it is thought that the remaining ropairs can be completed in a comparatively short time.

Considerable interest will be doubtless felt by the public in the question as to whether any of the original timbers laid in the vessel when she was constructed iu 1797 remain. There is a tradition among naval constructors that there are some of the original timbers now in the vessel, but there have been so many repairs to her, and she has been so frequently overhauled that it is almost impossible to ascertain definitely whether such is the fact or not.

The vessel is said to have suffered greatly at the hands of relic hunters, for it is asserted while she was undergoing repairs at various wharves it was no uncommon thing for a carpenter who had discovered a piece of old and "historic-looking" timber, to appropriate it and have it turned into a cane or some other article to he preserved by himself or friends as a relic. These depredations, together with the necessary removal of a large amount of decayed or insecnre timber, has almost transformed the vessel into a new ship.

It was proposed by the naval authorities when it was found on the adjournment of the last Congress that no special appropriation for her repair had been made, to break her up, as it did not appear that she would be of any forther use to the navy. A similar proposition was made once hefore, and was the cause of the well known poem, written in protest of the act hy Oliver Wendell Holmes, beginning with

"Ay, tear her tattered ensign down."

The *Constitution* was built at a cost of over $300,000 at Hart's shipyard, in Boston, and was launched on the 21st of October, 1797, in the presence of a vast concourse of people. Special care was taken in her construction to use the best live oak timber, and the bending of the planking was done without steam in order that it might be the harder and more durable.

Her first commander was Captain James Nicholson, and she started npon her first cruise in July, 1798. In 1804, she was the flagship of Commodore Preble during the bombardment of Tripoli, and in the action of the 29th of August before Tripoli. She was run to within a short distance of the fortifications, and after a fierce contost silenced the gnns.

On the 19th of August, 1812, the celebrated combat between the *Constitution*, carrying forty-four guns, and commanded by Captain Isaac Hull, and the British frigate *Guerriere*, carrying thirty-eight guns, and commanded by Captain Dacres, took place off the American coast, in the present track of the vessels from New York to Liverpool. After considerable manœuvering, the vessels came together late in the afternoon, and the rigging of the two vessels having become entangled both crews prepared to board. While Lieut. Morris, of the *Constitution*, was making an effort to lash the vessels together, the *Constitution* shot ahead of her antagonist, and it was then found that the *Guerriere* was badly shattered. Soon after, the foremast and mainmast of the *Guerriere* were carried overboard, and the vessel was left helpless. A few momenta after, her commander surrendered.

The next action in which the *Constitution* was engaged was an engagement with the British frigate *Java*, of thirty-eight guns, commanded by Captain Lambert. This action took place on the 29th of December, 1812, off the coast of Brazil, and laated for three hours. A large number of the guns of the *Java* were disabled, her masts were shot away and her hull was badly damaged. The *Constitution*, on the other hand, was scarcely damaged at all. Of the crew of the *Java*, numbering 400, twenty-two were killed and 102 wounded. Her commander was among those mortally wounded. The loss on the *Constitution* was only nine killed and twenty-five wounded.

On the 20th of February, 1814, while on her way from Bermuda to Madeira, the *Constitution*, commanded by Captain Charles Stewart, fell in with the British vessels *Cyane*, thirty-six guns, and *Levant*, twenty guns. After an engagement lasting not quite two hours the *Cyane* surrendered, and two hours later the *Levant*, which had endeavored to escape, having been overtaken, was also compelled to surrender.

Of late years the *Constitution* has been used as a school ship at the Naval Academy, at Annapolis, and for a long time, while lying at the foot of the "long wharf," she has been a familiar object at the Academy. The figure-head of the *Constitution* has been for a number of years a wooden statue of General Jackson, which it is proposed to place in the grounds of the Naval Academy at Annapolis,

SCIENTIFIC PROGRESS.

Prospects of Science on the Pacific Slope.

The conditions for the advancement of science beyond the Rocky mountains are peculisrly favorable. The country itself presents an exhaustless field of research in every department of the physical and vital history of the world. Its records of contiuental upheaval and subsidenee, of nacient rivers and vanished seas, of vast volcanio outpourings, and vaster scenes of erosiou, are wonderfully full and legible. In the beds of its tertiary lakes are the remains of multitudes of the progenitors of recent forms of animal and vegetable life—inexhaustible mines of material for the solution of the great problems of evolution. On the shores of those lakes and rivers dwelt the most ancient races of men that geology has fnrnished glimpses of. Already abnndant trsces of them have been discovered in and beueath the later tertiary strata, and it is not unressonable to hope that future observation may connect them with the post-glacial founders of the civilizations which grew np along the valley of the Colorado, before that strange river had sunk its chsnoel a mile below the surface of the plain it once watered, probably before the Nile spresd its first layer of fertile soil over the fonndation sands of ancient Egypt. Chemical geology has already been immeusely fnrthered by the knowledge gsined through the mining operations of the interior and the investigations they have inspired; while the demsnds for men ot scientific training, incident to a country so largely givsn to mining, have secured to the Pacifie slope a proportion of scientific observers nneqnaled in any other conutry.

In older commuuities, science aud scientific thinking have to contend with the conservatism of enstom and the traditione of scholastic culture; in the far West, where scientifio training has been at a preminm from the first, where public prosperity rests so largely on scieutific operations, science is likely to get more thsn its fair shsre of encouragement, rsther than less.

In proof of this, it is necessry only to contrast the financial condition of the Califoruia Academy of Sciences with that of our Eastern societies of like ohsracter. It is true that something more than money ie needed for productive investigstion; the natursl and socisl conditions must be favorable, and there must he no lsck of msn of proper zesl aud training to nndertake the work. In this reepect, as already noted, the Pacific slope is as greatly favored ss in its sbundsnoe of wealtb; and only the grossest mismsnagement of their mesns and opportnnities can prevent the richest harvest of scientific achievement by the Pacific scientists, whether independent or connected with the Californis Academy.

The magoificent scope and execution of Mr. Bancroft's research, in connection with the native rsces of the Pacific coaet, afford st once an illustration of the Western wsy of working, snd a model of thorough scientific investigation. Wo shall be greatly disappointed if Mr. Bancroft's work does not prove to be the first of s long series of correspondingly valusble researches in other departmente of knowledge, undertsken by the scientific workers of the West. Hitherto their work has of neceseity been chiefly of practical, money-making sort. It hss given them the best poseible training for the conduct of investigstione of brosder scope and remoter profit. The work lies ready at hand; and it is ssfe to predict its prosecution with true Western vigor aud thoroughuess.—*Scientific American.*

New Applioations of Paraffine.—The corks of jars holding corroeive acid msy, it is said, be rendered proof agsinst the corrosive action both of liquids and gases, by dippiug them in psrsffine, and afterward drying at a temperature of 100° C. The eame method may be pursned with wooden vessels of sll kiuds used in manipulating powerful scids. Dr. Bohl observes that psraffine ie likely to sttsin a considerable importsnce in the manufacture of glazed papers of all kinds. For white snd delicate colored papers, 24 parts by weight of parsffine are mixed with 100 psrts of china-clay; the componnd is dried, snd ground with cold wster, snd mixed with the pulp in the proportion of 4 to 6 per cent. Paper thus prepared takes a fine sstiny gloes, and resists the damp well.

Chemioal Filter.—Place inside of the glaes funnel a small filter of parchment paper, pierced at the bottom with a fine needle; afterwarda plsce the ordinary filter in the funnel, and filter as uenal. Snch cones of parchment paper can be nsed in any required size, are essily obtained, and may be applied to almost all purposes where the more expeusive platinum cones have hitherto been used.

Chloroform, added to crude petroleum when burning, will at once extinguish it. According to F. M. Ommegauck, of Autwerp, five per cent., or one-twentieth part, will most readily effect this result. Even one-sixtieth psrt msy be made to extinguish the oil when burning.

Rate of Growth of Coraal.—According to Prof. Le Conte, the rate of the growth of corals in the Gulf of Mexico, is from three and one-fourth to fnnr inches per annum.

Industrial and Medical Application of Salicylic Acid.

This new product continues to be the subject of experiment, and numerous applications of its wonderful preserving power has already been made. It is excellently adapted for preserving eggs, fresh meat, jams, hevsrages, drugs, dye extracts, etc. Professor Neugebsuer recommends its use in wiue-making, snd in the trestment of ths various affections of fermeutative nrigin to which wines are subject.

Professor Kolbo recommends it in the nanufacture of effervesoing wines, export beers, etc. Fresh water on shipboard may be kept sweet by a mixture of the scid in a proportiou not exceeding one part of acid to 20,000 of wster. Or the water may bo filtered, as required for nso, through cotton wool dipped in a solution of the acid. Meat may be kopt fresh for wscks by rubbing it over with the acid, the lstter being washed off when the moat is required for nse. Now milk containing .04 per cent. of the acid, when left uncovered for thirty-six hours, was fonnd in better condition than an eqnal quantity of the same milk without any admixture, which stood beside it.

Salicylio acid may be nsed as tooth-powder, or, mixed with warm water, as a mouth wash. Sprinkled over the feet, it ie an effeetnal remedy for offensive odors arising from the perspiration. Applied as a powder with talc, sosp, and starch, it rendere the feet white and firm, and is a good sutidote to sore feet, well adapted for the nse of travelers snd soldiers on the march. Mixed with powdered starch, it may be advantsgeously spplied to sores and outsneous eruptions. A mixtnre of one part of sslioylic acid, three psrts phosphate of sods, nnd fifty of water, forms a good wssh for promoting the granulntion of wounds. In operatious iuvolving much loss of blood, Professor Thiersch employs s solution of one part of the scid in 300 of wster, to spriukle the injured surfsces sud to steep the bandages.

Dr. Febling states thst, at Leipsio, salicylic scid is now univorssily employed as a substitute for c rbolic aoid in msternity prsctice. In disinfecting the hands, clothes, etc., in cases of puerperal disordere, it is used either mixed with wster in the proportious 1 to 300 or 1 to 900, or ss a powder mixed with smyl in the proportion 1 to 5.

Sslycilic acid is soluble also in fatty oils, and may, therefore, replace carbolic acid in the preparation of Lister's bsndages. Its internal nse in cases of diphtheria, scarlatens, measles, smsll-pox, syphilis, cholera, etc, has yet to form the subject of experiment. Professor Kolbe finde that daily dosee of 1.0 to 1.25 grammes of salicylic acid in a crude stste is not to be recommended, on account of its irritating effect on the month snd throst. It msy, however, be given ss a syrnp.

The Spider's Web.

In onr issue of July 17th, we gave a little query from *Science Gossip*, under the head of "How Does the Spider Make His Web?" A correspondent of the *Scientific American*, which also gave the same item, snswers se follows:

"How does a spider make its web, the linee—some of them—crossing at the center, are csrried to the surrounding objects, while others sre fastened to an outer cironlar line, made evidently before the onter circular linee of the woof are formed?" Aleo: "Where does the spider plsce itself when it ejects the lines which form the spokee of the wheel?"

The extreme outer line surrounding the web, to which the spokee are fsetened, is by no mesns alwsys circular; this depends upon the position of the surrounding objects to which the web is faetened. The epider first extends lines from one point to another by the shortest route possible, inclosing a enfficient spsce to build its web; then he extende a line acrose where he intends to hsve the center of his web. He next fixes the center by fsetening a line thereto on the centrsl line, and, csrrying the line at right angles or nesrly so to the first line, hitchee it to the nearest object, whether that be the outer line of the web, or snything to which the web is fastened. It will be observed here thst the spider ejects all the epokes of the wheel (except the first line across the center of the web) from the intended center, placing the first lines at right anglee or nearly so, and dividing the dietsnce eacb time a line ie extended from the center until a sufficient number are put up, always stretebing the lines alternately in opposite directions until the spokes of the wheel are complete. He then places his left forefoot on the center of the wheel, and bitches the first end of the circular line of the woof to one of the epokes of the wheel, and moves rond the center, fastening his thread to every spoke as he go.s along, measuring the distance from one line to the other by stretching his right hind oot to secure the web to the spoke, with his le.t fore to.t one line toward the center and moving spirally aloug from one spoke to the other, until he gets his web sufficiently large for his purpose.

Poison in the Soil.—Cut from the earth a cubic foot of gravely soil and you will find you can pour into it one-third of its bulk of water. This really shows thst the water occupies one-third of the bulk, and when the water draine off an equal smount of air takes its place. Now the air of the soil is filed with various gases, such ss sre generated from animal mat er. The amount of carbonic acid in ground soil lately manured, is many times what it is in the air. The soil, however, can hold these gases for plants, so that they rarely injure us.

MECHANICAL PROGRESS.

Peter Cooper's First American Locomotive

"On a recent trip down the bay of New York," says the editor of the Brooklyn *Union*, "we turned with the venerable Peter Cooper a page of the opening railway era of America." Mr. Cooper, he claims, deserves the honor, among the other honors of his usetul life, of being tho first to introduce into actnal service the railway engine in America. We condense from the very animsted and interesting sketch of Mr. Cooper's reminisconces:

"Think of the excitement that pervaded the civilized world when it was sottled thst the Darlingtou rsilway, which was opened to supply London with coal, hsd actnally begun to carry passengers by steam at seven miles per hour. But we are able to correct the reminiscences of thst occasion which shared the common mistake that the snocess of the Liverpool & Manchester railway stimulated the introduotiou of railroads into this country; for some of the now most importsnt roads in this country were projected and commenced before the Liverpool & Mnnchester was bnilt. It received with them the stimulus of the first rosd above nsmed. In 1828, Mr. Cooper was in business in New York, his nstive place. His mother and grsudmother were both born on the present site of St. Paul's chnrch, Vesey street aud Broadway, and his mother remembered seeing the stockade still standing which hsd been erected to keep the Indians out of infant Now Amsterdam. Mr. Cooper had bought as a speculation the entire magnificent tract in Baltimore now owned by the Canton company. Baltimore was then a city of 75,000 people, rich and prosperous, and hsd entered upon the railroad era. On July 4th, 1828, the corner-stone of the Baltimore & Ohio road wse laid with imposing ceremonies by Charles Carroll, of Carrolton. It was pushed energetiosily, a little too mnch so, for when thirteen miles hsd been finished it wss found that in tnrning the rocks to ssve cutting, such short curves had been introdnced that the then experts declared the line utterly useless. It could not be nsed by steam. Five per cent. hsd been psid in, and shares hsd been sold at 17, such wss the zesl and confidence of the people. But the ohill was immense, and everything stopped. Mr. Cooper, then thirty-eight years of age, saw new disaster to himself in the depreciation of his trsct shonld the road fail. He proposed to the Directors to constrnct an engine that should be available to their line. They were willing, bnt incredulous. He brought down from his glue fsctory in New York sn engine with three snd a hslf inches cylinder and fourteen inches stroke, procured wheele and other spplisnces from the railway company, and presently rolled ont upon the trsck the first American rsilway engine. The trial trip was to take place the next day. Thst night a thief stole all the copper snd brass from the infant machine snd caused some further delay. The trisl trip wse run, Mr. Cooper himself nctiug as engineer; and when his wheezing little baby locomotive threatened to lose too much steam he held down the safety vslve with his own hsnds. The run was made with thirty passengere, thirteen miles in one hour, and Baltimore wss happy. Compare the little eugine of forty-seven yesrs sgo with the ponderous mschines of to-day, and yet they follow on the pathway the little engine opened."

European Demands for American Engineering Instruments. — Meesrs. Hiller & Brightly, the mathemstical instrument makers of Philadelphia, hsve recently received, and are now filting, heavy ordere for engineering instruments (tranoits and levele) from Vienns, Austria, and from Bristol, England. When it is recslled to mind thst up to within s comparatively recent date all the most accurate instruments of this class have been imported from Europe, and thst this is the first instance known where instrumeuts of this olsss hnve been imported into Austria from thie conntry, the fact is deemed worthy of notice. This firm is also filling ordere for engineers' transits and levele, etc., for the Imperial College (Ksga Yashiki), Tokio, Jspan, from Yokohama and Kokaido, Japan, and from Hong Koog, China. They have aleo recently shipped a number of their instrumeuts to South Americs.

The Monster Gun at Woolwioh.—The 81-ton gun in course of manufscture at the Royal gun factories in the Roysl Arsensl, Woolwich, is rapidly spproaching completion. The bore is being rifled at the boring mills in the department, and the only other process required to finish the gun in the rough is the shrinking on of the trnnnion ring. Considering that the 81-ton gun is more than twice the size of any other gun yet made at Woolwich, aud that most of the machinery by whicb it hss been produced wae never intended for such gigantic operations, it is worthy of remark that the work hss been performed without the slightest hitch or accideut to the gnn. The face of the new 40-ton hammer wae frsctured in welding together the breech coile, bnt thie wae soon remedied by substituting another face piece msde in the department.

The Largest Rifled Cannon.—They have just finished, at South Boston, the largest breech-loading rifled cannon in the world. It is steel lined, weighs 82,280 pounds, is 12 inches calibre, carries a 600-pound shot, snd reqnires a charge of 70 pounds of powder. It ie destined for Ssndy Hook.

Headwork an Aid to Handiwork.

The pursuit of mechanice involves accnracy of eye, knowledge of form and of proportion, strict measurements, and a dne preservatiou of the relatiou of parts to each other, and of the whole to the several parts. It teaches also economy of material and of space. Strength and ntility msy, indeed, be acquired without observation of all these details. Tho old fashioned iron and other metal work of houses, csrriages, and ngricultural snd other implements, and the waste of wood, stone, brick and other materials, show that the workers for our grandpareuts consulted safety and durability without much regard to taste or elegance. The work in an old-fashioned chsir would almost make a full set of modern ones. A Lsncaster lock-handle was long enongh to set as a lever to lift a hundred weight. Competitiou making economy necessary and reqniring elegance and fitness in ordor to secnre purchasers, has changed the style both of honses sud furnitare. And a better comprehension of the strength of materials has csused modern machinery to attain what ancient machinery lacked, thst is symmetry sud even elegance as well as strength. If an iron worker of the lsst century had undertaken to construct a locomotive, for instance, it would have been a clumsy and ugly affair. Now the psrts are proportioned exsctly to the power required, snd the details are worked up with an eye of beauty. A trsin of highly finished cars, drawn by a first-class locomotive, is a triumph of strength, beauty and mechsnical ingenuity.

A Mechanical Car Starter.

George Hunter, of Payson, Ill., has invented a device for the above named purpose, which is described ae follows: To the inner side of one of the wheels is rigidly attached a small gear wheel, and to the inner side of the other wheel is attachod a large, internally toothed gear wheel. A shsft placed parallel with the axle is msde in three parts, connected with each other by universsl joints. To the middle part of the shaft is attsched one end of the spring, which is coiled around said shsft. The end parts of the jointed shaft engage by gesrs with the gear wheels above mentioned. Devices are provided which lock the levers, which hold the gear wheels in gear snd ont of gear. When the car is to be stopped, the apparatus is so regnlated thst the torward movement or momentum of the car may wind np a spring. When the car is to be started, the power of the spring may be spplied to the wheel near its rim, and thns, with a great advantage of leverage, assist in stsrting the csr. In the eame way the spring msy be coiled by the advance of the car when upon a level or down grade, and held, to be applied to the car when upon a short upward grsde, to assist in its propnlsion

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New Mone of Linino Metallic Tubes with Another Metal.—A vslusble method of lining a tube of one kind of metal with another of a more fusible nature is noticed in the London papers. It conoists in first thoroughly cleaning the interior of the tube and plugging it up st both eude, and then fitting it into a lsthe or other apparatus, by mesns of which s very rapid rotary motion in a horizontal position msy be given to it. Through one of the pluge a sufficient quantity of the second or softer metsl, which ie to form the desired lining, is introduced in a melted state; a psn of ignited cosls or a gss-burning sppsratus being plsced nnder the tuhe, extending slong ite whole length and st a suitable distsnce, so ss to keep the metsl in that condition while a rotsry motion of the tube is estsblished. The melted metal is thus diffused uniformly around the interior of the tuhe, and, by removing the coale while the rotation is still continued, the temperature is gradually reduced, and the interior metsl hardens, forming s permanent liniug.

A Million Dollar Hammer.—A German psper informs us that the fsmous steel works of Frederick Krupp, of Eesen, are about to receive a very important addition to their mschinery. The largeet steam hsmmer in use at these works, at the present time, is one capsble of workiug a mass of steel fifty tone in weight, snd erected st the cost of $560,000. It is now in coutemplation to huild a new stesm hammer capable of beating np a mass of steel of double the weight, namely, 100 tons. The new machine, it is estimated, will cost $1,000,000 and will be the most powerful in the world; and it may be expected that the sizo and weight of the German artillery will be enormously increased, ae the new stesm hammer will permit the working-up of larger mssees of metal than, up to the present time, has been thonght to he possible by scientific engineers.

Enormous Locomotive Engines.—A locomotive has recently been plsced on the Pennsylvania railrosd which weighs seven tons heavier than the ponderoue "Modoc," whose drawing capacity is almost twice that of an ordinary locomotive. Tho "Modoc" is capable of taking eighty loaded cars from Harrisbnrg to Columbia, while other engines are put to severe test when they pull fifty csrs on that portion of the road. The new locomotive, when full intiated, ie expected to get away with a hundred cars. The only argument that can be ueed sgainet large engines is that they are hard on the tracke, but as the Penneylvania railrosd company hss adopted eteel rails—able to withstsnd a fsr greater pressure than iron rsils—the wear will not be meterial. The introduction of these mammoth engines is considered a very economical measure by the railrosd company.

Sales at S. F. Stock Exchange.

FRIDAY, A. M., AUG. 6.

690	Alpha	24@24½
1335	Baltimore Con	5@4½
415	do	h 30...5
815	Belcher	30@28
100	do	b 5...30½
20	do	b 10...30
2200	Best & Belcher	68@67½
645	do	b 5...67½@69
100	do	b 10...67½
569	Bullion	5@55½
270	Confidence	24½@24¾
150	Con Virginia	35@35½
1825	California	72½@73
50	do	b 10...73
10	do	b 5...72½
5	do	b 30...74¾
185	Caledonia	28@29
330	Daney	1¾@1¾
455	Empire Mill	7½
40	Exchequer	20½
970	Gould & Curry	26½@26¾
50	do	b 5...26½
300	Globe	75c
270	Hale & Norcross	68@68¾
6495	Imperial	10½@9¾
80	Justice	150@142
260	Julie	22
200	do	b 30...23½
530	Knickerbocker	3
1260	Kentuck	17½@17
2310	Lady Bryan	1¾@1¾
4720	Mexican	27½@26
50	do	b 5...27
2530	Ophir	72½@73
130	do	b 5...70@71
620	Overman	78@76
115	Savage	120@115
395	Sierra Nevada	19@19¾
510	S Hill	11¾@11
90	Seg. Belcher	97½@100
265	Succor	1½@1¾
2030	Union	10@9¾
50	do	h 5...10
50	do	h 30...10
415	Yeeb	14½@14¾
440	Yellow Jacket	87½@89
30	do	h 30...90

AFTERNOON SESSION.

150	Alta	5@5¼
1185	Andes	3¾@4
100	Belmont	3¾@4
205	Challenge	1
150	Cosmopolitan	50@55c
439	Peyton	6¾@6¾
870	Eureka Con	40@39½
1115	Gile	4½@5½
300	do	s 30...4½
575	Golden Cheriot	1½
250	Illinois Central	1¾
110	Jackson	1¾@1¾
180	Jefferson	3@4¼
205	K K Con	2
450	Kossnth	2½
300	Leoperd	17½@18
250	Lady Wash	2¾@2¾
1410	Leviethan	1¼
200	Leo	1¾
465	Meadow Valley	6½@6¾
585	Mansfield	9@8¾
100	Montezuma	7
2300	Mides	5@4
360	Mint	50@60c
295	Maryland	87½@91
350	New York	3¾@4
1300	Negara	80@81½
150	O G Hill	2
2240	Occidental	5½@6
10	Phoenix	1¾
235	Peuper	1
960	Phoenix	3½@3¾
50	Poorman	3¾
1310	Prospect	8@9
10	Phil Sheridan	1¾
60	Prussian	1¾
200	Raymond & Ely	47½@48
50	do	b 30...49¾
225	Rye Patch	1¾@1¾
2120	Rock Island	4@4¼
150	South Chariot	6¾
225	S Mountain	1¾
20	do	h 30...2½
300	S Star	1
75	Senetor	1
150	S R Island	1¾
520	Tyler	1¾
350	Woodville	3@3¾
600	Wells-Fargo	40@35c

SATURDAY, A. M., AUG. 7.

815	Alpha	25@26
50	do	h 30...26½
940	Belcher Con	5@4¾
100	do	h 30...5¼
185	Belcher	25
165	Bullion	54@5
8665	California	71@69½
80	do	h 30...71@72
185	Caledonia	27@28
470	Confidence	25@23½
230	Con Virginia	35@34½
30	Exchequr	20½@20¾
185	Empire Mill	8
340	Eureka	37@38
150	Globe	75c
3260	Imperial	10½@11
110	Julie	22½
80	Justice	130@135
10	do	b 30...133
395	Knickerbocker	4¾@4¾
250	Kentuck	17@17½
1850	Lady Bryan	1¾@1¾
235	Meadow Valley	6½@6¾
195	Overman	74@76
160	Ray & Ely	48
100	do	b 30...49
440	Sierre Nevada	19@18¾
50	do	s 10...18½
625	Seg. Belcher	94@100
20	Succor	1½
340	Union Con	9½@10
555	Yellow Jacket	89@87½
40	do	b 30...89

MONDAY, A. M., AUG. 9.

480	Alpha	25½@26
3080	Best & Bel	64½@65
500	do	b 5...64¾
100	do	s 30...64¾
420	Belcher	29@29½
10	Bullion	56
685	Bal Con	5@5¼
220	Caledonia	29@30
2360	California	68@69
100	do	s 30...68½
50	do	b 30...68
800	Confidence	23@23½
55	Con Virginia	33@33½
50	do	b 5...35
1105	Crown Point	34@33½
265	Chollar	98@105
200	Obullenge	7¼@7
220	Dayton	5@5¼
325	Empire	8¾@8¾
100	do	b 30...8¾
20	Exchequer	20½@20½
80	Eclipse	9½@10
300	Globe	50@75c
840	Gould & C	25@26
80	do	b 30...25½@26
20	do	b 10...25¼
80	Hale & Nor	57½@60
3050	Imperial	11¾@12½
30	do	s 30...12
50	do	b 30...12½
15	Julia	22½
175	Knickerbocker	4¾@4¾
285	Kentuck	18½@18½
2130	Lady Bryan	2@2¼
2245	Mexican	26½@26
70	do	b 30...26@26¾
1063	Ophir	69@70
80	do	b 30...71
365	Overman	77@78
55	Savage	137@140
5	do	b 30...141½
15	Seg Belcher	99
620	Sierra Nevada	18¾@19
360	Silver Hill	10¾@ 9¾
100	Succor	1¾@1¾
400	Union Con	10@9¾
435	Utah	14¾@ 5
25	do	b 30...15¾
900	Y Jacket	89@88

AFTERNOON SESSION.

50	Am Flag	2¼
280	American Flat	3¾@4
350	Alta	4¼
845	Andes	3¾@4
100	Belmont	3½@3¾
125	Cosmopolitan	50@55c
970	Eureka Con	42@44
125	Eureka G V	5
130	Empire I	1
50	Florida	2½
1190	Gila	4½@4¾
580	Golden Cheriot	1¾@1¾
150	Geneva	2
80	Illinois Con	5¾
60	Jackson	1¾@1¾
260	Jefferson	4¾@4½
405	Kossutb	2¾@2¾
65	K K Con	3
680	Leopard	17½@17¾
145	Meadow Val	6¾@6¾
280	Mabogany	8½@8½
16 0	Mansfield	8¾@8¾
450	Mint	50c
400	Mides	4@5
100	New Nayada	3@3
210	Phoenix	1¾
295	Raymond & Ely	50@1
100	Rock Island	4¼
245	Occidental	5¾@5¾
700	O G Hill	2½@2¾
290	Rye Patch	1¾@1¾
1100	Leo	1½@1¾
253	Lady Wash	2¼@1¾
600	Leo	1¾
400	Leviathan	1½
300	Mides	4¼

SALES OF LAST WEEK AND THIS COMPARED.

THURSDAY, A. M., AUG. 5.

640	Alpha	24@25
2755	Best & Belcher	71½@74
385	Belcher	31½@32
915	Bullion	54@55
455	Baltimore Con	5½@6
2110	Crown Point	39@4
730	Chollar	115@12
185	Confidence	23½@26
240	Caledonia	27@28
700	O G Hill	2@2½
6 5	Prosiect	13½@14½
v 0	Poo-nan	4@4¾
100	Phoenix	2¼
25	Phoenix	1¾
295	Raymond & Ely	50@1
150	Rye Patch	1¾@1¾
295	Rock Island	4¼
245	Occidental	5¾@5½
700	O G Hill	2@2¾
185	Confidence	23½@26
240	Caledonia	27@28
50	Con Gold Hill	2¾
200	Con Virginia	35½@36
4010	Celifornia	74½@76
200	Daney	1¾@1¾
925	Empire Mill	8¼@8¾
40	Exchequer	20½
34 0	Gould & Curry	28¾@30¾
775	Hale & Norcross	75@78½
1800	Imperiel	11¾@12
435	Julie	158@161
410	Julie	23@24
350	Kentuck	17½@18
305	Knickerbooker	4¾@5
2640	Lady Bryan	1¾
2940	Meiedonia	2¾@3
2660	Ophir	72½@76
940	Overman	83@85
145	Sevage	155@159
1805	Sierre Nevada	19¾@21
680	S Hill	11¾@12
90	Seg Belcher	99@100
850	Union Con	11½@12¾
280	Utah	15
590	Yellow Jecket	90@95

TUESDAY, A. M., AUG. 10.

310	Alphe	27½@27
395	Belcher	3@30½
260	Bullion	60½@61
785	Best & Belcher	68@69
120	do	b 30...69@70
2285	Bal Con	5@5¼
160	Cbollar	110@115
810	Crown Point	35@39
20	do	b 10...38
100	C G Hill	4@4¼
260	Confidence	28@29
100	Con Virginia	34½@35
1860	Celifornia	70@69¾
50	do	b 30...70¾
100	do	b 5...69½
250	Caledonia	31@30
60	Daney	1¾
	Empire Mill	8½@8¾
10	Exchequer	2.5
200	Globe	1¾
710	Gould & Curry	25½@26¾
100	do	b 30...25¾
410	Hale & Nor	61@63½
110	Julia	23½ a 24
100	Justice	131½@135
2260	Imperiel	13@13¾
100	do	b 10...13¾
265	Kentuck	18½@18¾
50	do	b 5...19
85	Knickerbocker	3½@4
2680	Lady Bryen	2¼@2½
140	do	b 30...2½
1345	Mexican	27½ a 26¾
2030	Ophir	76@14½
2 0	Overman	77@80
250	Savage	148 a 150
350	Silver Hill	10½@10¾
240	Succor	1¾
350	S Nevada	20 a 19½
55	Seg Belcher	96 a 98
260	Utah	14@14½
1400	Union Con	10½ a 10¾
30	do	b 5 11
527	Y Jecket	95@103

AFTERNOON SESSION.

420	Am Flat	3½
200	Alta	5
625	Andes	4¾
100	do	b 30...5
50	Amerioan Flag	2¾@2½
250	Belmont	3¾@3½
300	Cosmopolitan	52½@55c
320	Chellenge	1¾@1½
100	Dayton	5¾@5
535	Eureka Con	42@39
50	Florida	2¾
455	Gila	4½@4¾
990	G Cheriot	1¾@1¾
275	Geneva	2
300	Golden Fleece	1¾
580	Jackson	1¾@2
430	Jefferson	4½@4¾
75	K K Con	3
1110	Leopard	17
50	Lady Wash	2¾
630	Leo	1¾
380	Leviathan	1¾@1½
110	Mahogany	50c
130	Mansfield	7¾@7¾c
20	Meadow Valley	6¾
25	Marsland	15c
80	Mint	55c
400	Mides	5
200	New York	3¾
370	Niegara	80@1
150	Occidental	4½
275	O G Hill	2¾
20	Pacific	3½
100	Phoenix	1¾
100	Pauper	25c
100	Pict u	50c
1075	Poorman	4¼@4¼
725	Prosnect	17½@18¾
0 0	Rail Shet	1@1¾
1125	Raymond & Ely	50@1
50	do	b 30...49
120	Rook Island	4
100	Rye Patch	1¾
650	S Chariot	25c
1 5	S Mountain	1¾@2
50	S R Island	1¾
800	South Cal	2¾@2¾
350	Senetor	50c
1500	Wells-Fargo	50@45c
1200	Woodville	2¾@2¾

WEDNESDAY A. M. AUG. 11.

465	Alpha	24½@26
900	B & Belcher	62@63
30	do	b 30 63½
120	do	b 5...62½@63¾
525	Bullion	57@53½
470	Belcher	29@29
875	Baltimore Con	5
200	Chollar	110@108
815	Crown Point	3¾@35
20	do	b 30...37
90	Con Virginia	33@33¾
330	Caledonia	30@29
2260	Celifornia	67@68½
100	do	b 5...66@66½
150	Confidence	26½
300	Con G H	4½
225	Empire	8¼@8¾
100	Globe	3¾
750	Gould & Curry	25@23
1 0	Hale & Norcross	63@62
2215	Imperiel	12@12¾
100	do	b 30...12¾
50	Justice	140@145
25	Julie	22
50	Knickerbocker	3¾
140	Kentuck	18@17½
1655	Lady Bryan	2¼@2½
1370	Mexicen	25½@25½
1265	Ophir	68@70
100	do	b 5...69
1 5	Overman	75@74
200	Savage	140@145
3 0	S Nevada	19¾@19
70	Seg Belcher	98@97
1 5	S Iver Hill	10¾@9
85	Succor	1¾
395	Union Con	10@10½
255	Utah	14½
335	Yellow Jacket	98@100

AFTERNOON SESSION.

400	do	b 30...4¾
1185	Mensfield	1@8?½c
250	Mebogeny	75c@1
150	Meadow Valley	6¾@6¾
30	Merylend	
195	New York	3¾@4
500	N Cerson	55c
250	Niegara	75@80c
520	Occidental	5¾@5¾
200	O G Hill	2¾
600	Poorman	4¾@4¾
310	Phil Sheridan	1¾@1¾
1630	S California	2¾
265	Prospect	18½@18¾
60	Raymond & Ely	48@47¾
100	Rye Patch	1¾
50	Rock Island	4
1 0	S Cheriot	3@3½c
475	S Mountain	1¾@1¾
200	S R Island	1¾@1
1630	S California	2¾
200	Senator	1@75c
100	Tyler	1¾
870	Wells Fargo	50@45c
350	Woodville	2¾@2¾

MINING SHAREHOLDERS' DIRECTORY.

Compiled every Thursday from Advertisements in the Mining and Scientific Press and other S. F. Journals.]

ASSESSMENTS.—STOCKS ON THE LIST OF THE BOARDS.

Company.	Location.	No.	Amt. Levied.	Delinq'nt.	Sale.	Secretary.	Place of Business.
Beltimore Cons M Co	Weshoe	9	1 00	June 30	Aug 3	Aug 23	C A Sankey	331 Montgomery st
Buckeye G & S M Co	Wasboe	14	25	July 1	Aug 7	Aug 26	C A Senkey	330 Montgomery st
Caledonia S M Co	Washoe	13	3 00	July 7	Aug 11	Aug 31	R Wegener	414 Californie st
Chariot Mill & M Co	San Diego Co	Cal	4	25	June 24	July 27	F Swift	419 Californie st
Cherry Creek M & M Co	Nevada	4	50	July 15	Aug 19	Sept 14	D F Verdenel	409 Californie st
Condor M Co	Ely District	4	50	July 9	Aug 16	Sept 7	G T Grimes	240 Montgomery st
Cosmopolitan M Co	Wasboe	2	25	Aug 11	Sept 15	Oct 4	M Landers	507 Montgomery st
El Dorado South Cons M Co	Nevada	1	1 00	July 6	Aug 14	Aug 31	W Willis	419 Californie st
Empire M Co	Idaho	10	50	July 7	Aug 12	Sept 1	W Willis	419 Californie st
Enropa M Co	Washoe	4	25	July 23	Aug 27	Sept 14	R B Noyes	419 Californie st
Globe Cons M Co	Washoe	6	75	July 20	Sept 1	Sept 18	Joseph Magnire	419 Californie st
Golden Fleece G & S M Co	Wasboe	9	10	June 16	July 16	Aug 16	J P Moore	320 Californie st
Idaho Elimore M Co	Idaho	18	1 00	July 29	Aug 27	Sept 18	D Higgins	402 Montgomery st
Imperiel S M Co	Wasboe	22	1 00	June 29	Aug 3	Aug 20	W E Dean	419 Californie st
Justico M Co	Wasboe	15	3 00	June 19	July 19	Aug 19	Jas Kennody	Merchants' Ex
Kossuth M Co	Washoe	4	1 00	June 12	July 15	Aug 21	E F Stone	419 Californie st
Lady Bryan M Co	Wasboe	8	50	July 9	Aug 12	Sept 3	F Swift	419 Californie st
Mahogany G & S M Co	Washoe	16	2 00	July 15	Aug 7	Aug 16	D B Higgins	402 Montgomery st
New York Cons M Co	Washoe	14	50	June 22	July 27	Aug 16	H C Kibbe	419 Californie st
New York M Co	Wasboe	5	50	June 22	July 27	Aug 16	H C Kibbe	419 Californie st
Omega Teble Mt M Co	Cal	7	5	July 27	Aug 31	Sept 20	Devid Wilder	Merchents' Ex
Overman S M Co	Wasboe	32	3 00	June 25	July 30	Aug 19	R Wegener	414 Californie st
Pauper M Co	Idaho	5	20	July 24	Aug 30	Sept 23	W F Bogert	402 Montgomery st
Phil Sheriden G & S M Co	Washoe	3	50	Aug 6	Sept 8	Sept 29	W R Townsend	330 Pine st
Pictou M Co	Washoe	8	25	July 2	Aug 6	Aug 23	S Phillips	408 Californie st
Picobe West Ex M Co		8	2 00	July 12	Aug 18	Sept 10	T L Kimbell	409 Californie st
Rocky Bar M Co	Washoe	3	10	Aug 6	Sept 16	Oct 6	J P Cavellier	513 Californie st
Rye Patch Cons M & M Co	Nevada	4	50	July 30	Sept 6	Sept 30	D F Verdenal	409 Californie st
Sevage M Co	Washoe	19	5 00	June 24	July 28	Aug 16	F B Holmes	419 Californie st
Silver Central Cons M Co	Nevsda	2	10	Aug 3	Sept 8	Sept 29	Lucien Hermann	320 Pine st
Silver Cord M Co	Idaho	10	1 00	July 20	Aug 28	Sept 20	C B Higgins	402 Montgomery st
South Mounteen Cons M Co	Idaho	1	2 00	Aug 3	Sept 14	Oct 4	Wm Willis	419 Californie st
Tripper M Co	Wasboe	3	30	Aug 6	Sept 7	Sept 27	David Wilder	Merchents' Ex
War Eagle M Co	Idaho	10	1 00	June 30	Aug 5	Aug 23	L Kaplan	Merchents' Ex
Werd Beecher Cons M & M Co	Nevede	5	50	July 14	Aug 25	Sept 22	D A Jennings	401 Californie st
Woodville Cons M Co	Wesnoe	2	60	June 25	July 29	Aug 18	W M Helmann	401 Californie st
Woodville G & S M Co	Wesboe	10	60	June 25	July 29	Aug 18	W M Helmann	309 Californie st

OTHER COMPANIES—NOT ON THE LISTS OF THE BOARDS.

Black Hewk Coel M Co	Cal	1	5	June 23	July 30	Aug 16	H A Powell	520 Montgomery st
Black Jacket M Co		2	1 00	July 30	Aug 31	Sept 18	C J Eaton	724½ Market st
Cascade Blue Grevel M Co	Cel	3	10	July 20	Aug 25	Sept 13	J M Buffington	311 Californie st
Cons Poe M Co	Wasbos	8	25	July 24	Aug 24	Sept 24	Jas H Kinrad	Reno Nevada
El Dorado W & D G M Co	Cel	10	10 0	Aug 5	Sept 6	Sept 21	Hugh Klias	416 Montgomery st
Emme Hill Cons M Co	Utah	2	50	June 14	July 19	Aug 19	L C Fowler	302 Montgomery st
Enterprise Cons M Co	Cal	4	10	July 29	Sept 8	Sept 24	F J Hermann	418 Kearny st
Evening Q M Co	Cal	2	10	June 30	Aug 9	Aug 19	R Von Pfister	Merchants' Ex
Fresno Q M Co	Fresno Co	Cal	2	25	June 14	July 24	Aug 14	R Wegener	414 Californie st
George S M Co	Washoe	1	10	July 29	Sept 2	Sept 22	R Wegener	414 Californie st
Gold Mountain M Co	Amador Co	Cal	4	25	July 1	Aug 7	Aug 23	W A Knapp	116 Leidesdorff st
Green Valley Blue Gravel M Co		Cal	4	30	July 7	Aug 9	Aug 27	A D Carpenter	605 Cley st
Hartford M Co	Washoe	3	30	June 26	July 28	Aug 21	E F Sloan	419 Californie st
Howard Hill G M Co			3	35	July 28	Sept 6	Sept 24	F J Hermann	418 Kearny st
Jackson M Co	Eureka	Nevada	7	50	June 25	July 29	Aug 19	H C Kibbe	419 Californie st
Misers Dream S M Co	White Pine	Nev	2	40	June 21	July 31	Aug 19	W F R S Hindler	Cor Cal & Spring
Missouri Q M Co		Cal	2	20	June 22	July 26	Aug 24	F H Rogers	330 Pine st
Mountain Star G & S M Co		Cel	25	1 00	June 21	July 24	Aug 14	W F Bogart	402 Montgomery st
Mosquito Hydranlic M Co		Cal	2	31½	June 28	July 31	Aug 19	C S Healy	Merchants' Ex
Mountain View Cons M Co		Nevada	1	50	June 24	July 29	Aug 16	C S Healy	419 Californie st
Monnt Savege M Co		Utah	2	10	June 12	July 26	Aug 17	D F Verdenal	409 Californie st
Omega Teble Mt M Co		Cel	7	5	July 27	Aug 31	Sept 20	D Wilder	Merchants' Et
Ophir Q M Co		Cal	6	1 00	July 23	Aug 28	Sept 13	Geo P Thurston	315 Californie st
Picacbo M & M Co		Cal	1	10	Aug 2	Sept 13	Oct 18	Ford H Rogers	330 Pine st
San Francisco Copper M Co		Nevada	2	10	Aug 4	Sept 6	Sept 30	R De Clermont	Front & Jackson st
Silver Sprout M Co		Cel		5	July 3	Aug 10	Sept 1	T B Wingard	318 Californie st
Tolman & Miller M & M Co		Cal	2	30	July 14	Aug 16	Sept 6	C H Bogert	402 Montgomery st
Union Gravel M Co		Cal	11	1 00	July 16	Aug 25	Sept 14	T Derby	320 Californie st
Victoria & Imperial Tun't & M Co		Utah	5	10	July 8	Aug 12	S pt 2	W H Watson	302 Montgomery st
West Point G & S M Co		Cal	1	10	July 23	Aug 24	Sept 13	J C'Connel	400 Montgomery st
Wm. Penn Cons G & S M Co		Wasboe		6	Aug 7	Sept 11	Sept 30	John F Pope	424 Montgomery st
Woodside M & M Co		Cal	2	25	July 17	Aug 17	Sept 2	J Glassman	335 Montgomery st
Wyoming G M Co		Nevada Co	Cal	7	25	July 13	Aug 17	Sept 4	J M Buffington	311 Californie st

MEETINGS TO BE HELD.

Name of Co.	Location.	Secretary.	Office in S. F.	Meeting.	Date.
Alta Mining Co	Utah	Wm H Wetson	502 Montgomery st	Annuel	Aug 19
Annie Belcher Q M Co	Cal	J M Buffington	311 Californie st	Annuel	Aug 23
Beaver M Co	Nevada	W G Hugher	309 Californie st	Annual	Aug 25
Celedonia S M Co	Washoe	R Wegener	414 Californie st	Annual	Aug 18
Chariot Mill & M Co	Washoe	Called by Trustees	434 Californie st	Special	Aug 18
Cerrie Hole Hydranlic M Co	Cal	F W Van Reynegom	531 Californiats	Annual	Aug 14
Chief of the Hill M Co	Ely District	Chas S Neel	419 Californie st	Annuel	Aug 19
Equitable T & M Co	Utah	Chas S Healy	Merchents' Ex	Special	Aug 19
Gold Run M Co		C C Palmer	41 Market st	Annuel	Sept 6
Hannah Cons Cons S M Co		Chas Hammond	103 Montgomery s	Annual	Aug 19
Julia G & S M Co	Weshoe	Called by Trustees	419 Californie st	Special	Aug 23
Meadow Valley M Co	Ely District	T W Colbourn	418 Californie st	Annual	Aug 26
New York M Co	Nevada	Called by Trustees	419 Californ a st	Speciel	Aug 24
Oakland G & S M & M Co	Wasboe	Wm H Wetson	302 Montgomery st	Adjourned	Aug 21
Overman M Co	Washoe	Called by Trustees	419 Californie st	Special	Aug 17
Senetor S M Co	Washoe	J H Seyre	331 Montgomery st	Annual	Aug 25
South Comstock M Co	Washoe	J M Buffington	311 Californie st	Annual	Aug 16
Sutro M Co	Wasboe	Called by Trustees	434 Californie st	Special	Sept 8
Ward Beecher Cons M & M Co	Nevada	D A Jennings	401 Californie st	Annual	Aug 17

LATEST DIVIDENDS (within three months)—MINING INCORPORATIONS.

Name of Co.	Location.	Secretary.	Office in S. F.	Amount.	Payable.
Black Bear Quartz	Cal	W L Oliver		25	July 19
Con S Virginia M Co	Washoe	Chas H Fish	401 California st	10 00	Aug 7
Gold Hill G M Co	Sierra Co	Cal O Gollschon		2 Dividends—$5 Eech	July 8
Empire M Co	Nevada	Cal D A Jennings	401 California st	50	June 15
Eureka Consolidated M Co	Nev	W W Treylor	419 California st	1 00	Aug 5
Excelsior M & M Co		Frank Swift	419 Californie st	1 00	April 10
Gile S M Co	Neveda	W Ang Knapp	116 Leidesdorff st	25	Aug 16
Jefferson S M Co		C A Sankey	331 Montgomery st	50	May 15
Leoperd M Co		R H Brown		50	July 15
Manhattan S MCo	Nevada	Chas S Neal	419 California st	1 00	June 15
Northern Belle M & M Co		W Willis	419 Californie st	1 00	Aug 16
Oneide M Co		L Kaplan	Merchants' Ex	50	July 23

The Mining Share Market.

Since our lest iseus the market has undergone soms changee. The last part of the week and np to Tuesdey it was steady, bnt that day showed a weaknese and yasterday (Wedneeday) the etrannoue efforte of the heers effected a material decline in eome of the leading etocks. Ophir closed on Monday at $66; Tueedey it had advanced to $74¾ and Wedneedey dsclined to $68½. This morning it was down to $67. The hear element is making a strong fight, bnt it ie believed that any succes they may have will be only temporary and that the increased activity in stock circles, together with enconragning rsporte from the minee, cannot hut result in a strong and steadily advancing market.

The regular monthly dividend of $10 per ehare ie being paid by the Coneolidated Virginia. The Directore of the Northern Belle have declared their third dividend of $1 per ehare and the Gila silver mining company has declared a dividend of twenty-five cente per share.

Reports from the Comstock continue to be of the moet enconreging character and those heet acqnainted with the resources of that wonderful lode have unhennded faith in the future, and believe that the world has not begun to see the houndleee wealth contained in ite depths.

CONTRACTS for grading the North Pacific Coast railroad from Tomalee to Duncan's mills have been let, and the entire work ie to be completed by the 1st of May next. The tunnel at Tomales, npon which a large force ie at work, will be 1,800 feet long. It ie believed that it will be quite eaey of conetruction.

METALS.

[WHOLESALE.]

WEDNESDAY M., August 11, 1875.

American Pig Iron, ℔ ton	38 00	@	39 00
Scotch Pig Iron, ℔ ton	40 00	@	44 00
White Pig, ℔ ton	— —	@	38 00
Oregon Pig, ℔ ton	— —	@	38 00
Refined Bar, bad assortment, ℔ ℔	— —	@	— 3½
Refined Bar, good assortment, ℔ ℔	— —	@	— 4
Boiler, No. 1 to 4	— —	@	— 5¼
Plate, No. 5 to 9	— —	@	— 5½
Sheet, No. 10 to 14	— —	@	— 5¾
Sheet, No. 16 to 20	— 5¼	@	— —
Sheet, No. 22 to 24	— 6	@	— —
Sheet, No. 26 to 28	— 6½	@	— —
Horse Shoes, per keg	7 50	@	8 00
Nail Rod	— 10	@	— —
Norway Iron	— 6	@	— —
Rolled Iron	— 6	@	— —
Other Irons for Blacksmitbs, Miners, etc.	— —	@	— 4½
COPPER.—			
Brazers'	— 35	@	— —
Copper Tin'd	— 37½	@	— —
Nail's Pat	— 37½	@	— 40
Sheathing, ℔ ℔	— 24	@	— 40
Sheething, Yellow	— —	@	— 25
Sheathing, Old Yellow	— —	@	— 12½
Composition Nalls	— 24	@	— —
Composition Bolts	— 24	@	— —
STEEL.—English Cast, ℔ ℔	— 20	@	— 25
Anderson & Woods' American Cast	— —	@	— 16½
Drill	— —	@	— 16½
Flat Bar	— 18	@	— 22
Plow Steel	— 9	@	— 10
TIN PLATES.—			
10x14 I C Oberooal	11 50	@	12 00
10x14 I X Charcoal	13 50	@	14 00
Roofing Plate I C Charcoal	10 50	@	11 00
Benca Tin	— 25	@	— 30
Australian	— 25	@	— 30
ZINC.—By the Cask	— —	@	— 11
Zino, Sneet 7x3 ft, No 7 to 10 ℔ ℔	— —	@	— 11
do do 7x3 ft, No 11 to 14	— —	@	— 11½
do do 8x4 ft, No 8 to 10	— —	@	— 11½
do do 8x4 ft, No 11 to 10	— —	@	— 12
NAILS Assorted eizes	— —	@	— 4 10
QUICKSILVER, per ℔	— —	@	— 70

Gold, Legal Tenders, Exchange, Etc.

[Corrected Weekly by CHARLES SUTRO & CO.]

SAN FRANCISCO, August 11, 3 P. M.

MINING SUMMARY.

THE following is mostly condensed from journals published in the interior, in proximity to the mines mentioned

California.

ALAMEDA.

THE LIVERMORE COAL MINE.—The Alameda *Independent*, of August 7th, publishes a communication from Rev. J. J. Powell, giving an account of a visit to this mine from which we extract: About the first of January of this year the company began operations at their present location. There were surface indications which led Mr. Thomas Harrie, the efficient Superintendent of the mines, to believe that there was a rich deposit of coal in the neighborhood, and they soon struck a black seam, which they followed for 60 ft at which depth coal began to show itself, and as further depth was attained upon the deposit, they found a first-class vein 5 ft thick, or about one foot thicker than the Black Diamond vein. Angle 41 degrees north, and well defined to a depth of 400 ft. It is lignite, similar in quality to the Black Diamond, but of a higher grade and far superior as far as it has been tested. The tests are so far exceedingly satisfactory, much freer from smoke and obnoxious sulphur than the ordinary lignite. The company are hueily engaged in making arrangements for shipping coal on a large scale. They have on the ground and are putting up a large and powerful engine, with two large boilers. The whole will be constructed with a view to permanent and extensive operations, and will be provided, when complete, with the auxiliaries of blacksmith, carpenter and general repair shop. They are also engaged in building a hunker—capacity 250 tons.

AMADOR.

PROSPECTING IN THE EUREKA.—*Foothill Ensign*, August 6: We believe it is the intention of the Superintendent to do a little prospecting on this mine. Sinking operations are to be commenced forthwith, and the shaft run down 200 or 250 ft, in the hope of again striking the ledge. This work will require many months to complete, and in the mean time the mill will only be run to about half its capacity. For so extensive a mine comparatively little prospecting has been done, and it is confidently expected that a small expenditure of capital in this way will develop chimneys of as rich a character as have ever been met with in the past history of the mine.

BUTTE.

FIRE AT THE LAVA BEDS.—*Record*, Aug. 7: A fire occurred at the Lava Bed mines, near Oroville, on the morning of August 1st, which destroyed the Chinatown of that locality, consisting of about 60 new buildings. The loss is estimated at $60,000.

CALAVERAS.

A STRIKE.—*Citizen*, Aug. 7: We learn from Mr. Brice that Booth and Rhead have struck a rich quartz vein near Angels. The rock is reported to be so full of gold as to necessitate a chisel being used to separate it.

FIRE AT THE SAN BRUNO.—*Chronicle*, Aug. 7: Saturday evening last the blacksmith's shop, sheds and other buildings connected with the San Bruno mine at Mosquito, were destroyed by fire. A lot of wood was also consumed, and it was only by hard work that the fire was kept out of the "dump." Operations at the mine were not impeded by the fire.

A RECENT clean-up at the Veth hydraulic, after a few days' run, yielded $2,500. Pretty good considering that only a partial clean-up was made. Operations in the mine have been suspended for want of water.

PIPING has ceased in all the hydraulic claims in this vicinity owing to the scarcity of water. The supply in the ditch is unusually small for the season of the year.

EL DORADO.

MINING ITEM.—*Mountain Democrat*, Aug. 7: Under date of Aug. 1st, "Prospector" writes as follows from Greenwood: The ditch company having completed the ditch to Loon lake, we are looking for lively times.

THE French claim commenced operations today, and having had the claim put in splendid condition, will no doubt give a good return in due season.

THE Taylor mine is again in operation, good ventilation having been secured. It is being worked by single hand drilling, and the superintendent reports a great saving in expense in consequence. A rock breaker is in course of erection at this mine.

THE Rosekranz mine—the first south extension of the Taylor—is being opened—and the ore is looking and will pay as well as any in the State. Mr. Burlingham has a 5-stamp mill which will commence crushing ore the first of this week, having about 100 tons of ore on the dump. Four miners will keep the mill going, the ledge being 4 ft in thickness between the walls. The shaft 15 ft by 4½ inside the timbers.

THERE are several new buildings in course of erection, besides those lately completed, which shows that our miners have confidence in the permanence of the mines at this place.

MESSRS. WILLIS AND CRANE are sinking on a ledge near the Rosekranz mine, with flattering prospects for a fine development.

INYO.

THE JACOB'S MILL.—Panamint *News*, Aug. 4: It is rumored that E. P. Rains and others have leased, for one year, the Jacob's mill, down the canon, the first one built in Panamint. If this is so, we presume the intention will be to put in a roasting furnace, and run it on custom ore. We hope this is a fact, as it will give a number of our miners an opportunity of prospecting their ledges. Mr. Rains is expected here in a few days, when we shall endeavor to learn particulars.

THE Stetefeldt furnace at the S. V. M. & W. company's mill was fired up last Saturday evening. A slow fire will be kept up for about 10 days in order to thoroughly dry and temper the masonry work, after which time, the mill will commence to run. We think we shall hear the sound of the stamps about Tuesday or Wednesday of next week. The Hallidie rope-way, for bringing the ores down from the Wyoming and Hemlock mines, is completed, and works to a charm. In the mill but a few things of minor importance remain to be done—the laying of one or two short railroad tracks and some paving of the ground floor with brick. Nearly everybody were engaged yesterday in cleaning away the debris of the workmen, preparatory to active operations.

MARIPOSA.

RIVER TUNNEL.—*Gazette*, August 7: Our advice from Bear valley inform us that this tunnel is now one thousand and twenty feet in length, with the face in hornblendic rock, and extremely difficult to break. Last week it required twelve hours to drill a dozen holes about four feet each in depth, and these holes were fired three times in order to blast to the bottom of them. But in all probability this ground will not continue, and the rock will become easier to extract. The water still comes in at the heading. A new road has been made lately, so that material for the work can be unloaded on the dump; which, at the present writing, has grown to be quite large and roomy. The time occupied in going in and out with cars pushed by men, is so great that mules will be put to do the work, one mule hauling three or four cars.

NEVADA.

WORK AT THE GOLD TUNNEL MINE.—*Transcript*, August 7: For some time past Mr. Holland, the superintendent, has been engaged in sinking a new incline shaft to work and develop the north end of Gold Tunnel mine. The incline when completed will be over 600 ft in length, and was started from the surface and present lower level at the same time. When sunk 260 ft water was encountered, and the sinking from the top suspended, and the work prosecuted by raising from the bottom alone. There is in the mine a middle and upper level, and to facilitate work, Mr. Holland had a connection made between the middle level and the raise in the new incline. The connection was made on the morning of the 22d of July, at a distance of 153 ft from the bottom of the new incline shaft, and with an accuracy that is worthy of mention. There are forty-one different horizontal angles or corners, distances, five vertical angles, sixteen different leveling sittings in the lower, and nineteen in the middle level, making no less than 81 instrument sittings and readings, and the whole distance to connect is 1,575 ft—255 ft over a quarter of a mile—when, as the miners term it, they "holed." The connection was perfect; the exact point in the new incline was hit; the leveling came together like a floor, and the distance to the inch. The engineering has been done by one of the pioneers of this county, Capt. C. H. Seymour.

PLACER.

MINE CLOSED.—*Argus*, August 7: The mines of Gold Run, with the exception of the cement mill, are all closed on account of a scarcity of water. The town does not present its usual lively appearance. Work in the way of tunneling and preparing for active operations as soon as they get water still continues.

THE ST. PATRICK.—*Herald*, August 7: The most favorable reports come to us from this mine, or rather from the Crater mine, which belongs to the St. Patrick company. "It is," an old and experienced miner tells me, "one of the best mines in the State, and if located in some district that had a reputation, would be worth a million of dollars." How this may be we don't known, but we learn that they are hoisting daily about 20 tons of ore, which pays in the neighborhood of $50 per ton. The mill is kept running all the time, and the late clean-ups, as a natural consequence of such rock, have been of a character decidedly encouraging.

THE Greene mine is now yielding some very rich rock. They are now stoping from above the 240-ft level, where the ledge is three ft thick, and the character of the rock superior to any yet taken out since the mine was re-opened. This mine, throughout, looks decidedly better than it has ever done. The pay chute is broad, and the rock is so rich as to show free gold plainly in nearly all. Some changes are just now being made in the mill, which, though, will be completed early next week, when they will again commence crushing, and from the rock now out, they will make, doubtless, the richest clean-up ever made in the district.

THOS. WADE, while employed by John Worsley in cleaning out the old channel of Auburn ravine, beneath Cubberly's wagon shop on Washington street, for the purpose of erecting new underpinning for the same, discovered that the gravel contained gold. He accordingly put in two sluice boxes, dammed the water so as to run it through them, and what dirt he was compelled to move he threw in the sluice boxes. By this means he has saved, we understand, much more than wages in dust, besides finding several specimens, the largest of which is worth about $7.

SAN DIEGO.

DEVELOPMENTS IN THE NEW MINING DISTRICT.—*Union*, August 4: A correspondent of the *Union*, writing from Julian, says a letter has just been received from Mr. H. M. Whitcom, (now on a visit to San Francisco), to whom the superintendent of the Oriflamma mine sent a package of sulphurets taken from the first run of rocks to have tested by working process. Mr. Shulz, of Frary & Shulz, who received the letter, has permitted a copy of it to be given to the readers of the *Union*. Mr. Whitcom writes: "I have had one test made of the sulphurets that Mr. McLellan sent to me. One ounce was tested just as he sent it, and it yielded at the rate of $758 to the ton! I have worked the balance down much finer and it is being tested now; I expect from it much better results." The sulphurets spoken of were taken from the concentrators on the first part of the first run of the Oriflamme mill, and from the *poorest* quality of ore the mine produced, which was being put through simply as a test of the mill, and to fill up the battery floors, etc., before putting through good rock.

SHASTA.

THE MCCLOUD RIVER MINE.—Yreka *Union*, August 7th: Last Thursday, Mr. F. Grisez, of Little Shasta, showed us a certificate of assay of some rock from the new discoveries on McCloud river, by Leopold Kuh, San Francisco. The rock from which the assay was made was sent down by Frank Montre, Mr. Grisez's partner, who is at present at the mines. The piece of rock assayed was from a well developed ledge, about 4 ft wide and about 20 ft from the original discovery and running parallel with it. The certificate is as follows:

Oza., 1.59 gold, value per ton	$32.87
" 3.05 silver, value per ton	3.96
Total value per ton	$36.83

This would indicate that these mines are of considerable value, notwithstanding the unfavorable reports brought in by most all who have visited the locality. Mr. Grisez informs us that no work has been done on this ledge yet, Mr. Montre having broke the piece of rock assayed off the ledge with his pick, just before he started for Yreka. A tunnel is being run on the original discovery, in which Mr. Montre is also interested.

SIERRA.

PRESERVED WOOD.—A piece of wood from the Buena Vista mine, at Monte Christo, has been taken out 50 ft below the surface. It has been there undoubtedly for thousands of years, as trees have been cut from the surface 4 ft in diameter. The feature peculiar to this specimen is that the fibre of the wood is so well preserved, being nearly as strong as when first deposited, whereas wood found deep in the hills is generally charred and rotten.

SISKIYOU.

THE SCOTT RIVER DITCH.—Yreka *Union*, August 9: From the parties from Scott river we learn that the work on the ditch now being constructed on Scott river by the San Jose mill, mining and ditch company, is progressing favorably. About one mile and a half of the ditch is now completed, with the exception of a little fluming. The ditch lines are already permanently run for over eleven miles. The mill was started up for the first time two or three weeks ago. It was started up again last week but had to stop on account of the breaking of the mill gate. It is expected that it is running again by this time. We are informed also that another contract for digging has been let on the ditch, commencing at Tonkine creek—about the middle of the ditch. The contractors are Chinamen. The size of the ditch at this point is 5½ ft wide at the bottom, 3 ft deep, and 8½ ft wide at the top. The work will be pushed forward with energy until the ditch is completed. The company have a claim about 1½ miles from the head of the ditch which they intend to commence prospecting as soon as they can get the water to it. They have a little giant and 400 ft of pipe already on the ground. We are informed that there has not been any mining done as far up as this claim before, though good prospects have been got all around there. The ditch company have other claims on the line of their ditch, and propose, we believe, to prospect the ground all along the ditch.

SONOMA.

IN FULL BLAST.—*Democrat*, August 7: The new furnace of the Cloverdale mine is working well and is now in full blast. They have a large amount of ore on the dump, and we understand that the owners are well satisfied with the prospect so far. On the Mount Vernon, next adjoining, the prospect is also very flattering. W. S. Bell, one of the owners, will set to work at once to build a furnace.

A CLEAN-UP.—Russian River *Flag*, August 5: The Great Eastern cleaned up the pipes of the retort on Saturday and filled 10 flasks with quicksilver as the result. The furnace for working dirt and low grade ore is nearly completed and will soon be in running order.

TULARE.

THE NEW ENGLAND MILL.—Visalia *Delta*, August 5: We learn that work on the mill of the New England smelting company is progressing rapidly. Although there is no road and nothing but the roughest of mountain trails, the superintendent, by his untiring energy, has got most of his machinery up, and will fit the mill first for sawing lumber, and then for crushing ore. Work will be commenced on the furnace at once, and it is expected that not less 100 tons of bullion will be shipped before snow falls. Some of the specimens brought in by Mr. Ford are very rich in silver glance, and a ton of the rock would assay away up amongst the thousands. As to whether there is a large body of that kind of ore, the mine is not sufficiently developed to determine.

TUOLUMNE.

THE LADY WASHINGTON.—Sonora *Union Democrat*, August 7: The vein of ore struck in this mine two weeks ago continues to maintain its thickness and quality, as the work progresses. The prospect is deemed good for an extensive and rich mine.

Nevada.

WASHOE DISTRICT.

SAVAGE.—Gold Hill *News*, August 5: Sinking the main incline below the 2200-ft level is going steadily forward, the bottom in fair sinking ground. There is still a small flow of water but not enough to occasion any delay or trouble. Driving the north drift on the 2200-ft level is making steady progress, also the main south drift on the same level, both these drifts are being run outside of the ore vein, and it is not the intention to commence cross-cutting the ledge on that level until the south drift shall have been connected with the north drift from the Hale & Norcross, so as to afford a better ventilation. Sinking the south winze below the 2200-ft level is going steadily forward.

CALIFORNIA.—The main north drift on the 1550-ft level is being gradually extended into the ore body, which is proving itself richer, if possible, than ever as the drift advances. Cross-cuts Nos. 4 and 5, on the 1550-foot levels have been connected during the week by the latteral drift in the ore vein. That drift is now being extended to the northward to meet another from cross-cut No. 6, which is being run in the ore vein, and will soon complete the connection of the lateral drifts in the ore veins for the entire length of the mine.

GOULD & CURRY.—Repairing the shaft at the tenth station is being pressed to completion with all the energy possible, every man being employed that can find room to work. Enlarging and timbering the drifts on the 1700-ft level, so as to give greater ventilation, is going forward as fast as the work can be accomplished.

CONSOLIDATED VIRGINIA.—Daily yield 600 tons of ore. The ore breasts on the lower levels are still making a most magnificent showing of rich ore, and the usual monthly quota of $1,500,000 has been accomplished with four days less than the usual monthly run, giving a big surplus to carry over, if desired, to that of the next month. Thus the Consolidated Virginia, instead of showing a decrease in the yield of bullion, is proving that with scarce an effort she can easily increase her yield half a million more, and her dividends in proportion. Sinking the C. & C. shaft is going steadily forward, and the erection of the ponderous machinery for the new works is being steadily pushed ahead with the usual vigor of the management.

CHOLLAR-POTOSI.—Sinking the new combination shaft is making rapid progress. It is now down to a depth of 150 ft, having been sunk a distance of 31 ft during the past month, a depth which, considering its great size, is almost without a precedent in the hard rock of this section. The frame work for the new building is almost completed; also that of the machine shop, blacksmith shop, carpenter shop and boiler works. Sinking the main incline at the old works goes steadily forward, without change of interest to report. The south drifts on the 1150, 1250 and 1350-ft levels are all steadily advancing, the face of that of the 1350-ft level being in hard blasting ground. Daily yield, 75 tons of ore, the assay value of which is $28 to $30 per ton.

OPHIR.—Repairing and retimbering the shaft is being prosecuted with all the vigor possible. The erection of the new and powerful incline machinery is fast approaching completion, and the foundations are about ready for the reception of the new pumping engine. The new building is inclosed, and in fact all the outside work is advancing as rapidly as it is possible for it to be done. The mills are kept steadily running on the reserve or supply, and the prospects of the speedy development of the lower levels of the mine are daily becoming brighter.

AMAZON.—The shaft has been sunk 16 ft since our last report, making a total depth of 134 feet. The rock in the bottom blasts well, and good progress is being made. The winze in the vein below the first station level is down 46 feet, the quartz in the bottom being much harder, and showing a decided improvement as the winze advances downward. Everything in and about the mine is in fine working condition; the future prospects are bright and flattering.

BELCHER.—There is little or no change in the daily yield of the mine, or the general appearance of the ore producing sections. The ventilation of the 1500-ft level, by means of the connecting drift with the Crown Point, is fast cooling the level, and preparing the way for working that portion with speed and comfort. The main prospecting drift on the 1600-ft levels is making good progress. Nothing new of any other portion.

YELLOW JACKET.—The south winze is down 150 feet below the 1740-ft level, the bottom in good sinking ground and quite dry. The north winze on the same level is down 68 feet, with a slight flow of water at the bottom. Both the north and east drifts on the 1740-ft level are steadily advancing, with no new or valuable features to report.

CROWN POINT.—Daily yield 500 tons of ore. There are no particular changes to report of the ore-producing sections of the mine. Driving the prospecting drift on the 1700-ft level is making good progress and it will not be long in reaching the ledge when we hope to record the finding of a new bonanza as rich and valuable as that of the old.

Pre-Historic Remains of the Pacific Coast.

The remarkable group of islands off our Southern coast was once thickly populated by a people whose food consisted mainly of eatable shell-fish, principally of the abalones and the mussel. Among the shells that have accumulated as kitchen refuse, on many places along the shores and even on higher slopes on the islands, Mr. Paul Schumacher, sent out by the Smithsonian Institute to continue his successful exploration of a year past, searched the graves of a by-gone population, which are found near the kitchen refuse, and the places where formerly their houses stood. With the skeletons were fouud buried the implements of stone, shells and bone. On the islaud he especially brought to light many new forms of implements for hunting and fishing; also ornaments of great variety, worked out of stones, hones, and particularly of the beautifully colored shell *Kaliotis*. In recent graves he even found glass beads of somewhat *rococo* style, and made of a kind of glass not now found in the Bohemian glass-factories. Such finds may date from the discovery of California by Cabrillo, in 1542, who reported some of these islands as having been thickly populated. The kitchen utensils consists of pots of all sizes and forms, worked out of magnesia aud mica, and of bowls made of serpentine—all polished. The mortars are chiseled out of sandstone and often handsomely oruamented, some even with bas-relief, as found on St. Nicholas island, others again with shells sunk in the upper rim and cemented with asphaltum. The islanders, as well as those living on the mainland, have been, no doubt, clever smokers, as pipes are not rarely found. Of works of art, sculptnres were found representing sea lious, fish, fowls and idols, etc. This work, done either in soapstone or serpentine, is neatly executed and polished.

After the exploration on the island was done, Mr. Schumacher went over to the mainlaud (where in the meantime a division of Wheeler's exploring party, under Dr. Yarrow, was busily engeged in exhuming antiqnties and in exploring the historical site of Dos Pueblos), and oompleted his collection with all such articles and varieties of forms as are fonnd in that part of our coast. His collection made for the Smithsonian Institute in 1874, together witu that of this year, which comprises over seventy cases, will be a full representation of the archeology of the southern coast of California.

As the season has advanced and the Smithsoniau Institute is desirous that Mr. Schumacher should visit the coast of Oregon, where he obtained some results two years ago, he has left the lower coast, and is now in this city preparing for the northern trip. He requests us to acknowledge the courteous assistsnce of some of our Government officers, and to the liberal favors of the Pacific railroad companies. Mr. Sohumacher is soon going to leave for Oregon, and as the pursuit of his exploration is hy no means a small task, more so in country where the still living Indians may interrupt suoh investigations with the strong desire to take the scalp of the explorer, we hope that our Oregonian friends will give him a kiudly reception and such advice and assistance as they can conveniently.—*Alta*.

New Method of Making Nuts.

A Richmond (Va.) gentleman has iuvented a new method of manufacturing nuts, which is thus described:

Mnck iron is rolled into the required shape to make a hollow pile, by forming two sides with top and bottom of half circle, octagonal or hexagonal exterior, or a square hollow faggot, just as may he desired. This pile is heated in the usual manner, and before being given to the rolls a mandrel is introduced into the interior or hollow of the pile, which mandrel is held in position by being attached to the end of a rod or chain, the other end of which is supplied with a collar which falls behiud a notched rest or brace which holds the maudrel in place as the pile is introduced to the bite of the rolls and passes through them. Thus the exterior of the bars, and the iuterior, are formed at the same time aud the weld completed. The further reduction and finish of the bar ie accomplished by a repetition of the manipulation in the euccessive use of smaller maudrels and emaller groves in the rolls. Theu, before the bar has lost the heat it is given to a gang saw and by one movement cut up into blanks of the required thickness of exactly uniform size and weight, ready for the reamer and milling and chamfering machine.

Among the advantagee claimed for this process are that the nuts can be mannfactured much cheaper than by the old process, they are stronger, and consequently can be lighter, aud thus more of them obtained from a given weight of iron.

To Work Harn Steel.—If steel is rather hard under the hammer when heated to the proper cherry-red, it may be covered with salt aud hammered to about the shape desired. More softness can then be obtained; if required to give a further finish to the shape, by sprinkling it with a mixture of salt, blue vitroil, sal-ammoniac, saltpetre aud alum, made cherry-red again, sprinkled with this mixture and hammered into shape. Thie process may be repeated until entirely finished. When ready the steel is hardened in a solution of the same mixture. Thie method is recommended by Mr. W. R. Lake.

San Francisco Microscopical Society.

The stated meeting of the San Francisco Microscopical Society wss held on Monday evening, the 5th inst., President Ashburner in the chair. The cabinet was enriched by a donation from Mr. J. P. Moore of five slides mounted hy him, with wood sections, traverse and longitudinal, viz: *Torreya Californica*, or California nutmeg; *Oreodaphne Californica*, or California laurel or bay tree; and *Balsa*, a wood used by the natives of Central America for the purpose of making canoes, boats, etc., on account of its extreme lightness.

Dr. James Blake donated a slide mounted by him with diatoms from Echo lake, Califoruia, and a supply of diatomaceous earth from the same locality, for mounting. The bottom of the lake as stated by Dr. Blake, is composed almost entirely of diatoms, there being not more than four-tenths of one per cent. of for eign matter, the form being mainly *Gallionella*.

Mr. Charles F. Lightner presented two varieties of aphidæ, collected July 26th, on Morrisania ranch, Napa county, California, for examination and mounting.

Mr. W. A. Woodward presented a very destructive coleopterous insect, which had been damaging the apple and pear trees and grape vines for some years past. The line of operations of this beetle is to attack the vine or twig, and by sinking a shaft from the surface and then running a series of drifts, so weaken the structure that it breaks off and falls to the grouud. The specimens were obtained from Penn's grove, Sonoma county, and with a promise of a larger numbsr for future examination, the matter was passed for the present.

Mr. Dameron hrought to the rooms some Eastern oysters, the spat of which was examined aud found to be living, the embryo oysters being as lively as those ehown at the last exhibition of the society. This fact shows the need of some systematic efforts to ascertain the causes of the failnre to propagate the Eastern variety on this coast, as it is a well-known fact that they mature and fatten finely wheu transplanted from Eastern beds, bnt as yet have not multiplied like those to the manor born.

Mr. H. C. Hyde exhibited some beautiful test objects, among them the Lord's Prayer engraved on glass in so small a space that it requires a very high power and careful illnmination to resolve so as to be read. Mr. Webb, of England, is the only maker of these slides, and when it is stated that mechanism has succeeded in his hands in reducing things to so fine a poiut that the contents of six Bibles, on the same scale, would occnpy a space hut an inch square, some idea of the object in question may be formed.

A Strong Room.

The London *Daily News* gives the following description of the new premises of the Safe Deposit company in Bucklersbury, London: The building, roughly speaking, is divided into two divisions—namely, office and safe. There are in the building four tiers of safes, and, as tenders to them, four tiers of offices. These two divisions are separated by a brick wall three feet thick, through which there is only one entrance on each floor, such entrance being a massive corrugated iron door that has stood the test of two days' fire without flinching. The "safe" division of the building contains thirty-two distinct chambers, and each chamber contains many hundreds of compartments, great and small, for the deposit of papers, etc. The walls of this gigantic safe are composed of three feet of the hardest blue Staffordshire brick, with an exterior of fire bricks, and inside there is an armor plating four inches thick, cast on a wrought iron gridiron, that is calculated to make entrance doubly impossible. Around this parent eafe there is a clearly defined passage, which will be patrolled night and day. To each department of this gigantic repository there is a door composed of twelve inches in thickness of solid steel, slid into grooves by hydranlic machinery, and behind which there is a perpetual pressure of 160 tons. These doors are composed of steel so tempered that the greatest expert who could be fouud in the country, after drilling vigorously for a week, found that he had progressed only half an inch aod retired dishartened. To gnard against nefarious entrance to the premises hy horing from below, there is, as a final floor to the building, a tank of eight feet of water, to reach which an enterprising burglar would have to engineer his way through fifteen feet of concrete, for the mere pleasure of finding himself drowned like a rat in a hole. The water in this tank is used for a variety of purposes, being ultimately sent with a rush to the top of the building. The steam engines, boilers and all the machinery are in duplicate; so, that one set failiug, the concern will not be brought to a standstill.

Painting Old Buildings.—An inexpensive but durable method of painting old buildings is as follows: First give them a coat of crude petroleum, which is the oil as it comes from the wells, and which can be procnred for four or five dollars per barrel. Then mix one pound of "metallic paint," which is brown or red hematite iron and finely ground, to one quart of linseed oil, and apply this over the petroleum coat. The petroleum sinks into the wood and makes a ground work for the iron and oil paint. The color of the iron paiut is a dark reddish brown, and ie not at all disagreeable; it is a color not easily soiled, very durable, and is fire-proof.

Carelessness in the Use of Machinery.

An exchange offers the following good suggestions to its readers:

If one who looks over the newspapers daily should compile the statistics of loss of life, or injury to body or limb by machinery, for one year, the aggregate would undoubtedly surprise the community. At least such is the presumption from the frequency of such records. We do not refer particularly to nnavoidable accidents caused by defects in machinery, or sudden or unlooked for contingencies, but to those that might he avoided by a moderate degree of carefulness. A large proportion of these are caused by handling belts, particularly throwing them on or off pulleys in motion. There is a right way and a wrong way to put on a belt. The belt should be first placed on the pulley at rest, and then rnn on to the one in motion. In some cases where the belt is heavy, or the shaft runs very swiftly, it is best to slow down the speed so that the shaft barely moves. Where this is impracticable, great care should be observed in mounting the belt on the pulley face. The operator should have a firm and solid foothold, and see to it that no part of his persou or clothing gets between the belt and the pulley.

Belts running from overhead shafts are frequently run off or on hy means of a long stick, the operator standing on the floor. In throwing a belt off, the danger of accident is not great, but in running a belt on in this manner, the stick is liable to be caught and thrown with great violence, at the hazard of breaking human heads or valuable machines. The practice is reprehensible.

A common practice is to stand on the floor, and oast the belt on the face of the revolving overhead pulley. Once on, it must be held motionless in its place with one hand, against the friction of the pulley face, while the other hand guides it on the loose pulley of the machine, or the tight pulley, if there be no loose pulley. The danger is obvious—the belt may catch in a projecting key, or the head of a set screw, or double under on the shaft, when it will wind up with a velocity corresponding to the speed of the shaft, and perhaps carry the workman with it.

It would seem to be within the bounds of inventive possibility to construct some cheap and effective implement for throwing on belts.

The practice of leaving long ends of lacings or torn up flaps of splicings to catch into clothing or any projecting object, is not a good one. Small as this matter is, and alight as are these leather thongs and scraps, we have known of painful accidents being caused by them.

Using fast and loose pulleys without a belt guide, leads to deplorable accidents. One lately occurred in this State. A man was adjusting a pair of powerful steam shears and by some means, and all unexpecedily to him, the belt on the loose pulley worked over on the stationary pulley, and set the shears in motion. His left arm at the time was between the blades, which, closing with great force, nearly severed the arm near the wrist, cutting through the flesh and bone, and leaving the hand hanging by a few tendons and the skin. The arm was amputated near the elbow. The shipper or belt guide should have an automatic catch which secures the belt on either pulley. Many concerns use this preventative, and it is so easily applied, in one form or another, and is so certain in its operation, that it should be generally adopted. Unless the shafts are perfectly in line—a condition continually liable to change—and the faces of the pulleys are crowning, there is danger of the belt working from one pulley to another.

There are other careless practices among mechanics and those having the charge of machinery, which it is scarcely necessary to enumerate. The general thoughtless handling of machines, cleaning parts of machines while in motion, adjnsting parts that should be at rest while being acted on, and other habits contracted by familiarity, should be avoided. A machine ought not be trifled with. It has no remorse or pity. Once in its power, there is no escape with impunity. It should be managed with caution and constant care, for in dealing with machinery it is always better to be foolishly careful than foolishly careless.

New Method of Lighting Street Lamps.—A German engineer has invented a new method of lighting street gas lamps more simple and durable than by electricity. The apparatus can be affixed equally to all gas jets, and it is made to act, not by any special mechauism, but simply by the increased pressure of the gas, which is always laid on from the gasometer when the lamps should be lighted. The one act of turning on the gas at the main ignitee it at all the burners fitted with the new apparatus. When the pressnre is diminished at the main, the gas can either he totally extinguished or let down to a thread. It is chiefly in the lighting of the streets of a town that the invention will be of practical use. As soon as the gas is turned on, the whole city will be eimultaneously illnminated, and when in the early morning, the pressure is reduced the light may he totally extinguished or gradually diminished. This apparatus has been adopted at Heidelberg.

Paint for Hot Iron.—The best material to put upon iron subject to any considerable degree of heat, as a steam pipe or smoke stack, is a preparation of coal tar, commonly called black varnish.

Colorano is to be known as the "Centennial State."

Sound Castings.

In our issue of July 31st we gave an extract from *Iron* on the subject of obtaining sound castings. We continue the subject to-day:

The formation of blow holes in castings is bnt one of the minor evils to which castings are heirs, and this principally because the results are so evideot and plain to be seen. One of the most dangerous periods in the life of a casting is the cooling, when the contraction of the various parts in the mold is setting in. The general principles, and laws of this shrinking are but little understood or appreciated even by founders themselves.

The whole danger lies in the shrinking not taking place simultaneously. Given a caetiog of any complexity of form, there cannot be the slightest danger of breakage from shrinkage if the cooling throughout takes place simultaneously, and if the cores will give to the contraction. This latter necessary quality of the cores should be carefully seeu to, as evidently, if the cores will not give, the casting must burst under the contracting strain. There is, however, great danger to the casting, when the cooling is not simultaneous, of many portions being placed under great tension, even to such an extent as to cause them to part. Now this simultaneous rate of cooling is very seldom to be obtained naturally in any casting. In a very great proportions of castings the sections of metal are by no means equal throughout, and even if they are, the inner portions of the casting are not able to radiate their heat away with the same facility as the outer ones. The rate of cooling is primarily dependent on the proportion of the outside cooling surface to the mass of interior metal in any portion. The regularity of this proportion is one of the most essential points that should have the consideration of the designer. This is too often neglected, since the design is frequently made hy men or youths unacquainted with the laws of cooling or contraction. Bnt very often it is impossible to design the casting with equal masses of metal throughout, and then the rate of cooling will be inversely proportional to the relative areas of the sections compared with their perimeters. The rate of cooling will also, secoodarily, depend on its position—whether surrounded by or in close proximity with other metal, or whether to the outside of the mold.

The success or soundness of a casting uuder contraction is, then, dependent in the first place on the designer, that all parts should, as far as possible, be of even proportion as to their mass and perimeter, and where this is impossible the responsibility will devolve upon the founder, who must, by artificial accelerated cooling by early uncovering, or by retarded cooling hy hot plates, endeavor to produce a simultaneous rate of cooling throughout the casting.

There is still another most useful precantion in the hands of the desiguer, and that is to evade the disastrous effects of irregnlar contractiou. We will now explain what may be considered to take place, during cooling in the mold, in a very common instance, that of a rigger. The outside face of a rigger is nsually of very slight section, aud being situated to the outside of the mold is in peculiarly favorable circumstances for rapid cooling. The rim will thus cool and contract much the first, whilst the arms and boss are still hot, the arms being slightly compressed to permit the shrinkage of the rim. When the arms and boss are then cooled and contract, the rim is already set and rigid, and cannot give to the contraction of the arms. These latter, then, heing put under high tension, will probably part, as is generally eeen to be the case in straight armed riggers; each double arm, forming a diameter, having parted on one side or the other. This is a perfectly simple course of action under the natural laws, and is the key to nioety-nine out of a hundred unexpected breakages of castings, under slight strain. For in some instances, while the difference in time of cooling is but slight, and the section of metal strong, the contraction does not alwaye produce breakage in the mold, but the castings are delivered, apparently sound, nntil subjected to a slight strain or sudden jar; when the already severely strained portions at once break, long before the normal breaking strain is reached. This peculiar danger of portion of the casting being, though apparently sound, yet under abnormal tension, may be well illustrated by the two following cases. A sqnare plate of thin section, with a heavy boss in the middle, was taken out of the sand apparently sound, and placed till wanted in a yard. After some little time had elapsed it was fonnd to have split spontaneously right across the center, and it was noticed that the slit was widest across the central boss, or strongest part, and scarcely reached to the outside edges, or weakest parts. Now this apparent paradox may be easily explained by reference to the above instance of the rigger, the action being exactly the same. The outside of the plate, offering large surface and small section, cooled much sooner than the heavy central boss and internal portion of the plate. The outside of the plate having thus taken its set, compressing the liquid or hot metal within by contracting, offers a perfectly rigid resistance to the after contraction of the boss and center. The outside and center were thus straining against one another in opposite direc ions, not being able at first to part, but at last doing so under the influence, probably, of the expansion and contraction caused in it by the weather. The use of this foundation plate might thus have seriously endangered the safety of some structure or crane for which it was doubtless intended.

Useful Information.

To Kalsomine a Wall.

Buy tha best bleached glue if the walls are to be white or some light tint, (if dark, it is immaterial, so the glue is clean,) and use it in the proportion of a quarter of a pound of glue to eight pounds of whiting. Soak the glue over night; in the morning pour off the water, as tha glue simply swells while soaking. Add fresh water, put it in a tin pail, and set that in a kettle of boiling water. When dissolved, stir into it the whiting, adding enough water to make it, after mixing, of the same consistence as common whitewash. It may be tinted to any color desired, and is applied with a whitewash brush. If the color is rubbed smooth in a little water, and then mixed with tha wash, it will be more even. If the walls have been previously whitewashed, scrape away all that will come off, and wash with a solution of white vitriol, two ounces, in a pail of water The vitriol will be decomposed, forming zinc white and plaster-of-paris, to which the kalsomining easily adhares. It is important to dissolve the glue in a hot water bath; for if scorched by too great heat its tanacity is impaired or dastroyed. Whiting is simply chalk freed from impurities and reduced to a fina powder.

There is graat difference in whitawash brushas, and the beauty of the work, as wall as the ease of performing it, depende very much on a good brush, making it wall worth while to pay the difference between a good one and a cheap one. For the inexperienced it is more difficult to lay on tints evenly than pure white. —*Maryland Farmer.*

To Preserve Iron from Rust.—The following composition is said to preserve iron from rust, and also to be applicable to other materials, such as stone or wood, used in conjunction with iron or other metal, in the formation of reservoirs or other works: Virgin wax, 100 parts; Gallipoli, 125; Norwegian pitch, 200; grease, 100; bitumen of Judea, 100; gutta-percha, 235; red lead, 120; and white lead, 20; all of which, says the inventor, have their special value. The materials are mixed in a boiler in the order in which they are given, the gutta-percha being cut up in small peices, or rasped. Tha mixture must be well stirred at each addition, and, when homeogencons, is poured into monlds, and looks like chocolate. Whan used for preserving iron from rast it is melted and laid on with a brush; but for stopping holes, etc., it must be in a pasty stata. It may also be used as a glue to fix a peica of metal over a hola. For certain purposes, such as stopping holes in large vertical metal surfaces, composition is slightly varied, tha Gallipoli being reduced to 115, the bitumen to 90, and the red lead to 100, while 40 parts of gum copal are added next to the gutta-percha.

Ventilation Without Draft.—Fit the centar frame of the top sash of a window with double panes of glass, one attachad to the outer margin of the frame, and the other to tha inner, leaving an interval of about an inch between. The outer pane is deficient for the last inch at the bottom, and the inner pane for an inch at the top, thus allowing a current of air to enter the bottom of the outside pane, pass upward between tha two, and enter the room in a vertical direction, causing no draft but maintaining an almost constant supply of frash air, which can be increased or diminished to any extent in proportion to the number of panes thus treated.—*Herald of Health.*

Cane Fiber Felt.—An article of original manufacture, called cane fiber felt, is made by a Virginia company. It is the only felt made from cane in the world. It is used as a lining under tin, slate and shingle roofs, and for deafening floors; it also forms a cheap carpet lining, and is a substitute for plastar; in fact serves any use for which felt can be employed in buildings. It is a non-conductor of heat and cold, and impervious to water or moistura. This felt is plain or rosin sized, tha latter as well as tha former being inodorous. It is cheap, durable and free from objections that characterize other felts.

Cheap Process for Bronzing Articles Made of Iron Wire.—Clean the wire perfectly, and then immerse it in a solution of sulphate of copper until covered with a coating of metallic copper. Then wash and immerse the article in the following solution: verdigris, two ounces; salammoniac, one ounce; vinegar, one pint; diluted with water until it tastes only slightly metallic, and then boiled for a few minutes and filtered. The articles are steeped in this liquor, at the boiling point, until the desired effect is produced; but do not keep them in too long. When taken out wash carefully in hot water and dry.

Old engravings, wood cuts, or printed matter, that have turned yellow, may be rendered white by first washing carefully in water containing a little hyposulphite of soda and then dipping for a minute in Javelle water. To prepare the latter, put four pounds bicarbonate of soda in a kettle over a fire; add one gallon of boiling water, and let it boil for fifteen minutes. Then stir in one pound of pulverized chloride of lime. When cold, the liquid can be kept in a jug ready for use.

The Action of Ammonia on Varnish.

Every one knows that oils, when brought in contact with alkalies, are more or less readily converted into soaps soluble in water. Among the most easily saponified oils is linseed, which, when shaken up with a solution of potash, soda, or ammonia, unites with the alkali, forming a thick emulsion of soft soap. It is also a familiar fact that ammonia is a gas always present in the air, especially wherever organic decay is going on, as in barnyards and stables. If a varnished carriage is exposed to this gaseous ammonia arising from manura heaps or decaying vegetable matter, tha alkali combines with the oil of the varnish, forming an almost imperceptible film of soap. When the vehicle is washed, this is dissolved and removed, leaving a fresh surface to be again acted apon by the ammonia. The oil being thus gradually removed, the varnish becomes brittle and more liable to crack. It is found that this cracking is most common on the upper surfaces and projecting parts of the carriage; probably, as an accomplished chemist who has looked into the matter suggests, because these parts "are most subjected to the influence of tha ammonia, by the falling on them of particles of dust impregnated with the gas." The obvious "moral" is, that varnished carriages should not be kept in a stable, or in a building where vegetables liable to decay are stored. A friend has told us of a case in which the varnish on the back part of a carriage was found to be badly damaged, while on tha other portions it was comparatively uninjured. This was a mystery until it was observed that some potatoes, in a barrel standing in the rear of the vehicle, were decaying. The mischief was doubtless caused by the ammonia evolved from this source. It is no uncommon thing for farmers to keep vegetables in their carriage-house, but it will be seen that tha varnish may suffer for it, if tha vegetables happen to decay. In any place where elegant carriages are kept, nothing should be allowed that can possibly give rise to ammoniacal vapors.—*Boston Journal of Chemistry.*

A non-drying cement of great tenacity, useful for fastening plates of glass so as to exclude air, but which may be easily separated, is formed by adding freshly slaked lime to double its weight of India rubber, and heating to about 400° Fah., when the rubber will be converted into a glutinous mass.

The Electric Light.—An ordinary light-house where oil is used gives an illuminating power equal to about 200 candles. An electric light in England flashes over the North Sea its condensed beams, each of which is more than an equivalent to the combined light of 800,000 candles.

Petroleum constantly applied to the cutting tools will enable the cutting of tha hardest alloys with the same ease as steel tempered to straw color. The latter is far more easily worked by keeping the cutter moistened with a mixture of petroleum and turpentine.

Glycerine paste for office use may be prepared by dissolving one ounce of gum arabic and two drachms glycerina in three ounces of boiling water.

Squeaking Boots.—It is said that a peg driven into the middle of the sole of a new squeaking boot will stop its noise.

A putty of starch and chlorida of zinc hardens quickly, and lasts, as a stoppar of holes in metals, for months.

Good Health.

Sunstroke.

Sunstroke is frequently brought on by persistent fretting.

The exhaustion of the nerves is one of the precedent conditions of the diseasa, and there is nothing which exhausts the nervas so surely as fretting.

An unexceptionally able physician has said that mental labor never alone produces disease of the brain, but that "worry" is tha chief source of softening of tha brain, and that paralysis which is distinct from apoplexy.

Now if you believe that sunstroke is caused in a similar way, you will comprehend why we have sometimes a hundred cases in a day in our country, but in Italy, where the heat lasts steadily for four months in the year, the disease is nearly unknown.

The reason is that most Americans, when the hot weather begins, go into training for sunstroke, and ignorantly do everything which can produce it.

What we ought to do in hot weather is evident. First, we must keep our minds easy and contented. Secondly, we should drink nothing but moderately cool water, and very little of that. Ice-water is the bane of America, and probably kills nearly as many people as alcohol.

Thirdly, we should avoid so far as is possible all work which overheats and exhausts us.

To Remove Freckles.—A simple remedy for removing freckles is a pint of sour milk and a small quantity of horse-raddish. Let the mixture stand over night, and use it as a wash three times a day until the freckles disappear.

The Active Element of Cod Liver Oil.

Why does cod liver oil produce better results than any other oil? One of the earliest answers given to this question was, because it contains iodine; but the amount of iodine contained therein is exceedingly small, and no greater than that found in salt water fish and oysters. The statements as to the presence of biliary matters rest on imperfect and somewhat antiquated chemistry, but may perhaps after all ha not without weight. Naumann showed that fish liver oil passed through membranes with greater facility than any other fat oil; and that liver oil, deprived as far as possible of its biliary matters, lost much of this property and behaved like other oils.

Buchheim finds in cod liver oil a considerable proportion of free fatty acids, which render more rapid and thorough the saponification and absorption of the oil by tha alkaline fluids of the duodenum. What the precise proportion between free fatty acids and the glycerides may be which is most favorable to their digestion, is a point yet to be determined. It does not follow that it is the same as that existing in cod liver oil. Ha therefore hopes, since stearic and palmitic acids are solid at ordinary temperatures, that some means may be found for manufacturing in abundance pura oleic acid, which may either be used alone or added to cod liver oil, and replace the partially decomposed oleic acid to which tha disagreeable odor and taste of the darker varieties of cod liver oil are due.—*Boston Med. and Surg. Journal.*

Flushed Cheeks.—Tha question has been asked tha *Herald of Health* why people who drink much alcoholic drinks have a red nose and flushed cheeks. That journal answers as follows: Alcohol paralyzes the nerves of the small bloodvessels, and they become dilated, filling with blood. Tha flush seen on tha cheek during the first stage of alcoholic excitation is commonly presumed to extend merely to the parts exposed to view. It cannot, however, be too forcibly impressed that the condition is universal in the body. If the lungs could be seen, they too would be found with their vessels injected; if tha brain and spinal cord could be laid open to view, they would be discovered in the same condition, and so on. Dr. Richardson said he had witnessed this vascular condition of the lungs of an animal killed suddenly when under the influence of alcohol. He once had tha opportunity of observing the same phenomenon in the brain stracture of a man who, in a paroxysm of alcoholic frenzy, had his brains dashed out by the wheels of a railway carriage. The brain, entire, was examined three minutes after death. It exhaled tha odor of spirit; its membranes and minute structura were vascular in the extreme. "It looked as if it had been injected with varmilion." The white matter of tha cerebrum could scarcely be distinguished, and the pia mater, the internal vascular membrana covering the brain, resembled a delicate web of coagulated red blood.

Action of Alcohol on the Blood.—Alcohol in its passage through the body first reaches tha blood, and coming in contact with all parts of it causes the corpuscles to run too closely together, and to adhere in rolls; it may modify their outline, making the clearly defined, smooth outer edge irregular or crenate, or even starlike; it may change tha red corpuscle into the oval form; or in very extreme cases it may produce a truncated form of corpascle, in which the change is so great that if we did not trace it through all its phases we should be puzzled to know whether tha object were indeed a blood cell. These changes are due to the action of tha spirit on the water contained in tha corpuscles. While these changes are going on tha power to absorb and fix gases is impaired, and when tha aggregation of the cells in masses is great, other difficulties arise, for tha cells united together pass less easily than they should through the minute vessels, and thus impede the current. Alcohol in excess acts also on the fibrine of tha blood. It may act in two ways, according to the degree in which it affects the water that holds the fibrina in solution. It may fix the water with the fibrine, and thus destroy the power of coagulation; or it may extract the water so as to produce coagulation. This explains why in acute cases of poisoning by alcohol, the blood is sometimes found quite fluid, at other times firmly coagulated in tha vessels.—*Herald of Health.*

Welcome Spare Beds.—One rule ought to be invariable with every good housekeeper—that tha bed in the guest-chamber shall never be "made" except when it is to be directly used. Let it lie fallow between whiles, and turn the mattresses every few days, with all precautions against dampness gathering upon them. Then, when put in order with fresh sheets and blankets, having the dry heat of the kitchen fire in them, there will be small risk of that chill which travelers dread. A room kept andampened, sweet, and non-wholesome, with a dry bed and plenty of well aired bed clothes is within the power of the humblest to give their guests, and is all that sensible visitors ask.

Earache.—There is scarcely any ache to which children are subject, as bad to bear and difficult to cure, as the earache. But there is a remedy, which is said to be pretty generally effectual. Take a bit of cotton batting, put upon it a pinch of black pepper, gather it up and tie; dip it in sweet oil, and insert into the ear. Put a flannel bandage over the head and keep it warm. It will give immediate relief.

Domestic Economy.

A Substitute for Soap.

A lady writes to one of our agricultural papers, and communicates the following with regard to tha use of soap. We supposa she knows of what she speaks, but many housekeepers will be likely to regard her statements as bordering on moonshine. But listen:

"Without giving any recipes for making soap, I wish to tell all the hard-worked farmers' wives how much labor they may save by not using such vast quantities of this article. For nearly five years I have used soap only for washing clothes. In all that time I have not used one pound of soap for washing dishes and other kitchen purposes. My family has ranged from three to twenty-five. I have used cistern water, limestone water, as hard as possible, and hard water composed of other ingredients besides lime, and I find with all these my plan works equally well. It is this: Have your water quite hot, and add a very little milk to it. This softens the water, gives tha dishes a fine gloss, and preserves the hands; it removes the grease, even that from hand, and yet no grease is ever found floating on the water, as when soap is used. The stone vessels I always set on the stove with a little water in them when the victuals are taken from them; then they are hot when I am ready to wash them, and tha grease is easily removed.

"Just try my plan, you who toil day after day every spring to make that barrel of soap, and let us hear how it succeeds with you. I like the great barral of soap on washing-day, but am glad to dispense with its aid on all other occasions. I find that my tinware keeps bright longer when cleansed in this way than by using soap or by scouring. The habit so many of us have acquired of scouring tins is a wasteful policy; tha present style of tinware will not bear it. The tin is soon scrubbed away, and a vessel that is fit for nothing left on our hands; but if washed in the way I have described, the tin is preserved and is always bright and clean."

Brine that will Preserve Butter a Year.—Among the many devices for keeping butter in a manner that will preserve tha fresh rosy flavor of new, with all its sweetness, is the following from the Duchess *Farmer:* To three gallons of brine strong enough to bear an egg, add a quarter of a pound of nice white sugar and a tablespoonful of saltpetre. Boil tha brine, and when it is cold, strain carefully. Make your butter into rolls, and wrap each separately in a clean, white muslin cloth, tying up with a string. Pack a large jar full, weight the butter down, and pour over the brine until all is submerged. This will keep really good butter perfectly sweet and fresh for a whole year. Be careful to not put upon ice, butter that you wish to keep for any length of time. In summer, when the heat will not admit of butter being made into rolls, pack closely in small jars, and, using the same brine, allow it to cover the butter to the depth of at least four inches. This excludes the air and answers very nearly as well as the first method suggested.

Onions.—I think it is admitted that the majority of people like onions as food, and, only for the perfume, many would eat them who now do not. That they are antiscorbatic as well as antiseptic is also admitted, and this is tha way I prepare them. A few moments before eating they should be sliced quite thin and sprinkled plentifully with sugar, and you have a palatable relish which will not rise on the stomach or produce heartburn. A trial will afford proof.—*Wynkoop.*

To Cook Mutton.—Every week or two we kill a mutton. I roast it all. I put it in the oven in a large bakepan, put it in water, cook till eleven; turn it over twice; everyone who eats a mutton hare says it is tha best they ever ate. At eleven o'clock take out the mutton, fill tha pan full of potatoes and bake them; thicken tha gravy, and you need little else for a dinner fit for a —wall, anybody. Kings are no better than we are.

To Preserve Lemons Fresh.—Slice them as thin as possible, and put into a nice sweet jar with alternate layers of sugar and lemon; remove all the seeds, have each layer entirely covered with sugar; tie a thick cloth over the jar before putting the cover on, so as to exclude all the air. I have kept them perfectly fresh for a year in this way.

To Bake Ham.—Most people boil ham. It is much better baked, if baked right. Soak for an hour in clean water and wipe dry. Next spread it all over with thin butter and then put it in a deep dish with sticks under it to keep it out of the gravy. When it is fully done take off the skin and matters crusted on the flesh side and set it away to cool.

Beet Vinegar.—Grate the beet, says the *Farmers' Advocate*, and express the juice in a cheese press, or in any other way that may suggest itself, and put the liquor in an empty barrel; cover the bung-hole with gauze; and set it in the sun, and in twelve or fifteen days it will be ready for use.

Berry Tarts.—Cover gem pans with crust, as for little pies, and bake; when nearly done, fill up with berries and replace in the oven a few minutes.

MINING AND SCIENTIFIC PRESS.

W. B. EWER.....SENIOR EDITOR.

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Now Compete for the Prizes.

[From Advance Sheet of the Mechanics' Fair Daily.]

This year exhibitors at the Fair should make as fine a display of their articles as can possibly be made. Remember the prizes—sixteen gold medals, fifty silver medals, Society diplomas, certificates of merit and special premiums, as the Board may determine. Here is an incentive for the ambitious to do their level best. Bring forward your articles and put them in competition. We hope to see an honorable emulation in this matter, and a spirit of friendly contest which will be of benefit to all. Judges will be appointed by the Board of Managers immediately upon the opening of the Exhibition, to examine all articles presented (only those, however, which are *receipted for*), and the managers will award premiums on such articles as the judges shall declare are worthy, which will be delivered as soon as they can be prepared. The mornings of each day until ten o'clock will be appropriated to the judges, and no visitors will be admitted during the time thus appropriated, except at the special request of the judges, or by permission of the managers. Now go in and win—"*Palmam meruit Ferat.*"

THE Santa Cruz and Watsonville railroad is finished to Tracy's, on the San Andres ranch, three miles from the Pajaro valley, and seven miles from the Watsonville depot. Workmen are now laying half a mile of track per day.

WORKMEN in each end of the Felton railroad tunnel, says the Santa Cruz *Sentinel*, converse with each other, so small is the space between them. The "bore" will be completed in a day or two.

VANDER NOOT & SON, of this city, sold a few days ago 250,000 stone paving blocks to Ruisch & Taylor, street contractors, of this city.

Foundry Notes—Mining Machinery.

The foundrymen of this city continue as busy as possible on all varieties of work. Mining machinery, however, occupies their principal attention, and material of this class is on hand at all the large foundries.

The most important mining machinery lately finished is that for the pumping works of the C. & C. shaft, made at the Union iron works, by Prescott, Scott & Co. The engine is a very large one, and is the first direct acting pumping engine built on this coast. Although a simple machine it is handsomely finished, and presents a fine appearance. The cylinder is forty inches in diameter, and eight feet stroke. The piston rod is twenty-two feet long, eight inches in diameter, and made of steel. The cylinder is surrounded with a steam jacket to prevent the condensation of steam; and every appliance to economize fuel, space and friction has been added. The steam and exhaust valves are made of brass, and are fitted with steel rods. The disposition of the steam valves insures the largest opening with the least loss of steam, and the position of exhaust valves allows the escape of all condensation in each end of the cylinder at every revolution. The valve gear is automatic in its action, and is supplied with all cut-offs and modern appliances. The devices used control the movements of the large piston perfectly, so that in case of the breakage of the dump rod or the pumps losing their water, there is no danger of the engine racing or doing any damage. The design comprehends the connection of the crosshead of the engine and the nose piece of the bob without the intervention, cost and risk of heavy gears, with their shafts, boxes, sole plates, foundations and appurtenances.

The machinery on the C. & C. shaft will now be the best on the Comstock and on the coast, if not in the world. The hoisting apparatus, which was made at the Pacific iron works, is the largest of the kind in the country. It has a hoisting capacity of 21,000 feet. There are two engines, twenty-six inch bore, six feet stroke, fitted with balanced puppet valves and cross cut-off. The cylinders weigh 16,000 pounds each. There is one engine at each end of the drum shaft, the distance between being twenty-four feet. The engines are fitted with two steam brakes, one for each reel, with an independent hand brake for each reel. Six tubular boilers, fifty-four inches in diameter and sixteen feet long, supply steam for this machinery. The Consolidated Virginia and California mines have now on their joint shaft direct hoisting and direct pumping engines, compound engines and every facility for quick and easy work. The new milling machinery is also a marvel of mechanism. Altogether the outfit is worth the visit of any mining man, and is a credit to our machinists.

The Iron Interests of the United States.

It has long been predicted that, by reason of the increase in the cost of English coal and labor, English iron masters and smelters would soon begin to turn their attention to the advantages possessed by the iron and coal fields of the United States. This prediction is already coming to pass. The London *Engineer* of a recent date says: "The mineral wealth of the United States has a great attraction just now, not only to the operative miners of this country, but likewise to certain of our iron masters. The most recent indication of this is the purchase by capitalists in Stockton-upon-Tees of an extensive tract of country in Tennessee, and the forming of a company, incorporated under the Companies Acts, 1862-67, in this country, and also under charter from that American State. The object is to work the minerals, and to make pig iron upon the property, which, among other contents, has, we are told, 52,000 acres of coal outcropping into water worn ravines in seams twelve feet thick, which can be mined by drift ways, without shafts or pumping. Near at hand there is mountain limestone two hundred feet thick: brown hematite and specular iron ores, free from sulphur and low in phosphorus, are found in seams varying from eighty feet to two hundred and forty feet in thickness, over several miles of country; and lest these should not be enough, there are also manganese ore, lead ore, and sulphate of baryta."

Iron building-girders are going into England from Belgium at lower prices than the English can produce them. This, taken together with the successful importation of Alabama iron, is opening the eyes of our English cousins to the fact that they can no longer monopolize the iron business of the world. At a recent meeting a principal manufacturer was moved to admit that he did not believe any one expected the iron trade to be again what it has been.

There can be no mistake but that the iron business is fast slipping away from England. The superiority of American over English steel is also being recognized everywhere, even among Englishmen themselves. The *Ironmonger*, a standard English publication, gracefully and frankly acknowledges the situation as follows:

"Surely we shall not have long to look in vain for the incorporation into steel making in England of that intelligence by which the best cutting steel of the New World is so superior as it is to that of the Old World. We are afraid that our edge tool makers are supine, and that, content with their general prosperity arising out of the making of large quantities at a price which yields them a fair profit, they are not sufficiently awake to the gravity of the consequences which may ensue upon the surpassing excellence of specific American hardware."

The world must soon look to the United States for the great bulk of its iron, and when that time comes an industry will be developed here which will speedily give this country commercial supremacy of the world.

Come to San Francisco During the Fair.

[From Advance Sheet of the Mechanics' Fair Daily.]

Residents of the interior who can possibly find time for a visit to the city, should by all means come while the Fair is in progress. They will find both amusement and instruction at the Pavilion, attended with very little expense. Those who are about to purchase their supplies for the winter, will find it greatly to their advantage to come here during the Fair, as they can combine business with rational instructive amusement. Farmers who are going to invest some of the profits of this year's crop in new agricultural machinery, can see all the different classes from the hands of different manufacturers. There will be quite an extensive display in this line at the Pavilion, and farmers can compare the various machines, and examine as to their merits. This machinery will be running, as the managers furnish all requisite power.

Miners can see all the pumps, drills and quartz machinery in operation, and can witness the competitive tests which will be made before the Committee of Awards. They can see machinery of all kinds, and can select that best suited to their respective wants. If they do not wish to purchase now, they can have the advantage of understanding exactly what they want when they do wish to buy.

Citizens of the interior generally, who can by any means find time to come to the city this year, should come during the Fair. It is not a representation of the interests of San Francisco alone, but of the entire State, and should be fostered by every part of California. Every possible variety of machines manufactured, and natural products, etc., will be shown. Good music will be provided, and fine pictures displayed. The crowd itself is worth going to see, and if a visitor does not choose to walk, he can take a seat in the galleries and watch the brilliant moving crowd which is continually moving to and fro. No better time could be desired for visiting the city than during the Fair. By the latter part of August our stormy winds will begin to subside, and the fogs disperse, and September is one the most pleasant months in San Francisco. A glimpse even, of the brilliant and lively scene, day or evening, will pay for a long journey.

STREET RAILROAD MOTORS.—The subject of street railroad transit is still attracting much attention in all the principal cities of the Union, and many are the devices which have been suggested or tried as a substitute for the horse. The fireless locomotive, using a boiler supercharged with steam at the termini, and when necessary at intermediate points, is still in operation; but with what success accounts are somewhat at variance. The coiled spring is also undergoing experiment, wound up by a steam engine at the termini. Another inventor employs a horizontal compressed air engine under the floor of the car. Thus the matter stands, while the companies are still awaiting other contributions to the subject.

In the mean time the *Scientific American* suggests that we had better let well enough alone, and doubts the economy of the use of locomotives except where the power of ten, twenty or more horses is desired. When only one or two is required that journal thinks the living horse is preferable to the iron one for the following reasons: "The trouble of raising a horse is less than the labor of building a locomotive in a shop. And the horse takes its own water and fuel when needed, and needs no stoker; it also continually repairs itself, until it is entirely worn out. Even then, at its dissolution there is no danger of bursting a boiler. It is always ready, and needs no firing up; and finally, having a sense of self-preservation, it will not blindly go ahead, and run into the river off an open drawbridge, as locomotives have often done. If it is objected that occasionally the control of horses has been lost by the driver, and that they ran off, it must be remembered that runaway locomotives are by no means uncommon. Taking all things into consideration we believe that the ordinary horse is a good institution, which it will be hard to surpass by labor in a machine shop."

AT a meeting of the Mechanics' State Council, on Sunday last, a letter from J. H. Wright, President of the Industrial Congress, fixed the 4th of July, 1876, as an appropriate day to make a national effort to establish the eight-hour system of labor in the United States.

THE Natoma water and mining company are vigorously prosecuting the construction of the outer wall of their canal near the American river at Folsom.

A BARREL factory is shortly to be started at Vanconver, Washington Territory.

A Seamen's Home for San Francisco.

[From Advance Sheet of the Mechanics' Fair Daily.]

One of the greatest needs of San Francisco, at this time, is a seamen's home, where the common sailors who enter this port may find a resting place while on shore, in which they may be free from the sharpers who so persistently and cruelly prey upon this simple hearted, but useful class of people in all seaports where their welware and interests are not looked after by humane and benevolent persons. There has hitherto been so much to do in this city in the way of public and benevolent work that this particular enterprise has been quite overlooked by our more wealthy people, and all that has been done has been accomplished by a few earnest, hard working ladies, with little or no pecuniary means at their command.

Several fairs have been held, and one notably, some five or six years since—known as "The New England Kitchen"—at which a considerable sum of money has been raised and slightly increased by annual contributions from the lady workers themselves, with which a large amount of good has already been done in aiding sick and destitute seamen, and in establishing temporary seamen's homes, in hired buildings, which have had to be given up after a little for lack of means to keep them going.

The work above alluded to has all been done under the direction of a society, known as the "Seamen's Aid Society," which has recently been putting forth a more determined effort in this behalf. This society has recently purchased a suitable and valuable lot on the northerly corner of Howard and Spear streets, at a cost of $14,300, the value of which, by the recent advance in real estate, has largely increased, and now they propose, in the further prosecution of their work, to establish, temporarily, one of those novel institutions known as a

New England Kitchen.

To this end a building about 140x30 feet in area has been erected at the corner of Eighth and Mission streets, directly opposite the Pavilion, in which, during the continuance of the coming "Mechanics' Fair," they propose to give a series of those peculiar entertainments, appropriate to such an institution, and to furnish meals to all who may see fit to favor them with their patronage, in the old fashioned New England style, the proceeds of which will go to the fund which is now being raised to erect a permanent building, suitable for a Seaman's Home, on the society's lot.

It is expected that the "New England Kitchen" will be one of the features among the amusements in this city for the coming two months. The entertainments will consist of a reproduction of the manners, customs and costumes of the last century, and to illustrate, as far as possible, the domestic life and habits of the people through whose instrumentality our country has attained its present exalted position among the nations of the world.

The object cannot but commend itself to every philanthropist, as its basis is *universal benevolence*, without reference to sect or country. Social gatherings of the olden time will form an attractive feature in the kitchen, viz: the "spinning bee," apple paring, donation party, singing school, wedding party, etc., etc. The room will be of ample size for the accomodation of a large number of guests, for whose entertainment the best of materials, cooked in the best manner, will be served during the continuance of the Fair; and, among many others, the following dishes peculiar to New England: Pumpkin, Apple and Chicken Pies, Indian Puddings, Pork and Beans, Brown Bread, Cider, Apple Sauce, Johnny Cake, Doughnuts, etc., etc. In order to give a truthful and life-like representation of the times of our ancestors, the Committee have been at great expense in fitting up the necessary arrangements, and therefore ask from their friends, donations, or loans of relics, jewelry, wearing apparel, furniture and whatever they may be able to find of ancient date. There are also needed for the table raw and cooked materials. Cash contributions, which may be enclosed to Mrs. C. E. Cogswell, Treasurer, No. 610 Front street, will be thankfully received. Friends, either in the city or country, sending contributions, will please have them plainly marked "New England Kitchen" corner of Eighth and Mission streets. Communications may be addressed to the "New England Kitchen," corner of Eighth and Mission streets, and notices of contributions so addressed will be called for.

Wells, Fargo & Co.'s Express will convey all contributions from the country free of charge.

A COMPANY is preparing to commence the manufacture of glass on Bear creek, Placer county, not far from Wheatland. That creek supplies inexhaustible quantities of pure, white sand, well adapted to the purpose.

THE locomotive for the South Bay railroad has arrived at Eureka, Humboldt county. It is of sixty horse-power, cost $7,000, and is capable of hauling 150,000 feet of logs per day.

THE tunnel and trestle-work of the Lake Tahoe narrow gauge road are now completed, and before the end of the present month the cars will be running over it.

Something Reliable From the Black Hills.

There is some gold in the Black Hills after all, for as we write a small parcel of yellow dust from that locality lies on the desk beside us. It is a modest looking package, containing twenty or thirty pretty coarse pieces of gold, very similar to that found in our old placer mines. It was sent to us by a reliable gentleman, who is now in the Black Hills, and who is a relative of one of the proprietors of this journal. The information he sends, though not intended for publication, will be of interest to those who have thought about the Black Hills, as it comes from a disinterested party and is the result of personal observation. The letter accompanying the gold is dated July 18th.

He says he got into the Black Hills June 3d, and established camp on Beaver creek, west side of the Black Hills, in latitude 43° 49′ 40″, longitude 104° 19′ 30″. He gives the details of the command with which he is connected, and states that Professor Jenney has charge of the mineralogists, geologists, miners, topographers, "hug hunters," and quite a number of old California '49 miners, the latter of whom expected to pick up gold as they did in California in the days of '49. Thus far they have been disappointed.

On June 9th, a part of the command marched for French creek, near Harney's peak, where the miners had established a camp last winter, but were taken out of the Hills by Capt. Mix, 2d cavalry, on order of General Sheridan. The part of the command which went, found gold and sent for the rest of the party. When they arrived they found the party, miners, officers and men, panning for gold. They realized from *twenty-five to fifty cents per day*. Our informant worked three days to get a sample to send to his friends. The small sample sent to us is the proceeds of one day's hard labor, and our friend states that he has ceased to be a miner unless something richer is struck than has been found yet. He says, however, that it is stated that Professor Jenney has struck richer diggings on Spring creek, and two companies started for there on the day the letter was written.

Our informant's description of the Black Hills country is as follows: "The Hills are a cluster of mountains situated out on the plains all by themselves, and are supposed to occupy a space of about 140 miles north and south and 85 to 90 miles east and west. The altitude of Harney's peak, (eight miles south of the camp), is said to be 9,000 feet. The lowest levels are from 4,000 to 5,000 feet elevation. The country of the Black Hills is a beautiful one. Very high mountains interspersed with valleys from a quarter of a mile to three miles and a half in width, bounded by rocky ridges with splendid pine timber along the base and hillsides, giving it an appearance as if the groves were planted to improve the landscape. There are beautiful streams of clear cold spring water running through the grass covered valleys. There are no brambles or underbrush in these valleys, which are as smooth as meadows regularly mown. This will never make a good farming country, as the summer is too short and the climate too cold. (Blankets and buffalo robes are needed to sleep comfortably at night now—July 18th.) It will make a fine stock raising country, as the grass is very nutricious and water so plenty and good. Shelter can be found in the deep canons and valleys. The larger part of the timber is pine, which grows to an immense hight.

"As for gold," says our informant, "we have given it a thorough test, and thus far it has not been found in paying quantities. Of course we have not explored all the Hills, but this vicinity was supposed to be the richest, and was accordingly thoroughly prospected."

Any of our readers who would like to examine the character of the gold from the Black Hills, can do so by calling at our editorial rooms, 414 Clay street; but we fear they will be disappointed at the small amount realized from a day's work.

In addition to what we have said above, we append an Associated Press dispatch, dated Cheyenne, August 10th, which speaks for itself as follows:

General Crook and Colonel Stanton returned here to-day from the Black Hills. Miners were preparing to leave, and were covering up the richest leads, to prevent their being jumped until such time as they can return. The country is said to be rich in gold, and the mountains are supposed to be full of quartz. It is believed that capital and skilled labor will develop mines equal to those of Colorado and Nevada. There were about 1,500 miners in the Hills, and a great deal of preliminary work had been done in the way of ditches and sluices. There were no Indians in that region, and but few had been seen; but those at the agencies are still demanding that the miners be driven out. Some gold was panned out in the presence of the party, which yielded seventy-five cents to the pan. There is an abundance of water and grass, also of timber for building. A town called Stonewall has been laid out on Custar's gulch, in the vicinity of which some rich diggings are located. The whole country is said to be well adapted to grazing and farming. Troops are now en route to establish a temporary post near Stonewall, for the purpose of keeping out miners. Professor Jenney's party were still exploring the Hills, and will probably remain until the middle of October. General Crook and party had fine hunting on Spring Rapid, Elk and Box-Elder creeks, taking a large number of red deer, elk and mountain sheep. General Crook leaves to-morrow, for Omaha."

Montana Scenery.

Although the traveling facilities for reaching the Yellowstone country in Montana are not yet such as to induce tourists to visit the National Park, the general public know pretty well what is in store for them in that wonderful region. The scenery, as described by Prof. Hayden and his assistants in the government expeditions, is magnificent. The peculiar characteristics of the region and the wonderful variety of objects will make it a source of great pleasure to those who are able to visit the country a few years hence, when transportation facilities are arranged.

To those, however, who are unable to make the trip, illustrations and descriptions of striking objects and scenery are acceptable, and we propose giving, from time to time, engravings from the government reports, which will give a good idea of the country. We give in this number a view of the volcanic breccia at the head of Canon and Rock creeks. (Breccia is a geological term, applied to a natural conglomerate consisting of angular fragments of stone united together by some cement, or by infiltrated iron or carbonate of lime.) The divide

Volcanic Breccia at the head of Canon and Rock creeks, Upper Yellowstone, M. T.

between the Yellowstone and the Gallatin is quite sharp and narrow, the numerous little streams cutting deep channels down from the crest to the river. The divide itself is formed entirely of the volcanic conglomerate, weathered into the most singular architectural forms. West of the canon, at the head of Canon and Rock creeks, this conglomerate is at least 1,000 feet thick, horizontally stratified, and worn into hundreds of pinnacles or Gothic columns. Silicified wood is found in these conglomerates in vast quantities, and sometimes huge logs and stumps are exposed in a vertical position in the walls. Dr. Hayden saw, at the head of Canon creek, the stump of a tree which must have been at least fourteen feet in diameter originally. It was firmly enclosed in breccia.

These conglomerates are found sometimes 4,000 or 5,000 feet thick, and some of the highest mountains in the Northwest are capped with these volcanic breccia, arranged in horizontal strata, showing clearly that the agent which formed them was water. Dr. Hayden concludes that at a comparatively modern date the waters so covered the mountain ranges of the Northwest that not even the summits of the loftiest peaks were above the surface. We may suppose that the materials were supplied from the numberless volcanic fissures in unlimited quantities in a comparatively brief space of time; but the period which would be required for the waters to arrange this matter in the remarkably uniform and compact series of strata which is found at the present time, must have been great. The results have been carried on in such a stupendous scale that the mind finds with difficulty the courage to grapple with them or attempt to explain them. And then, subsequent to the deposition of these enormous beds of conglomerates, has been the wearing out of canons and valleys 2,000 to 4,000 feet in depth, the sculpturing of some of the most marvelously grand and unique scenery on the continent. In passing up the valley of the Upper Yellowstone, which is about three miles wide and has been carved out of this hard breccia, one would easily imagine himself in some enchanted land, where, on every side, were castles and palaces without number.

Invention and Progress.

[From Advance Sheet of the Mechanics' Fair Daily.]

It will be a matter of interest to many who have attended former exhibitions of the Institute to examine carefully and in detail improvement, made in any special class of exhibits this year and note the progress made within the past few years. One can, by this means, more fully realize the results of the patient, untiring industry of the inventor, than by reading pages of descriptions of the progress of any special branch of art.

We take these things so much as a matter of course now-a-days, that few people have any idea of the multiplicity of labor-saving improvements which have been invented within the past fifteen or twenty years. Though hundreds of such things are patented which never are put to practical use, a large proportion are of real benefit to the world at large. Even those inventions which are a partial or total failure, are in some degree productive of good, since they keep other inventors from making similar mistakes, and incite them to renewed exertions.

People generally fail to appreciate what a load of labor is taken from their shoulders by the exertions of the inventor. The tools, machinery and appliances of modern days are accepted as matters of course, without much thought as to the ingenuity they present. We wander through a place like the Mechanics' Fair, for instance, and see thousands of things on exhibition, each one of which may have taken years of labor of several men; not for its construction, but for its conception in all its details. We look more at its finish and beauty of construction generally, than at the ingenuity called forth in planning such a thing as a locomotive or steam engine. We must remember, however, that there is a large field still open for the inventor, and that many of our most elaborate and cunning devices will probably be old-fashioned and useless in another century; notwithstanding, our present appliances appear wonderful as compared with those of a few generations past. Invention and progress go hand in hand; as one increases, the other advances. If one is encouraged, the other is sure to follow. This should be remembered by all public-spirited citizens; and instead of snubbing inventors of new things, they should be judiciously encouraged and assisted.

The old Californian has commenced making prophecies in regard to rain the coming winter. He says he has always noticed that when there were floods in the East, and much of rains elsewhere, it was always followed by heavy rains here in winter.

A large amount of stone of superior quality is now being quarried at the Contra Costa quarries.

Service pipes are being laid in San Luis Obispo and the streets will be soon lighted with gas.

Mining Decisions and Patents.

The Commissioner of the General Land Office has made the following decisions on public lands containing valuable deposits:

Kaoline may be patented under the mining acts of Congress.

In the case of the Daney gold and silver mining company vs. the Sapphire silver mining company, it is decided that an application for a patent under a mining act is such an appropriation of the premises therein as takes them out of the operation of local laws, until such application is set aside.

Upon a failure to comply with the requirements of the General Land Office in the completion of title, it cannot be considered waived or forfeited.

In the case of the Crisman vs. the Union Pacific railroad company, it is decided, where parties were in the actual possession and working a coal mine on a railroad section prior to a definite location of such land, it does not pass to the railroad under the grant.

Rights acquired in coal under the Act of March 3d, 1865, are assignable.

The following patents for mining ground have recently been issued:

California—Amador county: J. F. Bradshaw and J. T. Wheeler, Grove Flat, placer. El Dorado county: Richard Doncaster, Jr., Canon creek, placer, and Red Hill quartz mine; Ernest Weber, placer; Charles Caquard *et al.*, Lone Star tunnel, placer; E. L. Parker, Parker hydraulic, placer; J. C. Berry and Joseph Brannan, Manhattan, Empire, Happy Flat and Johnstown creek, placer; Heley gold and silver mining company, Kelsey mine; Peter Watt *et al.*, Woodford & Company's, placer. Inyo county: Bonshey silver mining company, Bonshey silver quartz mine; Wyoming Wonder silver mining company, Wyoming mine; Stewart's Wonder silver mining company, Stewart's Wonder mine. San Bernardino county: Wm. P. Morrison *et al.*, Morrison mine; J. W. Searles *et al.*, Mohawk mine; Ohio and Soledad horse claims. Nevada county: Osborn Hill mining company, Osborn Hill, quartz mine. Placer county: Tabb Mitchell *et al.*, Conrad quartz mine; Wm. Winne Crossens, quartz mine. Calaveras county: Charles W. Smith and N. Palsma, quartz mine. Sierra county: Ludgo Leviche *et al.*, Independent quartz mine.

Colorado—Park county: David A. Moffat, Jr., minerals, lode. Gilpin county: Starr Cooper lode, Rookdale gold mining company; Harsh & Calhoun, lodes; William Richardson, William Richardson lode. Clear Creek county: William Helmer, Dora lode; Charles L. Hoker, Potosi lode; Silver mining, commercial and manufacturing company of Colorado, Jenks lode; J. B. Chaffee, mill site; Wm. P. Liel, Contra lode; S. Wann and G. S. Bowdern, placer; J. D. Ford *et al.*, Seaton lode; George R. Morehouse, Sterling lode; Trenton gold and silver mining company, lode. Park county: Frederick C. Morse, Claner lode. Boulder county: T. J. Graham and Keystone silver mining company.

Nevada—White Pine county: George Thomas, Grant and Colfax lode. Storey county: Ward gold and silver mining company, Ward lode. Lyon county: C. E. DeLong *et al.*, Columbia lode; Lonis Goldstone *et al.*, Grant lode; Sapphire mining company, Dois Senor or Manlet lode. Eureka county: S. Wenhan, St. Louis, Idaho, Garrison and Arctic lodes.

Utah—Salt Lake county: J. N. Whitney *et al.*, Aladdin lode; Isidor Morris, Ashland, No. 2. Iron county, S. M. Blair *et al.*, Iron May claim. Tooele county: Mount Gibson and Noyes mines.

Progress in the Sutro Tunnel.

The following is the report of progress in the Sutro tunnel, for week ending August 8, 1875:

Number of feet in tunnel, August 1	10,296
Number of feet driven during week	117
Distance in, August 8	10,413

Details of work performed are as follows, heading being 8x10 feet:

Holes drilled	364
Holes blasted	370
Aggregate depth	2,548 feet
Average depth	7 feet
Powder consumed	1,071 lbs
Exploders consumed	370
Rock extracted	1,488 tons

Rock — Conglomerate of porphyry; good drilling and blasting.

Water—Thirty-one miner's inches flowing.

Remarks—Average progress per day, 16.7 feet, the best week's progress ever made. Total delays laying track, etc., twelve hours.

[Signed] A. Sutro, Gen. Supt.

An explosion occurred in the laboratory of the U. S. arsenal at Bridersburg, P., last Saturday, resulting in the death of two persons and the wounding of about thirty others.

A special freight train loaded with tea started overland from this city on Friday of last week. It will go through to New York in 12 days.

A fast mail train from New York to Chicago is soon to be started, which will make the distance in 24 instead of 36 hours as at present.

Col. McAllister's yacht, the *Admiral*, was launched at the Mare Island navy yard last week.

Cars are running regularly on the street railroad in Santa Cruz.

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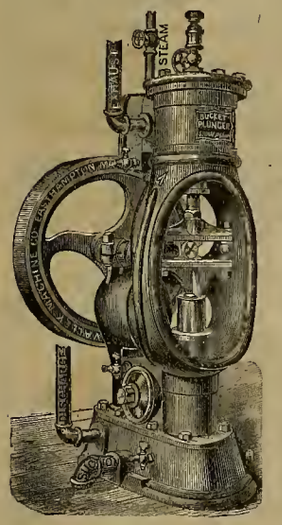

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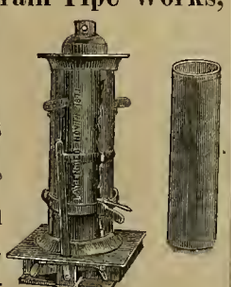

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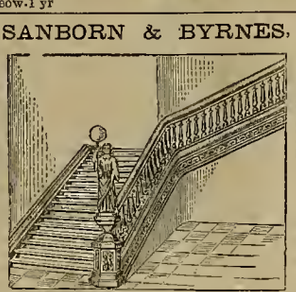

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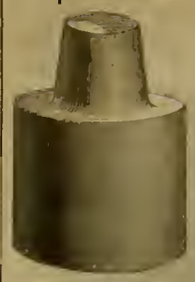

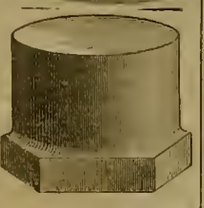

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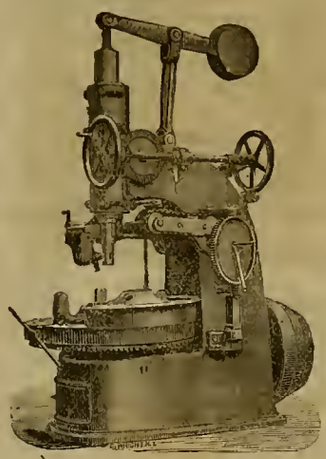
SAN FRANCISCO, November 10th, 1874.

To Supts. of Quartz Mills and Mining Men generally:

We take pleasure in stating that owing to the rapid increase in our orders, our Pittsburg Manufacturers have been compelled to add largely to their works—a new gas furnace and heavier trip hammer—and are thus enabled to reduce the cost of steel and at the same time produce SHOES AND DIES superior to any yet manufactured. We have consequently reduced the price to 16 cents per pound and solicit a trial order, guaranteeing that you will find them at least 10 per cent. cheaper than the best iron. There are no STEEL SHOES AND DIES made excepting under our patent and sold at this office, or by our authorized agents, though certain Eastern manufacturers advertise STEEL SHOES AND DIES which are only cast iron hardened by the addition of a composition. They will not out-wear two sets of common iron, though called steel. They are very brittle and are not capable of being tempered, flying from under the hammer like cast iron. Our STEEL SHOES AND DIES are in use in many of the largest mills on the Pacific Coast, and all who have tried them pronounce them cheaper and far superior to iron in every respect, even at the old price of 20 cents per pound. The advantages over iron are cheapness on first cost, increased crushing capacity, time saved in changing and in setting tappets, increased value of amalgam by absence of iron dust and chippings, and a saving of 75 per cent. in freight. It takes 50 days to fill orders from the manufactory East. Price 16 cents per pound shipped at San Francisco. Terms liberal.

Address all orders, with dimensions, to

1v29-3m CAST STEEL SHOE & DIE CO., Room 1, Academy Building, S. F



No. 4 Car Wheel Borer.

NEW-YORK STEAM ENGINE CO.
MANUFACTURERS OF
MACHINISTS' TOOLS
OF ALL DESCRIPTIONS
CHAS. A. CHEEVER, TREAS. No. 98 CHAMBERS ST.
GEO. Q. DOW, SEC'Y. NEW-YORK

We have the best and most complete assortment of

Machinists' Tools

In the Country,

Comprising all those used in

MACHINE, LOCOMOTIVE,

AND

R. R. REPAIR SHOPS.

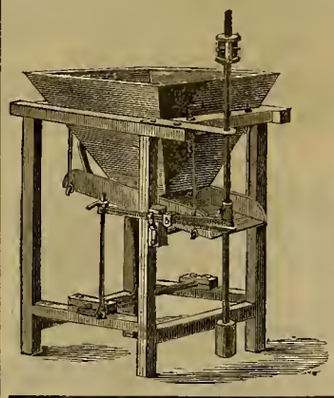
N. Y. STEAM ENGINE CO.
We make Without Charge For Patterns,
GEAR WHEELS,
with our Patent Moulding Machine.
98 CHAMBERS ST. N.Y.

For Photographs, Prices and Description, etc., address

NEW YORK STEAM ENGINE CO.,
98 Chambers Street, New York.

15v28-eow-1y

Tulloch's Automatic Ore Feeders.



Will Feed Wet or Dry Ore Equally Well.

Will Increase the Quantity from One to Two Tons Per Day.

Are Durable, Compact and Cheap.

For Full Description, Send for Circulars.

F. OGDEN,

310 California Street, SAN FRANCISCO.

The Simplest, Cheapest, Most Effective and Durable Power Drill is the New

"CALIFORNIA" ROCK DRILL,

MANUFACTURED BY

HAWKINS & CANTRELL, San Francisco, Cal.,

AND SPECIALLY DESIGNED TO MEET THE REQUIREMENTS OF MINERS ON THE PACIFIC COAST

—ALSO—

AIR COMPRESSORS,

And Complete Mining Outfits for Power Drills.

Address, L. W. COE,

Cor. Sansome and Sacramento Sts., San Francisco.

LANE & BODLEY,
John and Water Sts., Cincinnati.
Manufacturers of
PORTABLE & STATIONARY STEAM
ENGINES,
From two to two hundred Horse Power. Send for illustrated catalogue.

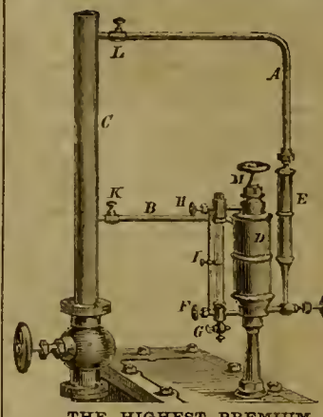
MACHINERY.

Iron and Wood-working Machinery, Wood Planers, Lathes, Mitre and Cutting-off Saws, Iron Turning and Screw Cutting Lathes, Planers, Shapers and Drilling Machines, Screw and Scroll Chucks, from the best makers, always on hand and for sale cheap by

NEYLAN & YOUNG,

mar27eow 18 & 20 Spear Street, S. F.

N. Seibert's Eureka Lubricators.



THE HIGHEST PREMIUM

Awarded by the Mechanics' Institute Fair, San Francisco, and State Fair, Sacramento, 1871.

These Lubricators are acknowledged by all engineers to be superior to any they have ever used; feed constantly by pressure of condensed water supplied by pipe A, regulated under the oil by valve J, and forced out through check valve and pipe B into the steam pipe C; it then becomes greasy steam, passes to all the valves and cylinder at every stroke of the engine; glass tube I indicates amount used per hour. Packing on rods and stems lasts longer, and the rings on the piston will not corrode. One pint of oil will last from three to six days, according to speed and size of engine; I, sliding gauge; K, valve to shut off when engine stopps; H, F, valves to shut off in case of frost; steam does not enter the cup; it is always cool; warranted to give satisfaction. Patented February 14, 1871. Manufactured by California Brass Works, 125 First street, S. F. 24v23

ROOT'S BLOWER.

JOHN CAINE, General Agent and Manufacturer of Root's Patent Force Blast Blowers and Portable Forges for the Pacific States and Territories.

Steam Engines, Steamboat, Mining and Agricultural Machinery built to order. Job work of all kinds.

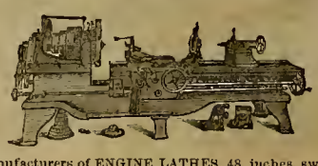
GLOBE IRON WORKS, Stockton, Cal.

"THE DANBURY"
DRILL CHUCK.
The Favorite Everywhere.
Send stamp for circular.
The Hull & Belden Company, Danbury, Ct.

P. S.—These Chucks are now on hand and for sale at manufacturer's prices by

H. P. GREGORY, Agent,
Nos. 14 & 16 First Street, S. F.

EDWIN HARRINGTON & SON,



Manufacturers of ENGINE LATHES, 48 inches swing and smaller; VERTICAL BORING MACHINES, suitable for jobbing and boring Car Wheels; UPRIGHT DRILLS, 36 inches and smaller, and other Machinists' Tools.

COR. NORTH FIFTEENTH ST.
AND PENNSYLVANIA AVENUE,
Philadelphia, Pennsylvania.

IRON AND STEEL
DROP FORGING.
Of Every Description, at Reasonable Prices.
The Hull & Belden Company, Danbury, Ct.

F. MANSELL & CO.,
SIGN PAINTERS,

423 PINE STREET,

(Between Montgomery and Kearny.)

Persons engaged in the following business can have their Signs Painted at contract prices, for goods or articles in which they trade, viz:

Merchant Tailors,	Gents' Furnish'g G'ds,
Bootmakers,	Furniture Dealers,
Hatters,	Jewelers,
Hotels,	Piano Fortes,

Wine Merchants, Etc., Etc.

Calculating the Speed of Railway Travel.

Travelers on railways are often desirous of knowing the speed at which they are moving, and, as a general thing, are not aware that with the aid of a watch they may readily do so, even when mile posts are not placed along the track. This may he done hy simply counting the nnmber of rails which are pessed over in any given minute. On the best laid roads the hammering sound made hy the wheels in passing from one rail to another is qnite endihle, and may he easily noted on which ever side of the car the observer may he sitting. All rails are either twenty-four or thirty feet in length; the length of the rail on which you are traveling may he ascertained hy pacing, or hy measuring with e pocket rule at any station where the train stops. Then by counting the nnmher of rails passed in thirty or sixty seconds, and consulting the subjoined table, yon can readily calculate the speed at which yon are traveling. When a train moves 14.67 feet in a second, it is traveling at the rete of 10 miles an hour, or a mile in 6 minntes. The following table gives data for different rates of movement, and will he readily understood. The first column indicates the nnmher of miles per hour, the second the corresponding nnmber of feet per second, and the third the time occupied at that rate in running one mile:

Miles per hour.	Feet per second.	Minntes per mile.
10	14.67	6.00
12	17 60	5.00
15	22.00	4.00
18	26.40	3.20
20	29.33	3.00
25	36.67	2.29
30	44.40	2.00
32	46.93	1.55
34	49.87	1.46
36	52.80	1.40
38	55.73	1.35
40	58.67	1.30
42	61.60	1.26
44	64.53	1.22
46	67.47	1.13
48	70.40	1.75
50	73.33	1.12
52	76.27	1.09
54	79.20	1.07
56	$2.13	1.04
58	$5.07	1.02
60	$8.00	1.00

General News Items.

A FRIGHTFUL accident occurred at Woodward's Gardens on Snnday last. A tier of seats erected near the bear pit gave wey and the occupants together with the debris of timber fell npon a crowd of people nnderneath, who were looking et the hears. One man was mortally wonnded, two women had legs hroken, and a nnmber of persons were injured more or less.

IT is the general helief that ex-Senator Finney was murdered, as the presumption is strongly against suicide, and he is known to have been threatened by a party of desperadoes whom he had prosecuted.

THE jury in the case of John D. Lee have disagreed. Eight Mormons and one Gentile for acquittal, three Gentiles for conviction.

JOSEPH A., eldest son of Brigham Young, is dead. He leaves four wives and a proportionate nnmber of children.

CHARLES KUCHEL, the defaulting stock hroker, has heen held to hail in $40,000, to await the action of the grand jury.

Two yonng ladies, while hathing in front of Cave of the Winds, et Niagara Falls, last Tuesday, were swept into the rapids and drowned.

THE number of through passengers over the Central Pacific in the month of July was: East, 2,842; West, 5,709. Total, 8,552.

A RIVALRY betweeu competing lines has reduced the rate of fare between Kansas City and New York to $20.

THE committee of J. B. Ford & Co.'s creditors recommend a compromise at 35 cents on the dollar.

SEVERAL riots occurred in London and Dnhlin during the celehration of the O'Connell centennial last week.

JACK COTTON has been incarcerated in the State prison for life, for the murder of Mr. Norton.

THE American rifle team will meet with a grand reception on their return to New York.

CARDINAL McCLOSKY has gone to Rome.

MR. WM. H. MARTIN, of the Union Emigrant company, has left San Francisco for Philadelphie, where he will spend ten days in making the necessary preliminary arrangements for the erection of a building at Fairmount Park, on the grounds which have been allotted, separate from the general Exposition buildings, to that company, for the exhihition of the natural and artificial products of California at the Centennial. He will afterwards visit Paterson, New Jersey, and other points where colonies are organizing to emigrate to California nnder this company's anspices.

A NEW ENTERPRISE.—We are pleased to learn hy the San Jose *Mercury* that articles of incorporation of the Angora Rohe and Glove company have been filed in the office of the Secretary of State. Capital stock $50,000, in shares of $100. Directors. J. W. Hinds, Jackson Lewis, Lewis & McCracken, H. T. Welch, G. T. Brown and Return Roherte.

PATENTS & INVENTIONS.

A Weekly List of U. S. Patents Issued to Pacific Coast Inventors.

FROM OFFICIAL REPORTS FOR THE MINING AND SCIENTIFIC PRESS, DEWEY & CO., PUBLISHERS AND U. S. AND FOREIGN PATENT AGENTS.]

By Special Dispatch, Dated Washington D. C., August 10th, 1875.

FOR WEEK ENDING JULY 27TH, 1875.*

ADJUSTABLE SACK HOLDER.—Henry W. Clark Red Bluff, Cal.

APPARATUS FOR SEPARATING GOLD FROM SAND. Thomas W. Irvine, Enreka, Cal.

PORTABLE FRUIT DRYER.—James W. Aubnrn, Aubnrn, Cal.

CURTAIN-CORD FASTENER. — Lewis Knudson, Sau Joee, Cal.

MARKING WHEEL. — Francis M. Truworthy, Sau Jose, Cal.

*—The patents are not ready for delivery hy the Patent Office until some 14 days after the date of issue.

NOTE.—Copies of U. S. and Foreign Patents furnished by DEWEY & Co., in the shortest time possible (by telegrapb or otberwise) at the lowest rates. All patent business for Pacific coast inventors transacted with perfect security and in the shortest nossible time.

New Incorporations.

The following companies bave filed certificates of incorporation in the County Clerk's Office at San Francisco:

EDINBURGH G. & S. M. Co.—August 6. Location: Nevada. Directors, S. J. Corbett, Vernon Seaman, L. J. Lewis, J. J. Owens and J. H. Adams. Capital stock, $6,000,000.

CALIFORNIA TRANSPORTATION Co.—August 6. Location: San Francisco. Directors, Andrew Nelson, Nels. Anderson, Solomon Runyon, Dwight Hollister and Renben Kercheval. Capital stock, $500,000.

MENDOCINO R. R. & LUMBER Co.—August 6. Location: California. Directors, A. W. Hall, West Evans, James McKinney, Charles G. Atherton, F. H. Clark. Capital stock, $15,000,000.

MENDOCINO MILL & FLUME Co.—August 6. Location: California. Directors, John Gillam, West Evans, Jas. McKinley, George Griggs, Wm. M. Bider. Capital stock, $20,000,000.

SARATOGA AND PESCADERA TURNPIKE AND WAGON ROAD Co.—August 6. Organized under an Act of the Legislature of California, entitled, "An Act to authorize the formation of a corporation for the construction of plank or turnpike roads."

THE NORTH OPHIR M. Co.—August 7. Location: Nevada. Directors, Robert M. Graves, C. W. Kellogg, John Landers, Daniel Cook and Bobert Barton. Capital stock, $10,000,000.

SAN FERNANDO M. Co.—August 7. Location: Lyon county, Nevada. Directors, Henry S. Fitch, Thaddens S. Fitch, Silas Selleck, William C. Guirey and Henry F. Morris. Capital stock. $10,000,000.

THE POWELSON FUEL SAVING Co.—August 7. Location: San Francisco. Directors. Nathan B. Hail, A. D. Allen, William Holmes, Obsdiah Dickenson Jr., and Bobert S. Knight. Capital stock, $500,000.

MADOCK CON. M. Co.—August 7. Location: Nevada. Directors, George Hearst, George W. Kidd, Bobert Sherwood, J. D. Fry and James Clark. Capital stock, $10,000,000.

PEASE G. & S. M. Co.—August 7. Location: Nevada. Directors, S. S. Tilton, C. C. Brookings, J. D. Swift and T. L. Bihhins, W. B. Lake. Capital stock, $6,000,000.

PACIFIC SLATE & MARBLE Co.—August 9. Location: San Francisco. Trustees, Emil Hendech, Wm. H. Martin, Wm. H. Hart, J. P. Jackson, E. K. Wood, D. M. Kent and Felix J. Hoin. Capital stock, $5,000,000.

SHAMO M. Co.—August 9. Location: Nevada. Trustees—C. W. Kellogg, R. C. Bogers, H. P. Wakelee, R. N. Graves and J. P. Garvey. Capital stock, $10,000,000.

ATLANTIC CON. M. Co.—August 10. Location: Nevada. Trustees, Charles H. Aitken, E. M. Hall, Charles Jones, J. A. Crossman and Philip Stoner. Capital stock, $10,000,000.

SANTA CRUZ WATER Co.—August 10. Location: Santa Cruz, Cal. Trustees, Henry Cowell. Isaac Davis, Watson A. Bray, Henry C. George and Charles A. Parsons. Capital stock, $300,000.

MINERTTA M. Co.—August 11. Location: Nevada. Directors, Geo. W. Kidd, Wm. M. Lent, John F. Boyd, Wm. Behler and David Fay. Capital stock, $10,000,000.

STILLWAGON M. & M. Co.—August 11. Location: El Dorado county, Cal. Capital, $1,000,000, in shares of $100 each. Directors, James Spiers, John P. Gilman, Andrew Kohler, John Tregloan and John R. Tregloan.

SACRAMENTO G. M. Co.—August 11. Location: Sierra county. Capital, $5,000,000, in shares of $100 each. Directors, Charles McCreary, James A. Duffy, John Black, James G. Chesley and M. Cronan.

NO USE of any longer taking the large, repulsive, griping, drastic and nauseous pills, composed of crude and hnlky ingredients, and pnt up in cheap wood or pasteboard boxes, when we can, by a careful application of chemical science, extract all the cathartic and other medicinal properties from the most valuable roots and herhs, and concentrate them into a minnte Granule, scarcely larger than a mnstard seed, that can be readily swallowed hy those of the most sensitive stomachs and fastidions tastes. Each of Dr. Pierce's Pleasant Purgative Pellets represents, in a most concentrated form, as mnch cathartic power as is embodied in any of the large pills found for sale in the drug stores. From their wonderful cathartic power, in proportion to their size, people who have not tried them are apt to suppose that they are harsh or drastic in effect, hnt such is not at all the case, the different active medicinal principles of which they are composed being so harmonized, one hy the others, as to produce a most searching and thorongh, yet gently and kindly operating cathartic. The Pellets are sold hy dealers in medicines.—*Com.*

THE SCIENTIFIC PRESS.—This valnable journal entered npon the seventeenth year of its pnblication on the 4th of July. The steady advance in character, that every reader has noticed in the paper, renders it unnecessary to make any splurge of improvement, and the publishers simply content themselves with the announcement that they will continne to make their paper as interesting as possihle. That it is interesting to a large class of readers, the wide circulation and extensive infinence of the PRESS, is sufficient evidence.—*Placer Argus.*

THE
MECHANICS' FAIR DAILY

—OF THE—

TENTH INDUSTRIAL EXHIBITION

[Circulation Free]

Will be a superior pnblication, and contain all

Official Information

During the Exhibition, commencing Ang. 17th, 1875,

Its Illustrations

Will furnish accnrate views of

New Inventions and Machinery.

The volnme will give a substantial and readable

Record of the Fair,

Qnite valuable for reference and preservation, in addition to a goodly variety of other reading matter, daily, embracing

Graphic Paragraphs and Humorous Incidents,

Making altogether a paper eagerly songht for (both in and ont of the Pavilion) hy nearly a

Quarter of a Million of Readers!

During the term of the Exhibition—a circnlation reaching a greater number of different individuals than that of any pnblication yet issned. We shall make a specialty of inserting

Attractive Advertisements,

Representing the leading firms in nearly

Every Branch of Trade and Industry

On this coast, upon favorable terms, soliciting such as we believe will be most benefited hy advertising in a well condncted, enterprising and everywise meritorious journal. We issue

An Advance Edition of Ten Thousand Copies

Of the first nnmber to be circnlated gratuitonsly

All Over the Pacific Coast

In advance of the opening of the Fair, including 5,000 in San Francisco, August 16th.

This beautifully illustrated sheet, issued npon snch an occasion will receive close attention, and its contents—both reading and advertising being original—will be closely scanned throughout.

The Immense Pavilion

Has been enlarged for the coming Fair. An unnsually large amount of space for exhibits has already been engaged. Stimulated hy the list of preminms offered this year the exhibition will donbtless be a

Grand Success.

Orders for advertising, sent in early, will receive careful attention.

The undersigned pnblishers of the MINING AND SCIENTIFIC PRESS have successfully issued a popular daily in the Mechanics' Fair during six Indnstrial Exhibitions since 1864, and we are now confident of making the coming volume surpass all its predecessors in its standard of valne as a reading journal of art and information and a medium of first-class business announcements.

We have been awarded hy the managers of the Exhibition, the

Exclusive Publishing and Advertising Privileges

Of the Tenth Indnstrial Exhibition, and are determined to accomplish a work creditible to the MECHANICS' INSTITUTE, TO OUR PATRONS, AND TO OURSELVES.

DEWEY & CO.,

Pnblishers and Patent Agents, No. 224 Sansome Street,

S. E. Cor. of California, S. F.

Our Agents.

OUR FRIENDS can do mnch in aid of our paper and the cause of practical knowledge and science, by assisting Agents in their labors of canvassing, by lending their influence and encouraging favors. We intend to send none hnt worthy men.

J. L. THARP—San Francisco.
B. W. CROWELL—California.
A. C. CHAMPION—Tulare, Fresno and Inyo Counties.
JOHN ROSTRON—California.
A. C. KNOX, California.
G. W. MCGREW—Santa Clara county.
CHAS. T. BELL—California, Oregon and W. T.
D. J. JAMES—Australian Colonies.
JAMES KEARNY—California.
WILSON SPENCER—California.
CHAS. T. BELL—Montana, Utah, Idaho and Nevada.

Thanks for Prompt Attention.

STOCKTON, June 26, 1875.

Messrs. Dewey & Co., S. F.—

I have received the patent for my invention in wagon brakes, which yon prosecnted for me; patented May 11, 1875—No. 163,046. Thanks to yon for your prompt attention to the case; yon will hereafter be my attorneys in such cases. I recommend all inventors on the Pacific coast to give yon a call, which I think they will never have any cause to regret. Very truly yours,

GEO. G. BUCKLAND,
Stockton, Cal.

THOUGHTLESSNESS.—Persons sometimes return their paper, marked "stop this paper." Their name being pasted on the sheet they think that is all we need to be able to cross their names off. Now that is thoughtlessness. Your P. O. address is needed as mnch as your name. We have thonsands of names arranged only according to locality. Our mailing clerk does not know where everybody lives.

DEWEY & CO.,

American and Foreign

Patent Agents

No. 224 Sansome St.

SAN FRANCISCO.

Patente Ohtained Promptly.
Caveats Filed Expeditiously.
Patent Reissues Taken Out.
Patents Secured in Foreign Lands.
Assignments Made and Recorded in Legal Form
Copiee of Patents and Assignments Procured.
Examinations of Patents made here and Washington.
Examinations made of Assignmente Record in Washington.
Examinations Ordered and Reported hy TELEGRAPH.
Interferencee Prosecnted.
Opinions Rendered regarding the Validity Patents and Assignments.
Rejected Cases taken np and Patents Ohtained.
Every Legitimate Branch of Patent Agenoy Business promptly and thoroughly condncted.
SEND FOR CIRCULAR.

UNITED STATES

Mineral Land Laws, Revised Statutes,

And Instrnctions and Forms Under the Same.

We bave just issned a pamphlet containing the general mineral land laws of the United States, with instructions of the Commissioner of the Land Office. The contents of this pamphlet comprise all of the Government laws with relation to mineral lands of interest to the mining community, as follows: Mining Statnte of May 10th, 1872, with Instructions by the Commissioner of the Land Office; Mining Statute of July 26th, 1866; Mining Statnte of July 9th, 1870. Forms required under Mining Act of May 10th, 1872, as follows: Notice of Location; Request for Survey; Application for Patent; Proof of Posting Notice and Diagram of the Claim; Proof that Plat and Notice remained Posted on Claim during Time of Publication; Register's Certificate of Posting Notice for Sixty Days; Agreement of Publisher; Proof of Publication; Affidavit of $500 Improvements; Statement and Charge of Fees; Proof of Ownership and Possession in Case of Loss or absence of Mining Records; Affidavit of Citizenship; Certificate that no Snit is Pending; Power of Attorney; Protest and Adverse Claim; Non-Mineral Affidavit; Proof that no Known Veins Exist in a Placer Claim, etc. There is also given the U. S. Coal Land Law and Regulations thereunder. The work comprises thirty pages, and will be sold. post-free, for 50 cents. It should be in the hands of every one having any mining interests. DEWEY & CO.,
Publishers of MINING AND SCIENTIFIC PRESS, S. F.

N. B.—We have also added to the above pnblication the REVISED STATUTES OF THE UNITED STATES, so far as relates to Mining Laws.

PACIFIC RURAL PRESS:

A first-class 16-page Agricultural Home Journal, filled with fresh, valuable and interesting reading. Every farmer and ruralist should take it. It is immensely popular. Subscription, $4 a year.

DEWEY & CO., Publishers,

No. 224 Sansome street, SAN FRANCISCO

SACRAMENTO, May 29th, 1875.

MESSRS. DEWEY & CO.—*Gentlemen:*

Yours of the 27th inst. is received. The patent came duly to hand yesterday, by express. Please accept thanks for your promptness in obtaining the same.

Very respectfully, DUNCAN BEAUMONT.

STEAM ENGINES AND BOILERS.

From 3 to 75-horse power. Shafting, Pulleys, Hoist Gear, Quartz Mills, Water Tanks, Spanish Arastras, Pumps and Pipes, Hephorn and Belden Pans, and all kinds of Machinery for sale at lowest prices by

THOS. P. H. WHITELAW,
266 Brannan stre et, S. F.

Highest cash prices paid for all kinds of Machinery.

San Francisco Cordage Company.

Established 1856.

We have just added a large amount of new machinery of the latest and most improved kind, and are again prepared to fill orders for Rope of any special lengths and sizes. Constantly on hand a large stock of Manila Rope, all sizes Tarred Manila Rope; Hay Rope; Whale Line, etc., etc.

TUBBS & CO.,

e20 611 and 613 Front street, San Francisco

Bronze Turkeys

Gobblers, 30 to 40 pounds. Hens 15 to 20 pounds.

Emden Geese

40 to 50 pound per pair at maturity.

LEGHORNS, BANTAMS

BRAHMAS, GAMES BLACK HOUDANS. CAYUGA DUCKS

EGGS, fresh, pure, packed so as to hatch after arrival of any part of the Coast. For Illustrated Circular and Price List, address

M. EYRE, Napa, Cal.

[Please state where you saw this advertisment.]

A STURTEVANT BLOWER

For Sale Cheap.

No. 2—In good order, with or without belting, shaft, pulleys and galvanized air pipe. Enquire at the BREWERY, corners of Fourteenth and Folsom streets, San Francisco.

Tenth Industrial Exhibition of the Mechanics' Institute, S. F., 1875.

PRELIMINARY ANNOUNCEMENT.

The Board of Managers of the Tenth Industrial Exhibition have the pleasure of announcing that an Industrial Exhibition will be held, under the auspices of the Mechanics' Institute, in the city of San Francisco, to be opened on Tuesday, the 17th of August, 1875, at 11 A. M., and to continue open at least one month thereafter.

In making this public announcement, the Managers desire that those who intend to exhibit should send in their applications for space as early as possible, so as to avoid the necessity of excluding, as has been the case heretofore, the many desirable exhibitors who are unusually tardy in making applications.

The forthcoming Industrial Exhibition will be the tenth held under the auspices of the Mechanics' Institute, and the Managers are justified in saying that it will undoubtedly surpass in completeness of detail and general arrangement any heretofore held.

The last Exhibition was attended by 700,000 visitors, attracted hither by the fame of these Industrial Fairs, and for the purpose of investigation, business and pleasure.

All the available exhibiting space was applied for several weeks before the day of opening, and the Managers were compelled to deny admission to many desirable exhibits.

The Board of Managers desire particularly that the arts, the industries and natural products of the country should be well represented at the forthcoming exhibition, and no pains will be spared to make these classes of exhibits a special feature there.

The Exhibition will be held in the building constructed for that purpose in 1874, but it will be materially enlarged and improved in many details for the Exhibition of 1875.

The space under roof will exceed 180,000 square feet, or about four and a half acres, exclusive of the Horticultural Garden, which will occupy 24,500 square feet additional.

The location of the Exhibition Building, on Eighth street, between Market and Mission streets, cannot be surpassed for convenience and accessibility, and can be approached from every part of the city by means of the various lines of street railroads, any of which bring visitors within two blocks of the entrance gate.

The utmost care has been exercised in providing for ample ventilation and light, and during the evening the building is brilliantly illuminated by over 5,000 gas lights.

The promenade avenues are broad, and 3,000 seats are provided for the comfort of visitors, for whose convenience there is also an excellent restaurant, under the management of a first-class restaurateur.

Every afternoon and evening the best orchestra the city can supply will discourse excellent music under the direction of an accomplished leader.

The building is always well attended by visitors, and during the last Exhibition over 29,000 were daily admitted for a number of days, and under no similar circumstances can the manufacturer, the mechanic, the inventor, producer or business man so advantageously place himself before the people of the Pacific Coast.

Persons desiring to obtain information, or to make application for space, should address "Managers of Tenth Industrial Exhibition, San Francisco, California," or make personal application as below.

It is expected that the various transportation companies will convey goods intended in good faith for exhibition, at half the usual rates.

Exhibitors from abroad, if they have no agent or consignee in San Francisco, can consign goods and mark the same to the "Manager of the Tenth Industrial Exhibition, 17 Post street, San Francisco," and they will be stored, if they arrive before the day of opening, free of expense; but no charges or expenses for or freight or forwarding, etc., will be paid by the Managers.

In order to secure space, application should be made on or before

Blanks will be furnished on application.

Premiums will be awarded as follows, viz: 16 gold medals, 50 silver medals, Society Diplomas, Certificates of Merit and Special Premiums, as the Board may determine.

Blanks for space can be obtained at the Mechanics' Institute on application by letter or otherwise; and any information will be given, by applying to any member of the Board of Managers, as below:

A. S. HALLIDIE	113 Pine street.
JAMES C. PATRICK	122 Battery street.
HENRY L. DAVIS	421 California street.
D. E. HAYES	213 Fremont street.
ASA R. WELLS	Mechanics' Mill.
P. B. CORNWALL	Cor. Spear & Harrison streets.
CHAS. ELLIOT	516 California street.
GEORGE SPAULDING	414 Clay street
W. P. STOUT	604 Merchant street.
J. H. STOPPENBOROUGH	111 California street.
R. B. WOODWARD	Woodward's Gardens.
JAMES SPIERS	311 Howard street.
H. S. SMITH	Ætna Iron Works,
JEREMIAH BROWNING	110 Pine street.

To the Librarian of the Mechanics' Institute, or to J. H. CULVER, Secretary, 27 Post street, S. F.

Rules and Regulations of the Tenth Industrial Exhibition, Mechanics' Institute, S. F., 1875.

1. The Pavilion will be open for the reception of goods on Monday, August 2d. The exhibition will be open to the public on Tuesday, August 17th, at 11 o'clock A. M.

2. Applications for space must be made on or before stating character of exhibit, amount and kind of space required—wall, table or floor. And, if cases, state length, width and hight of case. Blanks will be furnished for this purpose, and a clerk will be in attendance at the Library of the Mechanics' Institute, every day from 12 to 1, and 7 to 10 P. M.

3. All persons presenting articles for exhibition must have them registered by the Receiving Clerk, who will give a receipt for the same, which receipt must be presented when the articles are withdrawn, at the close of the Exhibition.

4. Judges will be appointed by the Board of Managers, immediately upon the opening of the Exhibition, to examine all articles presented, in accordance with Article III, and the Managers will award premiums on such articles as the judges shall declare are worthy, which will be delivered as soon as they can be prepared. Due notice will be given of the announcement of premiums.

5. The mornings of each day, until 10 o'clock, will be appropriated to the Judges, and no visitors will be admitted during the time thus appropriated, except at the special request of the Judges, or by permission of the Managers.

6. Articles intended for sale may be labeled accordingly, but cannot be removed until the close of the Exhibition, except by written permission of the Managers.

7. Steam power will be provided, so that machinery of all kinds may be seen in actual operation, and every facility possible will be given to exhibit working machinery to the best advantage.

8. The name of every article must be attached by the exhibitor to it.

9. Articles intended for exhibition must be entered and placed on exhibition on or before Saturday, August 21st.

10. Perishable articles will be received, or may be removed at any time during the exhibition, with the consent of the Managers.

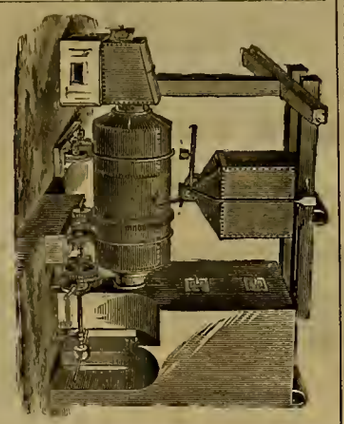
11. The most effectual means will be taken, through the agency of the Police and otherwise, to guard and protect the property on exhibition; and it will be the purpose of the managers that all articles shall be returned to the owners without loss or injury. Still, all articles deposited will be at the RISK OF THE OWNERS.

12. In case of any misunderstanding, application may be made to the Managers, who will at all times be in attendance.

13. The Managers are desirous that articles should be presented early. Those from abroad, intended for exhibition, should be properly packed, and if not consigned to exhibitor's agent, must be marked, "MANAGERS OF TENTH INDUSTRIAL EXHIBITION, SAN FRANCISCO, CAL." All articles thus received, arriving too early, will be stored free of cost to the exhibitor, and the Managers will have them duly placed in proper position for exhibition. No freight charges will be paid by the Managers; but exhibitors are notified that arrangements are being made with various transportation companies to repay freight charges on evidence of goods exhibited.

Information will be furnished by addressing MANAGERS OF TENTH INDUSTRIAL EXHIBITION, SAN FRANCISCO, CAL.

TEATS' PATENT FURNACE.



TEATS' PATENT FURNACE

For Roasting, Desulphurizing, Chloridizing and Oxidizing Ores, etc. For the reduction of Gold, Silver, Lead and other ores, saving a larger percentage, at less cost, than any other invention now in use. Chloridizing Silver ore more thoroughly, in less time, with less fuel, salt and labor; also roasting Lead ore preparatory to smelting, better and cheaper than any other invention. The Furnace is so constructed that one man, of ordinary ability, tends five or more furnaces; controls them with ease; adding heat or air; stopping or starting at will; charging and discharging with ease. Also, Patent "Conveying Coolor," for conveying and cooling roasted ores, heating the water for amalgamation and the boilers at the same time. Saving the large space in mill (covered with brick or iron), and the labor of two men per day, exposed to the poisonous chlorine gases. Also, Patent Air Blast "Dry Kiln," for drying ores direct from the mine or breaker, saving fuel and labor heretofore necessary in drying ores for dry pulverizing. For description refer to MINING AND SCIENTIFIC PRESS, No. 18, October 31, 1874. For particulars address

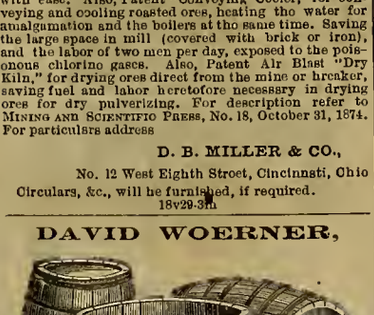
D. B. MILLER & CO.,

No. 12 West Eighth Street, Cincinnati, Ohio

Circulars, &c., will be furnished, if required.

18v29-3m

DAVID WOERNER,



COOPER,

No. 104 and 112 Spear St., San Francisco.

Wine Casks, Tanks, Tube, Pipes, Beer Barrels, etc., Manufactured at Short Notice and LOW RATES.

LUMBER for CASKS, etc., TANKS, etc. Steamed and Dried if required.

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RICHARD C. HANSCOM & CO.

BLOCK & PUMP MAKERS,

IMPORTERS OF ALL KINDS OF

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STEEL FRICTION ROLLERS,

MINING BLOCKS OF ALL DESCRIPTIONS,

PRESSED LEATHER FOR PUMPS,

Lignum Vitæ for Mill Purposes.

NO. 9 SPEAR STREET,

Near Market, - - - - SAN FRANCISCO.

jn5-2am

A COMPLIMENT.—It is proper to say that the MINING AND SCIENTIFIC PRESS is the best publication of its class on the Continent, and we are glad to know that it is appreciated and liberally patronized by those in whose interests it is published.—*Placer Argus.*

IMPORTANT SALE.

The following properties, situated at

SPANISH BAR,

Clear Creek Co., Col. Territory,

And now owned by the

United States General Smelting and Mining Company,

(Limited,)

—WILL BE OFFERED—

For Sale at Public Auction

On the 28th day of August next, unless previously disposed of by private contract:

BRICK BUILT MILL,

Main building 110x80, two wings, each 76x50, containing Reverberatory Furnace (capacity 10 to 12 tons per diem) and double hearthed Calciner, two Dodge Crushers, Ball Pulverizer, Sample Grinding Machine, two Force Pumps, Circular Saw, and all other necessary implements for smelting. Laboratory and assay tools, house and office furniture. Machinery run by water power. Large, well built

BOARDING HOUSE,

(Furnished,) and two small detached dwelling houses

Extensive Water-Power Flumes, Etc.

Mill Site, Containing about 10 Acres.

Valuable Pyrites Mine,

Adjoining mill property, claim owned to the extent of 1,900 feet. Ore, copper and iron pyrites carrying gold and silver, a most valuable flux in smelting.

Situation of property on main road, midway between the silver ore district of Georgetown and present terminus of the Colorado Central Railroad, at Floyd Hill. Several gold and silver mines in the immediate vicinity. Supply of water unlimited. Good wood in abundance within three miles. Works most conveniently situated in every respect. Further particulars to be had by application to

HENRY WILLIAMS, Manager,

Spanish Bar, Colorado Territory.

IRON AND STEEL.

VAN WINKLE & DAVENPORT,

Importers and Dealers in Iron and Steel, Norway and Siligo Iron, Heavy Hardware and Boiler Plate, Axles, Springs, Blacksmith's Tools, etc. Agents for Perkins' Horseshoe and Globe Horse Nails, Sheet-iron, Rivets and Cumberland Coal. All sold at the lowest rates Nos. 413 and 415 Market street, San Francisco, Cal.

Mining and Other Companies.

Eagle Mine and Mill Company—Location of works, Lander county, State of Nevada. Location of principal place of business, San Francisco, California.

Notice is hereby given, that at a meeting of the Directors, held on the tenth (10th) day of July, 1875, an assessment, No. 1, of fifty (50) cents per share was levied upon the capital stock of the corporation, payable immediately, in United States gold coin, to the Secretary, at the office of the company, room 8, No. 533 Kearny street, San Francisco, California.

Any stock upon which this assessment shall remain unpaid on Monday, the sixteenth day of August, 1875, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on the 8th day of September, 1875, to pay this delinquent assessment, together with costs of advertising and expenses of sale.

H. L. BYRNE, Secretary.

Office—Room No. 8, 533 Kearny street, San Francisco, California.

Electric Mining Company—Location of principal place of business, San Francisco, State of California.

NOTICE.—There are delinquent upon the following described stock, on account of assessment levied on the 22d day of June, 1875, the several amounts set opposite the names of the respective shareholders, as follows:

Names.	No. Certificate.	No. Shares.	Amount.
J Mullen	362	425	$21 25
G W Haskell	375	50	2 50
G W Terrell	51	500	25 00
A Briggs	66	1334	66 70
A Briggs	220	200	10 00
T B Wingard, Trustee	357	100	5 00
A H Putnam	351	78	3 90
E Walleb	433	730	36 50
E Walleb	363	638	31 90
F W Leslor	377	200	10 00
F G Northam	427	2775	138 75
R Smith	420	1000	50 00
W M Kerr	428	202	10 10

And in accordance with law, and an order of the Board of Directors, made on the 22d day of June, 1875, so many shares of each parcel of said stock as may be necessary, will be sold at public auction at the salesroom of Maurice Dore & Co., No. 326 Pine street, San Francisco, on the 16th day of August, 1875, at the hour of 12 o'clock M. of said day, to pay said delinquent assessment thereon, together with costs of advertising and expenses of sale. A. B PAUL, Secretary.

Office—No. 318 California street, San Francisco. Room No. 13.

Gover Mining and Milling Company— Principal place of business, San Francisco, Cal. Location of works, Drytown, Amador county, Cal.

Notice is hereby given, that at a meeting of the Board of Directors, held on the 4th day of August, 1875, an assessment of 20 cents per share was levied upon the capital stock of the corporation, payable immediately, in United States gold and silver coin, to the Secretary, at the office of the company, No. 402 Front street, room 8, San Francisco, Cal.

Any stock upon which this assessment shall remain unpaid on the 10th day of September, 1875, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Thursday, the 30th day of September, 1875, to pay the delinquent assessment, together with costs of advertising and expenses of sale.

W. O. WILSON, Secretary.

Office, No. 402 Front street, room 8, San Francisco, Cal.

Hope Quicksilver Mining Company—Location of principal place of business, San Francisco, California. Location of works, Cinnabar Mining District, Sonoma County, State of California.

Notice is hereby given, that at a regular meeting of the Board of Directors, held on the 2d day of August, 1875, an assessment (No. 2) of Five cents per share was levied upon the capital stock of the corporation, payable immediately, in United States gold coin, to the Secretary, at the office of the company, Room 2, No. 408 California street, San Francisco, Cal.

Any stock upon which this assessment shall remain unpaid on the 9th day of September, 1875, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Thursday, the 30th day of September, 1875, to pay the delinquent assessment, together with costs of advertising and expenses of sale.

JACOB HARDY, Secretary.

Office, Room 2, No. 408 California street, San Francisco, California.

Manhattan Marble Company of California. Location of principal place of business, San Francisco, California. Location of works, Oakland, Alameda county, State of California.

Notice is hereby given, that at a meeting of the Directors, held on the 6th day of August, 1875, an assessment (No. 8) of five dollars per share was levied upon the capital stock of the corporation, payable immediately, in United States gold coin, to the Secretary of the company, at his office, Nos. 13 and 15 Fremont street, San Francisco, California.

Any stock upon which this assessment shall remain unpaid on the 15th day of September, 1875, shall be deemed delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Monday, the 4th day of October, 1875, at 12 o'clock M., to pay the delinquent assessment, together with costs of advertising and expenses of sale.

L. L. ALEXANDER, Secretary.

Office, Nos. 13 and 15 Fremont street, San Francisco, California.

Morning Star Gold and Silver Mining Company. Location of principal place of business, San Francisco, California. Location of works, Great Mogul District, Alpine County, California.

NOTICE.—There are delinquent upon the following described stock, on account of assessment, No. 25, levied on the 21st day of June, 1875, the several amounts set opposite the names of the respective shareholders, as follows:

Names.	No. Certificate.	No. Shares.	Amount.
W F Bowen	144	10	$10 00
Mary E Culver, balance, Cert. No. 621, 40 shares sold, for assessment No. 24	988	1	100
S S Dunmire	908	3½	3 50
C R Fossen	399	5	5 00
Alameda Harvey, balance, Cert. No. 939, 20 shares sold, for assessment No. 24	990	1	1 00
William Kelly, balance, Cert. 657, 16 shares sold, for assessment No. 24	992	1	1 00
Wm Hyndmann	505	20	20 00
Phillip Meagher	277	10	10 00
Phillip Meagher	393	7	7 00
Phillip Meagher	702	20	20 00
Phillip Meagher	703	13	13 00
Phillip Meagher	705	10	10 00
Fred'k Mansell	766	10	10 00
H A Mayhew	224	10	10 00
H A Mayhew	225	10	10 00
H A Msyhew	226	5	5 00
J Penniman	146	5	5 00
J Penniman	912	2	2 00
J Penniman	948	4	4 00
A H Post	846	10	10 00
Margaret Palmer	728	15	15 00
Wm Robinson, Jr	884	11	11 00
H M Shute	985	115	115 00
Joseph Soper	907	20	20 00
Mrs. A Swaftz, balance, Cert. 151, 10 shares sold, for assessment No. 24	994	1	1 00
Louis Vesaria	942	30	30 00
Louis Vosaria	958	23	23 00
David Wally	986	38	38 00
Georgo Wegstern, balance, Cert. 749, 10 shares sold, for assessment No. 24	996	1	1 00
Herman Wanken	647	5	5 00
Herman Wankon	691	5	5 00
Herman Wanken	718	1	1 00
Herman Wankon	748	5	5 00

And in accordance with law, and an order of the Board of Directors, made on the 21st day of June, 1875, so many shares of each parcel of such stock as may be necessary will be sold at public auction, at the office of the company, room 1, No. 402 Montgomery street, San Francisco, on Saturday, the 14th day of August, 1875, at the hour of 1 o'clock P. M., of such day, to pay delinquent assessments thereon, together with costs of advertising and expenses of the sale.

C. H. BOGART, Secretary.

Office, Room 1, No. 402 Montgomery street, San Francisco, California.

Silver Wave Mining Company—Location of principal place of business, San Francisco, California. Location of works, White Pine Mining District, Nevada.

Notice is hereby given, that at a meeting of the Board of Directors, held on the 31st day of July, A. D., 1875, an assessment, No. 12, of twenty-five cents (25 cts) per share was levied upon the capital stock of the corporation, payable immediately, in United States gold coin, to the Secretary, at the office of the company, No. 418 California street, San Francisco, California.

Any stock upon which this assessment shall remain unpaid on the 10th day of September, 1875, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Friday, the 8th day of October, 1875, to pay the delinquent assessment, together with costs of advertising and expenses of sale. By order of the Board of Directors.

J. W. CLARK Secretary.

Office, room 2, No. 418 California street, San Francisco, California.

Orleans Mining Company—Location of principal place of business, San Francisco, Cal. Location of works, Grass Valley Mining District, Grass Valley, Nevada County, Cal.

Notice is hereby given, that at a meeting of the Board of Trustees of said company, held on the 23d day of July, 1875, an assessment, No. 6, of one dollar per share was levied upon the capital stock of said company, payable on the 23d day of July, 1875, in gold coin of the United States of America, to the Secretary, at the office of the company, room 8, No. 315 California street, in the city of San Francisco.

Any stock upon which said assessment shall remain unpaid on the 28th day of August, 1875, will be advertised on that day as delinquent, and unless payment shall be made before, will be sold on the 13th day of September, 1875, to pay the delinquent assessment, together with costs of advertising and expenses of sale.

GEO. P. THURSTON, Secretary.

Office, room 8, No. 315 California street, San Francisco, Cal.

Tolman and Miller Mill and Mining Company. Location of principal place of business, San Francisco, California. Location of works, West Point, Calaveras County, California.

Notice is hereby given, that at a meeting of the Board of Directors, held on the 14th day of July, 1875, an assessment, No. 2, of thirty (30) cents per share was levied upon the capital stock of the corporation, payable immediately, in United States gold coin, to the Secretary, at the office of the company, room 1, No. 402 Montgomery street, San Francisco, California.

Any stock upon which this assessment shall remain unpaid on the 16th day of August, 1875, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Monday, the 6th day of September, 1875, to pay the delinquent assessment, together with costs of advertising and expenses of sale. By order of the Board of Directors.

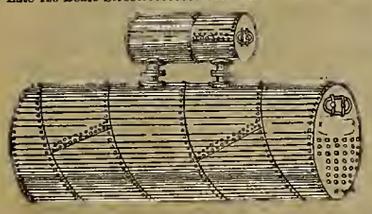
C. H. BOGART, Secretary.

Office, room 1, No. 402 Montgomery street, San Francisco, California.

Iron and Machine Works.

San Francisco Boiler Works,

N. W. Cor. Harrison and Main.
Late 125 Beale Street.....SAN FRANCISCO.



F. I. CURRY.
Late Foreman of the Vulcan Iron Works,) Proprietor

High and Low Pressure Boilers of all Descriptions.

SOLE MANUFACTURERS OF THE CELEBRATED
SPIRAL BOILER.

SHEET IRON WORK of every description done at the Shortest Notice.
All kinds of JOBBING and REPAIRING promptly attended to. 17v25-3m

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Iron and Locomotive Works,

INCORPORATED.....APRIL 30, 1868.
CAPITAL.....$1,000,000.

LOCATION OF WORKS:

Corner of Beale and Howard Streets,
SAN FRANCISCO.

Manufacturers of Steam Engines, Quartz and Flour Mill Machinery, Steam Boilers (Marine, Locomotive and Stationary), Marine Engines (High and Low Pressure). All kinds of light and heavy Castings at lowest prices. Cams and Tappets, with chilled faces, guaranteed 40 per cent. more durable than ordinary iron.

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James D. Walker.

WM. H. TAYLOR.....President
JOSEPH MOORE...Vice-President and Superintendent
LEWIS R. MEAD.....Secretary
24v11-qy

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HINCKLEY & CO.,
MANUFACTURERS OF
STEAM ENGINES,

Quartz, Flour and Saw Mills,
Hayes' Improved Steam Pump, Brodie's Improved Crusher, Mining Pumps, Amalgamators, and all kinds of Machinery.

N. E. corner of Tehama and Fremont streets, above Howard street, San Francisco. 3-qy

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MANUFACTURERS OF
STEAM ENGINES, BOILERS,
CROSS' PATENT BOILER FEEDER AND SEDIMENT COLLECTOR
Dunbar's Patent Self-Adjueting Steam Pieton PACKING, for new and old Cylinders.
And all kinds of Mining Machinery.
Front Street, between N and O streets,
SACRAMENTO CITY.

SHEET IRON PIPE.

THE
Risdon Iron and Locomotive Works

Corner Howard and Beale Streets,

Are prepared to make SHEET IRON AND ASPHALTUM PIPE, of any size and for any pressure, and contract to lay the same where wanted, guaranteeing a perfect working pipe with the least amount of material.
Standard sizes of railroad Car Wheels, with special patterns for Mining Cars. These small wheels are made of the best Car Wheel Iron, properly chilled, and can be fitted up with the improved axle and box—introduced by this company, and guaranteed to outlast any other wheels made in this State.
☞ All kinds of Machinery made and repaired.
24v22-3m JOSEPH MOORE, Superintendent.

G. W. PRESCOTT. | W. R. ECKART.

Marysville Foundry,

MARYSVILLE, - - - - - - - - - - - - CAL.
PRESCOTT & ECKART,
Manufacturers of Quartz and Amalgamating Machinery. Hoisting Machinery, Saw and Grist Mill Irons, Horse Fronts Car Wheels, and Castings of every description made to order.
Steam Engines constantly on hand for sale. 9v28-1y

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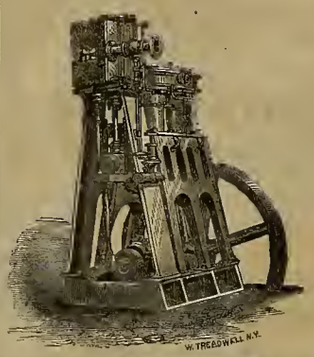
EUREKA FOUNDRY,

129 and 131 Beale street, between Mission and Howard, San Francisco.
LIGHT AND HEAVY CASTINGS,
of every description, manufactured. 2av16or



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SOLE AGENTS FOR THE

Burleigh Rock Drill Company.

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PNEUMATIC DRILLING MACHINES,

AIR COMPRESSORS AND OTHER MACHINERY.

Aleo, Farmers' Dynamic Electric Machine and Hill's Explodere for Blasting, Putnam Machine Company's Tools, Wright'e Steam Pumps and Haekin's Engines.

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UNION IRON WORKS,

Founded, - - - - - - - - - - - - - - - - - - 1849.

All kinds of Castings of Iron and Brass,

COMPOUND ENGINES,
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Steam Engines and Boilers constantly on hand and for sale. Marine, Locomotive and Stationary Engines, Quartz Crushing and Amalgamating Machinery, Cornish Pumps, Mill Irons, and Castings of every description, made to order.

PRESCOTT, SCOTT & CO.,
Successors to H. J. Booth & Co., San Francisco, Cal.

IRA P. RANKIN. Established 1850. A. P. BRAYTON

Pacific Iron Works,

FIRST STREET, - - - SAN FRANCISCO.
Geo. W. Fogg, Supt.

MACHINERY AND CASTINGS
OF EVERY DESCRIPTION.

Heavy Forging Boilers, Stationary and Marine.

JOBBING AND REPAIRING WORK OF EVERY KIND. SPECIAL ATTENTION GIVEN TO MINING AND HOISTING MACHINERY.

Sole Manufacturers and Agents of
PRALL'S PATENT STEAM PUMP.
GODDARD & CO., Props.

WM. HAWKINS. T. G. CANTRELL

HAWKINS & CANTRELL,
MACHINE WORKS,

210 & 212 Beale St.,
Near Howard, - - - SAN FRANCISCO.

MANUFACTURERS OF

Steam Engines and all kinds of Mill and Mining Machinery.

Also manufacture and keep constantly on hand a supply of our

Improved Portable Hoisting Engines,

From Ten (10) to Forty (40) Horse Power.
N. B.—Jobbing and Repairing done with Dispatch.

PACIFIC
Rolling Mill Company,

SAN FRANCISCO, CAL.

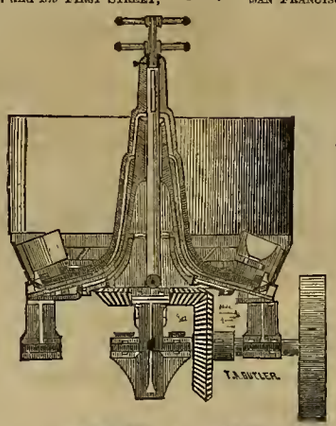
Established for the Manufacture of
RAILROAD AND OTHER IRON
—AND—
Every Variety of Shafting,
Embracing ALL SIZES of
Steamboat Shafts, Cranks, Piston and Connecting Rods, Car and Locomotive Axles and Frames
—ALSO—
HAMMERED IRON
Of every description and size.
☞ Orders addressed to PACIFIC ROLLING MILL COMPANY, P. O. box 2032, San Francisco, Cal., will receive prompt attention
☞ The highest price paid for Scrap Iron.

The Phelps' Manufacturing Co.,

(Late S. F. Screw Bolt Worke.
MANUFACTURERS OF ALL KINDS OF
Machine Bolts, Bridge Bolts and Ship or Band Bolts.
13, 15 and 17 Drumm Street, San Francisco. 4v24ly

Occidental Foundry,

137 and 139 FIRST STREET, - - SAN FRANCISCO



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IRON FOUNDERS.

IRON CASTINGS of all descriptions at short notice. Sole manufacturers of the Hepburn Roller Pan and Callahan Grate Bars, suitable for Burning Screenings.
NOTICE.—Particular attention paid to making Superior Shoes and Dies. 20v26.3m

THOS. PENDERGAST. HENRY S. SMITH.

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MANUFACTURERS OF
IRON CASTINGS
and MACHINERY,
OF ALL KINDS.

Fremont Street, bet. Howard and Folsom,
SAN FRANCISCO.

Empire Foundry,

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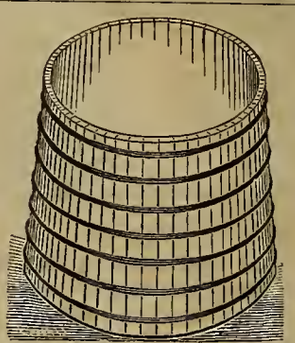

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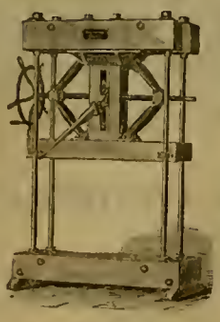

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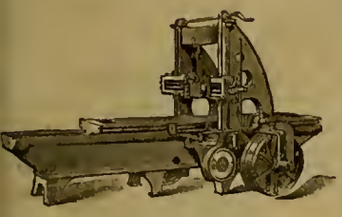

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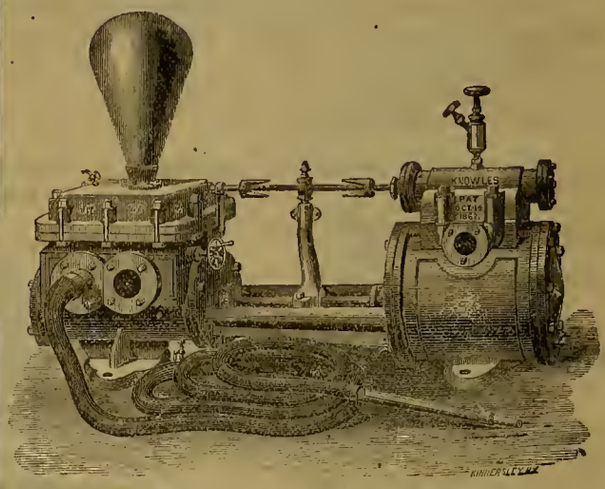

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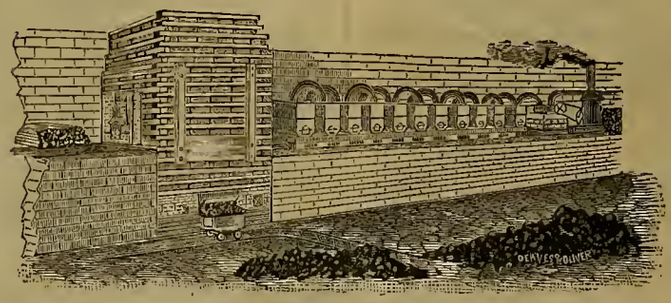

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At eleven A. M., with the usual ceremonies.

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There is no charge for exhibitors' room, and steam power is furnished free.

J. H. GILMORE, Superintendent, or J. H. CULVER, Secretary, at Mechanics' Institute, 27 Post Street, will promptly answer all inquiries, personally or by letter.

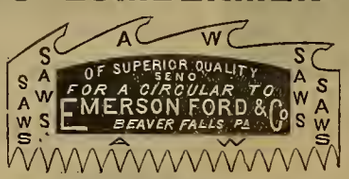
Double Season Tickets, (Gent. and Lady)	**$5**	**Children's Season Tickets, - -**	**$1.50**
Single Season Tickets, - - - -	**3**	**Single Admission, - - -**	**50 cts.**

Fair open from 10 A. M. to 5 P. M., and from 7 to 10 P. M., each day, except Sundays.

By order Board of Managers,

A. S. HALLIDIE, PRESIDENT.

TO LUMBERMEN OF THE PACIFIC.



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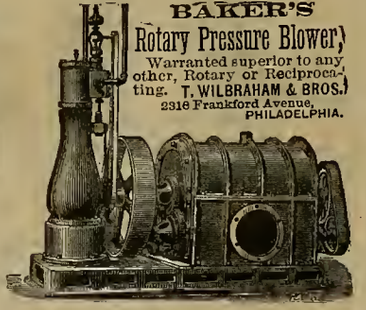

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MINING AND SCIENTIFIC PRESS.

An Illustrated Journal of Mining, Popular Science and General News.

BY DEWEY & CO., Patent Solicitors.

SAN FRANCISCO, SATURDAY, AUGUST 21, 1875.

VOLUME XXX. Number 8.

Co-Operative Mining.

When one travels through the mining conn-es of California, and sees the large number of ines that would be remunerative to labor and apital, and then again, the large number of ble-bodied idle men, we wonder why is that some system is not brought ont, that will give activity to the any dormant localities, and make rosperous the communities, while so nch riches ars within their reach. What country on earth spreads rth such a field for the industrious an as California? Her soil not nly can supply the necesseries of e, but untold gold and silver is ithin the reach of the industrious. nt, some say, we have not the capi-l. There are two equals of capital, z.: brains to contrive, and hands labor, and to our mind, the o latter are the main requisites to en a prosperous period in every lo-lity.

The brains we would engage, in rming organizations for co-opera-ve labor, and when that is formed, apital can be found, because labor comes the best of collateral for it. very man of means in our moun-in towns know, (if he is possessed ly of ordinary business judgment) at to aid legitimate enterprises, ie ilding up his own interest. So that oper combinations of labor is a mbination of labor and capital.

Co-operative organizations for min-g is no particular new idea, but hat we ask for, is, that it may be-me a more general one. That this ust be the course our honest, but orer miner must adopt, is quite ident, otherwise he must expect s day labor to fall to the standard—China rates—and for the reason, at the Chinaman is becoming expe-enced and will work.

We must say, that in view of the rge influx of this Asiatic labor, now ting at about 30,000 a year, that the tlook for the white laborer or iner who works for weges, is by no eans cheering. We therefore won-r why there is not more enterprise hibited in combining white labor to co-operetive organizations for ining, and we meen especially, uartz mining.

Organizations of this kind, with od executive heads, could accom-ish much for themselves and the ate, and bring the present evil of ina labor to a benefit for them-lves, while it is now especially for pital. While the idea is urged, it ay be well to suggest a simple plan. In every locality there are quartz ines which half a dozen or more n, and which, if necessary, as any more could be found to have ith in, divide this up into working terests of such an extent as to in-re complete development. This la-r being organized, then seek and ing only enough capital into the terprise to keep up the running penses, without counting labor. his accomplished, develop the prop-ty, lay upon the surface one, two or e hundred tons of ore; then your bor readily commends capital for ther mills or the mine. As things w are, the man who owns the mining prop-ty if poor, starves himself out holding on, and pital only offers a pittance for tens of thou-nds in value when developed.

Capitel thus rules, while adopting the co-op-etive plen, labor would rule and meet its llest reward. This we give as simply the out-ne of what may be worked up into a plan of -operative mining of great profit to the work-g miners of our State.

A NEW stove manufactory has been estab-shed in Santa Rosa.

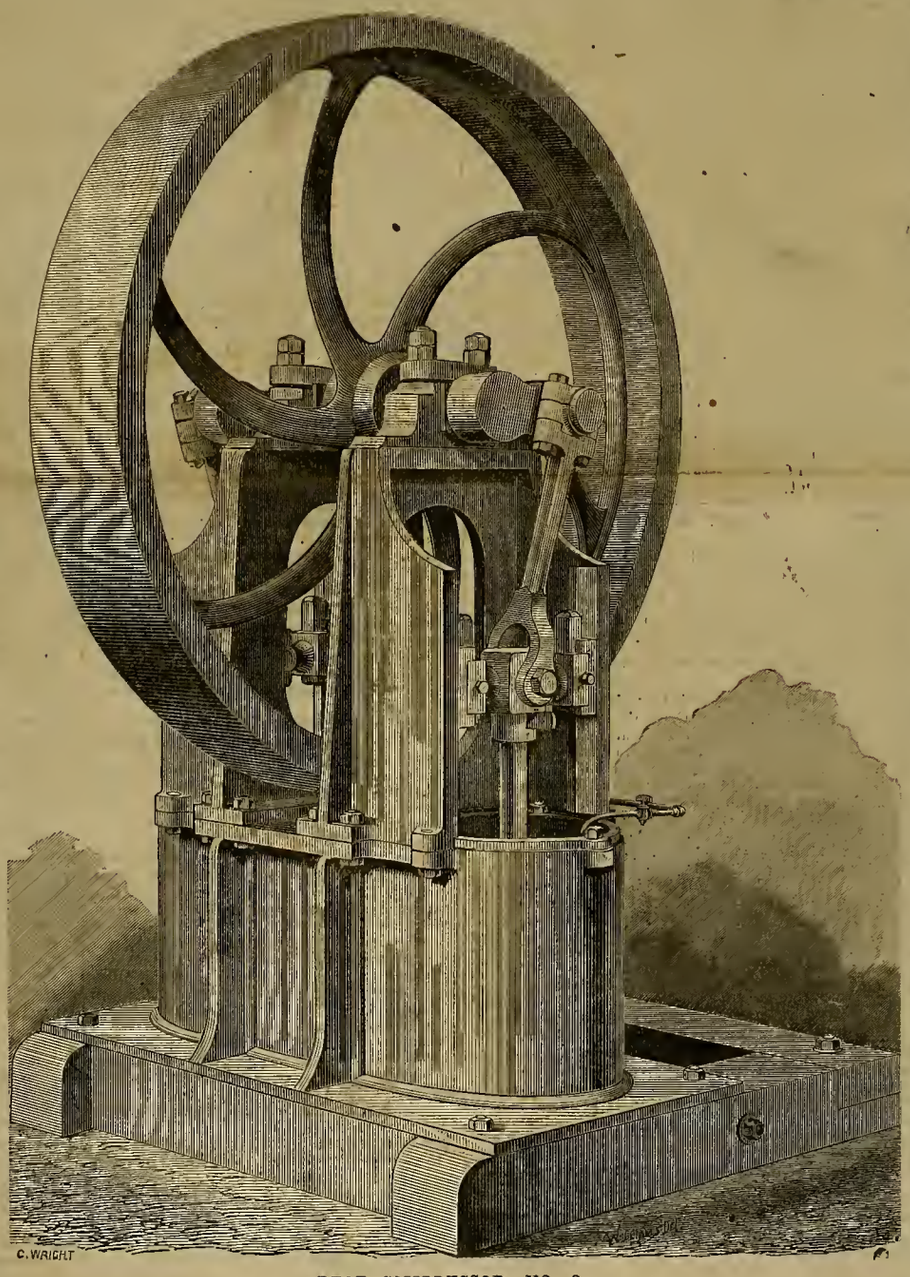
A NOVEL NEWSPAPER ENTERPRISE.—It is said that the London *Times* has in contemplation a plan for printing its sheets simultaneously in several of the great towns, in order to hold its position with its country readers, which it is fast losing by reason of the enterprise of some of the leading local interior papers. The plan proposed is an electrical type setting machine to be operated in London, but which shall set up the types in as many different localities as it shall be found desirable to do so. The *Times* is testing the practicability of the scheme, and the result is looked for with much interest.

IT is reported that work will soon be commenced on the extension of the Donahue road from Fulton to Guerneville, and also on the extension from Donahue to Swift's point, at the mouth of Petaluma creek.

CLAIM REJECTED.—A dispatch from Washington under date of August 14th, says that the Commissioner of the General Land Office has rejected the claim of the State of Nevada to the southeast quarter of section four, township nineteen north, range fifty-five west, in Eureka district; and so much of the homestead claim of Robert Meinka as conflicts with the mill site of the Nevada mill and mining company.

A WINE cellar is to be built in Sonoma county this fall, with a capacity of 200,000 gallons. The size will be 65x110 feet. It will be three stories; two stories of fifteen feet each will be cut in the sand stone ledge, and the upper story will be built of wood.

A CRACKER manufactory has been started in San Diego.



BELT COMPRESSOR, NO. 2.

Now on exhibition at the Mechanics' Institute Fair. For description see page 120.

Paul's Dry Process.

We are creditably informed that this system of working gold and silver ores, is now operating to such a degree of perfection that at an additional expense of about $1.50 per ton, over our common California wet working, that from eighty-five to ninety per cent. of all the value of the ores is very easily and practically obtained.

We would be glad to give our readers full particulars as to all the later improvements, but Mr. Paul does not seem inclined to say much about it further than that a mill of capacity to work ten tons a day is now being built for the Forbestown mining company, who expended considerable time and money in practically testing the process, and that he is willing to let this mill when completed, do the talking. Besides he says our California quartz miners are happy in their "chcap" way of working, and that it is only the few enterprising ones who want improvements, and that they will go to the mill when built, see its operations, and judge for themselves.

The tests made by the company erecting this mill were so extraordinary, and so completely confirmed Mr. Paul's representations as to what his plan of working would do, that they are sparing no amount of capital in having the most perfect mill that can be built. How soon it will be ready to run, we cannot now state, but will ascertain and advise our mining readers.

We have expressed our faith in the idea of manipulating ores dry, for obtaining a high per centage of the precious metal, and will look for the results of this operation, with more than usual interest, for the reason, that Mr. Paul declares his labor on both process and machinery is ended, and that this mill will embody the system in all its simplicity and perfection.

MINING FIRE BRIGADES.—The Gold Hill *News* suggests the expediency of organizing fire brigades attached to each mine, with the proper hydrants, hose and apperatus for extinguishing any accidental conflegration. At the Crown Point, Belcher, Yellow Jacket and others of the principal mines, such arrangements have existed for some years. For instance, in case of a fire at either of the mining works mentioned, so well organized and on the alert are the respective fire brigades, with their hose on reels at the hydrants, that within seven minutes from the time the alerm is sounded they can have half a dozen streams playing over or into any of the buildings coonected with the works. It seems almost impossible that any seriously destructive conflagration can occur in the face of such preparations and vigilance. Not only should the best and most effective apparatus be provided, but it should be kept in perfect order for immediate use, and the men should be constantly well drilled and ready for any emergency. It is a particularly well demonstrated fact that the fire extinguishing arrangements of the Imperial-Empire hoisting works saved the buildings and perhaps the shaft, from total destruction.

THE project of carrying water into Santa Monica from the Vincinte springs is being steadily pushed forward. The ditch is already dug and the contract for the pipes has been given out.

THE grading of the road from Galt to Ione valley has been completed as far as Buckeye, six miles from Ione City.

CORRESPONDENCE.

Hydraulic Gold Mining.

[No. 2.—Written by C. J. BROWN, for the PRESS.]

In article No. 1, on this subject, in the PRESS of Jnly 24th, I stated that my principal object in writing these letters was to give a statement of the progress of mining at this place and vicinity. Progress presupposes obstacles, and in order to give the readers of the PRESS a true and comprehensive idea of the progress of this kind of mining in any given locality, the obstacles with which the miner has to contend should also be discussed. The first and most noticeable obstacle is the ignorance of the miners of even the rudiments of geology, few of them being able to tell whether a given boulder is crystalline, sedimentary or igneous; or whether a certain stratum in the mines is true washed gravel or otherwise; and when informed that the waters of the South Blue flowed north, they doubt the sanity of their informant, and reply "water don't run up hill." It would be as fruitless for me to estimate the amount of money wasted in absurd and foolish mining enterprises as to estimate the value of hopes crushed, anticipations and exertions doomed, from the first, to inexorable disappointment and defeat, all owing to a deplorable lack of—what would be termed in every other business—common sense. But there are other formidable obstacles to be met and overcome, and only the intelligent and thinking, persevering miner can remove them with success. I will give an example of a failure, and the reasons for it further on.

I will confine myself, for the present, to a section of the South Blue from Indiana hill on the south to Thompson's hill on the north, and its tributary, known as the Dutch Flat channel, from the latter place eastward one mile, in all, six linear miles of these two channels of ancient rivers long since extinct. Twenty years ago they were filled and overspread with auriferous gravel to a depth of from three hundred and fifty to five hundred feet, upon which grew a forest of gigantic pines.

It will be observed that I locate this section of mining lands on the divide between the north fork of the American river and Bear river, in Placer county, and that the Central Pacific railroad crosses it between Gold Run and Dutch Flat at an altitude of three thousand four hundred and twenty feet above the sea.

As the South Blue ran its waters toward the north, Indiana hill (which is one mile southeast of Gold Run,) is located on the inlet, and Thompson's hill, (one mile west of Dutch Flat), on the outlet of its old channel across the divide. I use the words inlet and outlet, because to the south of Indiana hill, the north fork of the American river has crossed the South Blue and cut a canon to a perpendicular depth of fifteen hundred feet below the old channel, completely obliterating all evidence of its former existence between the latter place and Iowa Hill, a distance of four or five miles, and to the north of Thompson's hill, Bear river crossed it in like manner and cut a canon to a perpendicular depth of one thousand feet below its channel, destroying about two miles of it.

In my first letter I also called the attention of the reader to the fact, that at Indiana hill, the South Blue left the middle slate stratum and turned its course to the eastward on to the trap rock, over which it ran to near the town of Little York, in Nevada county.

Trap is an igneous rock, fine as iron, hard and very tough. A stream flowing across it cuts a narrow and steep canon for its channel, as witness the stupendous gorge of the north fork of the American river where it crosses this same stratum with its walls standing almost perpendicular, in bold, barren and rugged relief and picturesque grandeur, at a hight of two thousand feet above the river. So, too, the South Blue, along this stratum of rock, wore its channel deep and narrow, and the eastern wall of its canon stood high and precipitous.

During the slow upheaval of the Sierra Nevada, and after the old river channels here had filled with gravel to the hight of fifty feet or more, this wall of trap was precipitated into the ancient streams of the South Blue and the Dutch Flat. This slide was probably caused by the lateral pressure of the mountain as it arose, aided by an earthquake convulsion, as it has the appearance of being a sudden and formidable drift with a momentum which forced it far over upon the slate at Little York, and no doubt beyond, for it now shows several feet thick at the latter place; it appears in patches at Indiana hill, where the old river first entered upon the trap bed-rock, as before mentioned, and it still overlies the first, or what is called the blue gravel deposit, along nearly the whole extent of this section of hydraulic mining ground, from ten to eighty or ninety feet in depth; deepest near the western rim rock or side of the channel toward which it slid. When first deposited, it was of course, much deeper than at present, for the waters came upon and overflowed it, cutting down channels into it, and washed away the lighter surface material, leaving a non-gold-producing stratum of angular, unwater-worn gravel, which was, in time, deeply buried beneath a deposit known among miners as the red gravel banks. Of course this trap slide contains many boulders apparently water-worn, but to an observant eye it is plainly distinguished from the true gravel deposits.

This slide has been a serious obstacle to successful mining operations along this section because miners have been and are, to some extent, still ignorant of its true nature, and those, and those only, who comprehend its character and work it accordingly as they would a bank of pipe-clay or any other barren and vexatious incumbrance, to rid the claims of it to the best advantage, will ever mine this section successfully. Now for my example!

The most notable failure was that of the Dutch Flat blue gravel mining company, composed of San Francisco capitalists, which in A. D. 1871, commenced operations on a grand scale, and, under the direction of a California street mining broker as superintendent, erected the finest hydraulic works in the State, and commenced mining at two different points upon their ground located near the center of the Dutch Flat channel; bear in mind that the red gravel above the trap slide had been previously washed away by the miners, to the depth of about 200 feet, and near to this slide stratum, and a long sluice tunnel been run in the gravel near the bottom of the slide. The company commenced washing with 1,000 inches of water under a pressure of 500 feet, upon the top of this non-gold-producing trap slide, which at this point is fifty feet thick, and by dint of perseverance, an extravagant waste of labor, water and powder, and a most remarkable exhibit of ignorance, they bored a hole down through it, to the head of their tunnel, and washed a pit about 150 feet square; a cut was also opened on the southern rim of the claim on a level with the bottom of the same slide, with the expectation of large returns. The superintendent of the works was informed by your correspondent of the utter futility of his undertaking, but his scientific(?) knowledge of hydraulic mining was too profound to receive suggestions from country bumpkins who believed there was a difference between a stratum of water-worn gravel and a slide of hard earth and rock.

The enterprise was, of course, a failure, and after a useless expenditure of nearly or quite $100,000 the company struck its colors and surrendered.

I here venture the assertion that every attempt to open and work this Dutch Flat channel of mines on a higher level than the bottom of the channel will result in lose and grievous disappointment.

There are one or two companies which are now engaged in opening claims on this channel in an intelligent and sensible manner, and with fair prospects of a grand success. I will reserve them for my next.

Dutch Flat, August 6th, 1875.

South Mountain, Idaho.

EDITORS PRESS:—The S. M. C. M. Co.'s mines are looking well, yielding an abundance of ore. The deeper they are developed the more silver the ore is found to contain. The hoisting machinery of the Bay State mine is now in place and working finely, giving perfect satisfaction.

We are informed that the majority of the stock of the S. M. C. M. Co. is now under the control of Messrs. Hayward, Townsend and Minear, of San Francisco, and that hereafter the mines and furnaces will be under a new management. Hoisting works are to be erected on two or three additional mines. More extensive facilities for smelting will be provided soon, as the company have nearly 200,000 bushels of coal on hand, and are receiving an average of 3,000 bushels daily.

There are a number of good mines on this side of the company's that are well worthy of mention, among which are the Disappointment, Mono and Scandia. The former is down 90 feet, has well defined walls and a four-foot vein of rich carbonate ore, with 40 tons of good ore on the dump. The Mono and Scandia have prospect shafts down about 50 feet, with fine bodies of ore in sight, and from 15 to 25 tons of ore on the dump The above mines, and others equally as good, can be bought cheap for cash or bonded on reasonable terms. I believe those three mines would supply ore sufficient to keep a 50 ton furnace running steadily. I believe that if these mines that are undeveloped, owing to the want of capital, were under the management of a good substantial company "that meant business," they would pay dividends in a short time and prove a "bonanza" to the stockholders.

We had the pleasure last week of meeting Mr. C. T. Bell, the gentlemanly agent and correspondent of the MINING AND SCIENTIFIC PRESS, while on a brief visit to South Mountain. As his time was limited he only visited a part of the mines. We believe he left us with a favorable opinion of the future prospects of the camp. SMELTER.

South Mountain, Idaho, Aug. 5, 1875.

EXPERIMENT IN PHOSPHORESCENCE.—A writer in the *English Mechanic* says that if freshly prepared chloride of lime be thrown into a dilute acid, *in the dark*, distinct greenish-white phosphorescent fumes are seen to rise from the vessel, while the temperature of the mixture rises sensibly. The phosphorescent appearance lasts only two or three seconds. The nature of the acid does not seem to have much influence on the result.

San Francisco Manufactories.

Nothing shows the growth of a settled population more than the prosperity of its factories, machine shops, and home industries. In this city, the manufacturing and financial center of the State, factories of all kinds are continually on the increase. Scarcely a week passes in which we do not hear of the establishment of some new branch of industry, usually on a moderate scale, but destined to flourish and increase in prosperity within a few years. Our foundries and machine shops were never before in such a prosperous condition. They are overrun with orders, and are compelled to turn out articles of every conceivable class. They are, however, equal to the task. All the factories in the city are in good condition, and most of them making money. We give below a summary of statistics of factories, etc., in the city and county of San Francisco, taken from the annual report of the Assessor, dated July 29th, 1875. The summary is interesting and suggestive, showing as it does quite an extensive list for so young a city:

Amalgamating Pan Manufactory, 1.—Men employed, 12; pans made, 150; horse-power of steam engine, 6; value of manufactures, $30,000.

Artificial Stone Manufactories, 3.—Men employed, 51; value of manufactures, $137,000.

Axle-grease Manufactories, 3.—Men employed, 20; resin consumed yearly, barrels, 2,550; butter consumed yearly, pounds, 17,000; tallow consumed yearly, pounds, 10,400; aggregate value of manufactures, $91,600.

Barrel manufactories, 5.—Men employed, 215; barrels, half-barrels and kegs made annually, 247,250; horse-power of steam engines, 48; barrels made by sugar refineries, 75,000; syrup kegs made by tub and pail factories, 65,000.

Bed Spring Manufactories, 5.—Men employed, 22; copper wire used, tons, 520; aggregate value of manufactures, $141,000.

Bedstead Manufactories, 5.—Men employed, 725; lumber consumed annually, feet, 4,700,000; aggregate value of manufactures, $925,000.

Bellows Manufactories, 2.—Men employed, 11; bellows manufactured, 1,500; aggregate value of manufactures, $27,000.

Bedding Manufactories, 6.—Persons employed, 64; aggregate value of manufactures, $925,000.

Billiard Table Manufactories, 5.—Men employed, 95; billiard tables manufactured, 410; aggregate value of manufactures, $156,000.

Boot and Shoe Manufactories, 20.—Men and women employed, 2,000; aggregate value of manufactures, $2,793,000.

Borax Works, 2.—Men employed, 110; aggregate value of manufactures, $620,000.

Box Manufactories, 10.—Men employed, 372; horse-power of steam engines, 375; aggregate value of manufactures, $980,000.

Brass Foundries, 11.—Men employed, 273; aggregate value of manufactures, $1.055,000.

Breweries, 40.—Men employed, 365; beer made annually, barrels, 267,000; aggregate value of manufactures, $2,000,000.

Broom and Broom Handle Manufactories, 10.—Men employed, 174; brooms made annually, dozens, 100,000; aggregate value of manufactures, $200,000.

Brush Manufactories, 3.—Men employed, 37; aggregate value of manufactures, $50,000.

Candle Manufactories, 2.—Men employed, 110; candles manufactured, boxes, 150,000; aggregate value of manufactures, $425,000.

Clothing Manufactories, 8.—Men and women employed, 422; aggregate value of manufactures, $730,000.

Cigar Manufactories, 120.—Men employed, 4,000; cigars made annually, 95,000,000; average value of cigars per thousand, $40.

Chemical Works, 5.—Men employed, 50; nitrate of soda used, tons, 720; sulphur used, tons, 550; sulphuric and nitric acid used, tons, 900; sulphate of copper made, tons, 500; aggregate value of products, $425,000.

Carriage and Wagon Manufactories.—Men employed, 400; carriages, wagons, etc., made annually, 2,117; railroad cars made annually, 180; horse-power of steam engines, 190; aggregate value of manufactures, $837,000.

Coffee and Spice Mills, 10.—Men employed, 104; coffee ground and roasted annually, pounds, 2,930,000; chocolate made annually, pounds, 300,000; spices ground annually, pounds, 784,000; horse-power of steam engines, 70; aggregate value of manufactures, $1,102,000.

Cordage and Rope Manufactories, 3.—Men employed, 165; hemp and wire rope manufactured, tons, 5,500; horse-power of steam engines, 280; aggregate value of manufactures, $975,000.

Distilleries, 6.—Men employed, 100; proof gallons of liquor made, 1,594,962; value of manufactures, $1,647,000.

Dry Docks (Floating), 2.—Capacity of Docks, tons, 2,600; men employed, 15.

Dry Docks (Stone), 1.—Length of excavation in solid rock, feet, 450; width at top, feet, 120; depth, feet, 30; width at entrance, feet, 90; capacity of length, feet, 425; capacity in drawing, feet, 22; capacity of pumps for clearing, per hour, cubic feet, 325,368; tubular boilers of four-inch tubes, 4; dimensions of each boiler, diameter, inches, 25; length, feet, 16; fire surface of boilers, square feet, 3,800; men employed, 10; total cost of work, $675,000.

Flouring Mills, 8.—Men employed, 138; flour made annually, barrels, 446,000; hominy made annually, tons, 580; buckwheat and rye flour, tons, 685; oatmeal and groats, tons, 1,350; oatmeal and farina, tons, 2,530; feed barley, tons, 4,500; pearl barley, tons, 500; cracked wheat, tons, 200; split peas, tons, 100; run of stones, 50; horse-power of steam engines, 1,172.

Foundries and Iron Works, 16.—Men employed, 1,230; pig iron used annually, tons, 13,750; bar iron used annually, tons, 3,834; rivets used annually, tons, 94; horse-power of steam engines, 609.

Fur Manufactories, 5.—Men and women employed, 45; aggregate value of manufactures, $245,000.

Furniture Manufactories, 20.—Men employed, 507; lumber used annually, feet, 11,200,000; aggregate value of manufactures, $1,636,000.

Glass Works, 2.—Men employed, 167; furnaces, 3; pots, 12; aggregate value of manufactures, $270,000.

Glass Cutting Works, 2.—Men employed, 11; aggregate value of manufactures, $32,000.

Gas Meter Manufactories, 1.—Men employed, 4; aggregate value of manufactures, $15,000.

Glove Manufactories, 3.—Men and women employed, 100; aggregate value of manufactures, $130,000.

Glue Manufactory, 1.—Men employed 40; glue made, tons, 360; neatsfoot oil, gallons, 4,000; curled hair, pounds, 18,000; aggregate value of manufactures, $325,000.

Hat and Cap Manufactories, 15.—Men and women employed, 125; aggregate value of manufactures, 328,000.

Hose and Belting Manufactories, 3.—Men employed, 27; hose made annually, feet, 7,000; belting made annually, feet, 112,000; aggregate value of manufactures, $114,000.

Jewelry Manufactories, 30.—Men employed, 323; aggregate value of manufactures, $827,000.

Lead and Shot Works, 2.—Men employed, 90; lead made, tons, 10,000; shot made, tons, 500; aggregate value of manufactures, $1,000,000.

Last Manufactories, 2.—Men employed, 14; horse-power of steam engines, 10; lasts manufactured, 25,000; aggregate value of manufactures, $20,000.

Maccaroni and Vermicelli Manufactories, 3.—Men employed, 30; maccaroni and pastry made, boxes, 87,000; maccaroni wheat used, sacks, 9,500; horse-power of steam engines, 52; aggregate value of manufactures, $120,000.

Match Factories, 6.—Men employed, 87; matches made annually, gross, 250,000; aggregate value of manufactures, $260,000.

Malt Houses, 5.—Men employed, 35; grain malted annually, tons, $12,000; aggregate value of product, $300,000.

Oakum Manufactories, 1.—Men employed, 10; bales made annually, 5,000; aggregate value of manufactures, $25,000.

Pickle and Fruit Preserving Works, 4.—Men employed, 953; fruits and meats put up, dozens, 185,000; pickles put up, kegs, 45,000; aggregate value, $850,000.

Powder Works, 2.—Men employed, 58; horse-power of steam engines, 16; powder made annually, pounds, 980,000; aggregate value of manufactures, $568,000.

Rolling Mills, 1.—Men employed, 300; horse-power of steam engines, 400; cast iron used, tons, 1,000; scrap iron used, tons, 10,000; coal consumed, tons, 8,000; aggregate value of products, $750,000.

Saw Manufactories, 1.—Men employed, 30; horse-power of steam engine, 25; steel used annually, tons, 36; aggregate value of manufactures, $90,000.

Silk Manufactories, 2.—Men and women employed, 120; aggregate value of manufactures, $300,000.

Sash, Blind and Door Factories, 10.—Men employed, 502; horse-power of steam engines, 455; lumber consumed annually, 12,190,000 feet; aggregate value of manufactures, $2,500,000.

Silver Manufactories, 4.—Men employed, 88; aggregate value of manufactures, $252,000.

Shirt manufactories, 8.—Men and women employed, 743; aggregate value of manufactures, $798,000.

Slipper Manufactories, 18.—Men employed, 300; aggregate value of manufacturee, $200,000.

Soap Factories, 17.—Men employed, 152; soap made annually, 8,560,000 pounds; aggregate value of manufactures, $513,000.

Tanneries, 33.—Men employed, 244; horse-power of steam engines, 161; bark used annually, 7,900 cords; hides used, of all kinds, 216,000; aggregate value of manufactures, $985,000.

Telegraph Instrument Manufactories, 1.—Men employed, 40; aggregate value of manufactures, $75,000.

Tool Manufactories, 6.—Men employed, 43; aggregate value of manufactures, $210,500.

Trunk and Valise Manufactories, 6.—Men employed, 116; aggregate value of manufactures, $240,000.

Type Foundries, 2—Men and women employed, 53; aggregate value of manufactures, $55,000.

Vinegar Manufactories, 8.—Men employed, 68; vinegar made annually, 742,000 gallons; aggregate value of manufacturee, $122,000.

Windmill Manufactories, 4.—Men employed, 29; windmills made annually, 330; aggregate value of manufactures, $57,000.

Wood and Willow Ware Manufactories, 2.—Men employed, 70; horse-power of steam engine, 150; aggregate value of manufactures, $220,000.

Wood Preserving Works, 1.—Men employed, 30; horse-power of steam engine, 28; value of lumber used annually, $90,000; increase in value by preserving, $50,000.

Woolen Mills, 2.—Men and women employed, 900; number of power looms, 106; cart setts, 48; frames for knitting underwear, 20; frames for knitting hosiery, 50; spindles, 13,000; blankets made annually, pairs, 155,000; flannel drawers and underwear, dozens, 18,000; hosiery, dozens, 16,000; clothes and tweeds, yards, 850,000; flannel made, yards, 900,000; wool used, pounds, 3,150,000; aggregate value of manufactures, $2,200,000.

Watch Manufactories, 1.—Men employed, 140; number of watches made annually, 15,000; value of watches made, $14@$150.

Yeast Powder Works, 3.—Men employed, 16; yeast powders made, gross, 4,000; cream of tarta made, pounds, 140,000: soda made, pounds, 410,000; aggregate value of manufactures, $110,00

MECHANICAL PROGRESS.

High and Low Pressure Steam Engines.

It is a common but erroneous impression that by doubling or trebling the steam pressure by increased heat, we double, or treble, also, the power obtained. This, says the *Manufacturer and Builder*, would really be the case if the same weight of steam had not a diminished volume; but under actual circumstances our gain in power is by no means proportionate to the pressure under which we work the engine. Some engineers assert that there is great gain of power in using higher pressure, because when they run their engines at an increased pressure, and thus obtain more power, they forget that they obtain it at the expense of more steam and fuel; but this is not the sense in which we take the word "gain."

The question is, when employing the same amount of fuel, is it more economical to use higher than lower pressure?

In order to decide this question fairly in practice, it is necessary to compare the power of two engines, built, boiler and all, the one for low pressure and the other for high pressure, and both in the style found by experience to be the most economical in regard to the use of fuel. Such comparisons have taught that for stationary engines (when large boilers and furnaces, with consequent heavy parts are not objectionable) the condensing, low pressure engine has often, actually, given more power for the units of heat consumed, than the non-condensing, high pressure engine.

Our former arguments are based on the supposition that we had a steam engine working against the atmospheric pressure, a so-called high pressure engine, in which the first "atmosphere" of pressure obtained by the first 1,000 units of heat expended, gives no power, as it only counterbalances the natural atmosphere; the next atmosphere of pressure obtained by eleven additional units of heat, gives under the conditions supposed 30,375 foot-pounds; three atmospheres of pressure obtained by about twenty-three additional units, give 48,000 foot-pounds, and seven atmospheres pressure, obtained by about thirty-eight units of heat give nearly 60,000 foot-pounds. This is the reason that engines which do not condense the steam, nor produce a vacuum, but work always against the atmospheric pressure, can never be expected to work, except at a great disadvantage, at low pressure, and are therefore always worked at high pressure and temperature. In fact, at 212°, or a little above, such engines cannot work at all, while a condensing, or so-called low pressure engine can work at that temperature, the piston not having to overcome the counteracting pressure of the atmosphere, as is the case in all the non-condensing engines, which, for that reason, are called high pressure engines.

But the greatest advantage of working at high temperature and pressure is obtained by the use of the well known automatic mechanical addition called the cut-off valve, which is the next subject to be explained.

Theory of the Cut-off Valve in the Steam Engine.

To explain the theoretical advantage of the cut-off valve in the steam engine, which allows the steam to be worked expansively, let us suppose that a boiler supplies steam of 60 pounds pressure, which is obtained at an expenditure of 22 units of heat added to the 1,000 necessary to produce 15 pounds, an increase of only one-fiftieth in the heat supplied. The engine working with steam of one atmosphere pressure, will, under the conditions adopted before, lift 27x15 or 405 pounds, through a height equal to the length of the stroke of the piston. Approximately speaking, the same *weight* (not the same *volume*) of steam, but of four atmospheres tension, will do an equivalent work during the first quarter of the stroke; that is, it will raise four times 405 pounds through one-fourth of the previous hight. If now the connection between the cylinder and boiler be closed at this very moment, then the steam of course will continue to exert an expansive force, lessening gradually as the space between the piston and the bottom of the cylinder increases. At the moment the piston has reached the middle of the cylinder, the volume of steam has doubled, and its pressure declined to two atmospheres. When the piston has achieved three-quarters of the stroke, the volume of the steam is trebled, and the tension has fallen to one and one-third atmospheres; and at the end of the stroke, when the steam has four times its original volume, there is one atmosphere of pressure left.

In order to compare the efficiencies of a given quantity of steam, when employed at full stroke, and with a cut-off, let us suppose a cylinder and a piston of 4-foot stroke, and 27 square inches section. This worked with steam of four atmospheres pressure, and a full stroke will, at every single stroke exert a force of 4x 15x27, or 1,620 pounds, and this, multiplied into the length of the stroke, give 6,480 foot-pounds. In order now to cut the steam off at one-fourth of the stroke, and use notwithstanding the same quantity, we may either make the stroke four times as long or arrange the gearing in such a way that the engine may run twice as fast, or make the surface of the piston four times as great. The last plan would be the best; and we accomplish it by using a cylinder and a piston of double the former diameter, which would thus have 4x27, or 108 square inches surface. The steam acts on this surface with a pressure of 4x15x108, or 6,480 pounds, and cutting it off at one-fourth of the stroke gives a hight of only one foot, and consequently a power of 6,480 foot-pounds. The other three-fourths of the stroke are made after the ingress of the steam has been stopped, with an initial pressure of four atmospheres and a terminal pressure of one atmosphere. The mean pressure of this space of three feet would be two and one-half atmospheres, if the pressure decreased regularly during its expansion; but the cooling produced during the expansion of any gas or vapor, causes the pressure to dimish more rapidly in the beginning, and also in this case leaves the terminal pressure less than one atmosphere. We shall be nearer the truth in adopting as the mean pressure two atmospheres, which, multiplied by the surface of the piston, gives 2x15 x108, or 3,240 pounds, and this again multiplied by a 3-foot stroke, gives 9,720 foot-pounds. The efficiency of the steam in this case has thus been 6,480 foot-pounds for the first quarter of the stroke, and 9,720 for the other three-quarters, making together a force of 16,200 foot-pounds, against 6,480, obtained without cut-off in the smaller cylinder consuming the same amount of steam.

A NEW MECHANICAL MOVEMENT.—Mr. James R. Devor, of Goshen, Ind., has recently patented a device by which belts and pulleys, cog gearing, and other mechanism may be made to run on shafts which are out of parallel with each other. The arrangement is as follows: A ball is fastened tightly on each shaft, each ball having a socket composed of two disks, each of which has a broad slot through which the shaft passes, and which can turn to accommodate a shaft lying in any direction. The insides of the pulleys or cog wheels are made concave to fit the ball, having flanges which lap on the disks. The pulley or cog wheel is revolved by pins passing through it and the slots in the ball on opposite sides. The belt (when such means of transmission is used) is kept in place on the pulleys by guides supported by a rod which connects together the yokes on opposite sides of the ball. By this arrangement the ball is allowed lateral play, and the shaft to which it is attached can pass through the pulley at any angle. The usefulness of this novel invention will be apparent to mechanics, and a great saving of pulleys, belts, and gearing will be effected by its use in transmitting power from one shaft to another when not parallel to it.

CIRCULAR VS. BAND SAWS.—The German industrial papers are discussing the question of the disadvantages of circular saws as compared with band saws: 1st. Circular saws are very dangerous to the workmen. 2d. They require a much greater power to drive them than any other kind. 3d. They make a much wider cut, producing more waste, and thus fewer products from a given amount of material. The only advantage is, that the first cost of procuring a circular saw is less than that of a band saw; but, notwithstanding the Mechanics' association of Muehlhausen have already published in their yearly report the advice to abolish their use wherever it is practically possible to do so; and this is of course the case in the great majority of circumstances.

LEATHER BOARD.—A manufactory in Lowell, Mass., employs twenty-five hands in the production of leather board, so-called, which boot and shoe manufacturers use as a substitute for leather. The capacity of the factory is two and a half tons of board per day, and 15,000 pairs of counters. The demand has been so large this spring that the proprietor has been obliged to run twenty-four hours in the day. His goods are sold in Canada, the West, South, and, in fact, all over the country.

UTILIZATION OF COAL DUST.—Nearly twenty years ago, John Bourne, in his "Treatise on the Steam Engine," pointed out the advantage of blowing coal dust into a chamber lined with fire brick, so that it might be ignited by coming into contact with red hot surfaces, after having been mingled with quantity of air necessary for combustion. There are now several large manufactories in the United States using pulverized fuel for furnaces and boilers.

SHAPING SOFT RUBBER WITH A FILE.—Prof. Morton, of the Stevens institute, states that he finds the ordinary thick sheet rubber, used in making up lantern tanks, and for many similar purposes, may be readily dressed into an exact shape with a file, if only it is supported by being clamped between plates of wood or metal in a vice. The file is used dry, and in all respects as in working on wood or metal.

NEW BARREL MACHINERY.—H. A. Crossley, of Cleveland, is about completing his new patent machine for making barrel and hogshead staves. This machine is gotten up on an entirely new principle and is designed for cutting the stave so as to give each one the proper bilge for any sized barrel desired, and will turn out staves ready to be set up very rapidly.

FIRST SUSPENSION BRIDGE.—The *American Railway Times* says the first suspension bridge ever built was constructed by James Finley, of Fayette county, Pa. It was built over Jacobs creek, on the turnpike from Uniontown to Greensburg, in the State of Pennsylvania, in the year 1796.

SCIENTIFIC PROGRESS.

The Intensity of Different Colored Lights.

An experiment recently made at Trieste, to test the intensity of various colored lights, is worth recording in these columns, as it is naturally a matter of some interest to photographers. The experiment was a practical one, and designed for the purpose of discovering how far lights of different colors penetrate darkness, and whether they would be of any value for the lanterns of light-houses. Of course a white light is seen at a much greater distance than any colored illumination, and it is singular, too, as many of our readers have no doubt, remarked, when viewing a fountain illuminated by various colors, that when the white light is thrown upon the drops those appear at their best. At first we admire the violet; then a ruby light is thrown upon the falling water, and we pronounce in favor of that; then, perhaps, green, orange and blue illumination follow, all securing our admiration in turn, until, at last, the white light is again turned on, and its brilliancy and intensity give at once finer effects than the others. In the experiment at Trieste, half a dozen lanterns with carefully selected glass, and all furnished with oil and wicks of a like character, were set burning on the beach, and then observations were taken by a party of sailors in a boat. At half a league distant the dark blue lantern was invisible, and the deep blue one almost so, so that there could be no doubt as to their unserviceableness for lighthouses or beacons. Of all the colors, the green was visible for the longest distance, with the exception of the red, which ranked next to the white brilliancy. It is only the green and the red—such, indeed, as our railways make use of—that are capable of employment, and the green light the Trieste authorities only recommend in the vicinity of white and red lights, as from a short distance an isolated green light begins to look like a white one.—*Photographic News*.

IMPORTANT INVENTION IN TELEGRAPHY.—The *Galos* announces the arrival at St. Petersburg of M. La Cour, assistant director of the Copenhagen Physical Observatory, in order to submit to the telegraphic conference a new invention, which must produce a radical change in telegraphy. That invention gives the possibility of transmitting dispatches between two telegraph stations through one wire only, and by means of many instruments, so that transmission by one instrument cannot impede the action of the other. M. La Conr, whilst engaged some years ago in investigating the passage of electric currents through conducting media, found that electricity is transmitted from place to place by undulations analogous to those of sound. In consequence of this discovery, he hit upon an arrangement of electro-magnets and tuning-forks, by means of which a particular current passing through a tuning-fork pitched to a certain note does not become merged in or confounded with other currents which, after passing through differently pitched tuning-forks, are simultaneously transmitted along the same wire. This, of conrse, renders it possible to send many messages at a time through a single wire.—*Iron*.

EXPERIMENTS WITH ELECTRICITY.—Cadogan Morgan, in 1785, was the first experimenter who produced the electrical light in the interior of solid bodies. He inserted two wires in wood, and caused the spark to pass between them. The wood was illuminated with blood-red or with yellow light, according as the depth at which the spark was produced was greater or less. Many of the readers of the PRESS have doubtless seen an egg or a series of eggs lighted up by being placed in the line of discharge of a Leyden jar. An ivory ball, an orange, or an apple may be illuminated in a similar way. According to Tyndall, a lemon is especially suited to this experiment, "flashing forth at every spark as a spheroid of brilliant golden light." The wire used for the discharge should be brought within about half an inch of each other inside the lemon.

CHANGES ON THE MOON'S SURFACE.—Observations upon the spots on the floor of the crater Plato, on the moon's surface, now show that decided changes have taken place—judged by the record of previous investigations—the streaks and colors of the floor presenting unquestionable evidence in this respect. The changes in the direction and luminosity of the streaks detected are, it is said, of such a character that they cannot be referred to changes of illumination, but depend, rather, upon some agency connected with the condition of the moon itself. The color of the floor has been found to vary as the sun ascends in the lunar heavens, being darkest with the greatest solar altitude.

M. Deprez states that soft iron, malleable iron and temperod steel give the same results to investigations for determining the rapidity of their magnetization and demagnetization. The duration of demagnetization is 0·00025, and of magnetization 0·00160, seconds, approximately. Gray cast iron gives still better results, the time of magnetization being reduced to to 0·001 second. With this last metal, therefore, the highest possible rapidity in the transmission of signals may be attained. This is due, according to M. Deprez, to the molecular structure of the metal and not the proportion of carbon contained.

Salicylic Acid.

New and important facts in regard to the manufacture and use of this new tasteless and harmless disinfectant are continually being brought to light. The latest which we have noticed relates to a more ready means of increasing its solubility for disinfectant purposes. One of the principal hindrances in the way of its use has been found in the fact of its slight solubility in water. Phosphate of soda, it is known, increases somewhat its solubility, but it has been reserved for a chemist with the euphonious name of Rozsnyay to discover a better means than this. The salt employed by this chemist is one which itself possesses a certain antiseptic power, and this increases the power which the mixture of retarding putrefaction. This salt is sulphite of soda. If one part of salicylic acid and two parts of sulphite of soda are dissolved cold in fifty parts of water, the solution will be perfectly clear. The solution does not irritate an open wound in the slightest, and its disinfectant power is so great that, while a certain quantity of milk, to which has been added a solution of salicylic acid prepared with phosphate of soda, curdled in five days at ordinary temperature (66° Fah.), another portion of milk, to which was added a solution of salicylic acid prepared with sulphite of soda, remained fluid for two weeks.

Rozsnyay recommends one part salicylic acid and one or two parts of sulphite of soda dissolved in from fifty to one hundreds parts of water, for general use.

NEW PHENOMENA OF SOLAR RADIATION.—M. Desains has recently examined the variations which the calorific solar rays undergo at the same time in point of intensity and with reference to their transmissibility through water. He expresses the results reached in tables, which show the quantity of heat arising at noon during one minute, and at different periods of the year, on an area of 1.6 square inches. The numbers vary very slightly, ranging from 1 to 1,3. The minimum was observed in January, 1875, and the maximum in June, 1874. Another table shows how the quantity of solar heat varies in traversing 0.32 inch of water in a minute, at noon. On April 25th last, the sky being clear, sixty-three per cent. of the radiation was transmitted. In June and July, 1874, the proportion reached seventy-two per cent. M. Desain deduces from his results the curious fact that an increased transmissibility of the radiations is related to the presence of greater or smaller quantities of watery vapor in the high atmospheric regions. Facile transmissibility indicates cloudy weather on the following day; and on the other hand, when the reverse is the case, permanently fair weather may be expected.

TEMPERATURE AT GREAT HEIGHTS.—Professor Wahl, who accompanied Professor Wise in a recent balloon ascent, gives the following account of the temperature experienced: "The maximum temperature observed was 97° at starting, and this continued 1,300 feet. At 2,000 feet it was 96°; at 3,000 feet 85°. The fall went on until, at the greatest altidude attained—viz., 8,748 feet—the temperature was but 68°. It fell gradually as we descended, but was lower than in the ascent, owing, doubtless, to approaching twilight and the attendant lessening of the sun's power." Observations were also made with a view to estimate the quantity and quality of any mechanical or other impurities of the atmosphere, but it will require some little time and careful work before any information can be made public.

VANADIUM IN ROCKS.—Dr. A. A. Hayes, in a paper read before the American Academy of Science, Boston, in January last, states that he had detected vanadium in many rocks associated usually with compounds of phosphorus and of manganese. His mode of examination for the detection of vanadium is described in detail, but no complete analyses of any rocks are presented. The author proposes in a future paper to give a tabulated list of the rocks. He also states the occurrence of vanadium in the well water of Brooklinc, near Boston.

MORE PLANETS.—New York papers publish a communication from Dr. Peters, of the Litchfield observatory, stating that on the 4th of June he discovered two planets, one the tenth magnitude and one between the eleventh and twelfth; one in seventeen hours sixteen minutes of right ascension, and 23° 2′ of south declination, and both not far from one another. In honor of the reception given him in Utica, Dr. Peters styles these the "jubilee planets," and names them respectively "Vihilia" and "Adeona."

NEW PROCESS FOR COPPER ENGRAVING.—Bouquet de la Grye, of Paris, proposes to cover copper plate with a thin, strongly adherent coating of silver; the silver plate is then varnished with a colored resist, and the engraving traced with a dry point; the etching is then bitten in by perchloride of iron. In this way the aquafortie process is ameliorated, as the adherence of the silver renders the engraving as clean as the tracing itself; this is a defect for portraits, but essential for cards.

OXYGEN GAS when inclosed in a thin glass tube, will show itself under the action of a magnet to be paramagnetic, inclining north and south like iron; and while nitrogen, hydrogen and carbonic acids remain unaffected, phosphorous, leather and wood show themselves to be diamagnetic, and arrange themselves equatorially from east to west.

Sales at S. F. Stock Exchange.

FRIDAY, A. M., Aug. 13.

225 Alpha.....24@24½
1015 Baltimore C n.....5
1990 Best & Belcher.....58@58½
550 Belcher.....25½@25¾
135 Bullion.....56
500 Buckeye.....1
185 Choller.....116@118
120 Confidence.....27@28
35 Con Virginia.....327@328
80 Caledonia.....27½@27¾
285 Empire.....8@8¼
20 Exchequer.....220@225
845 Gould & Curry.....24⅞@25
350 Globe.....75c
210 Hale & Norcross.....74@75
1525 Imperial.....13¼@13⅝
190 Justice.....185@193
170 Julia.....23⅜@24
90 Kentuck.....18@17½
895 Lady Bryan.....2⅜@2½
845 Mexican.....26⅝@27⅜
2390 Ophir.....68@70
165 Overman.....74@75
205 Savage.....140@143
1235 Sierra Nevada.....19⅜@19¾
1268 Silver Hill.....12@13⅜
125 Succor.....1
300 Utah.....13 @13⅝
175 Yellow Jacket...102@100

AFTERNOON SESSION.

245 Alta.....4⅜@5
435 Andes.....1¾@1⅞
300 Am Flag.....2¾
30 Am Flat.....3¾
105 Belmont.....3½
50 Chollar.....9@9¼
200 Cosmopolitan.....40@50c
580 Dayton.....6¼@6⅜
200 ...do.....8 10..6¾
190 Eureka Con.....10
100 Eclipse.....10
20 Florida.....2½
100 Gila.....b 30..4¾
660 ...do.....4⅝@4¾
675 Geneva.....1
610 Crown Point.....36⅜@36
260 ...do.....b 5..37
470 Confidence.....29½@30
50 Con Virginia.....330@329
75 ...do.....b 5..330
380 Gould & Curry.....25¼@24¾
100 ...do.....h 10..25¼
160 Hale & Nor.....60@59
200 New York.....3⅝@3¾
1515 Imperial.....13@13¾
525 N Nevada.....3@2¾
300 Niagara.....75c
10 N Belle.....28
300 O G Hill.....2¾@2⅝
250 Occidental.....4⅛@3
255 Knickerbocker.....3¾@4
1155 Overman.....74@75
1005 Mexican.....2¾@2⅝
815 Ophir.....72½@72¾
450 Overman.....79@80
360 Savage.....142½@145
385 Silver Hill.....12⅝@13
530 Succor.....13¾@13⅝
335 S Nevada.....20¼@20½
1155 Utah.....15@15⅛
1150 Union Con.....11@11⅝
180 Y Jacket.....101@99
150 ...do.....b 5..100

AFTERNOON SESSION.

1512 Andes.....4⅜@4½
70 Belmont.....3¾
350 Cosmopolitan.....40@35c
35 Cromer.....3
390 Challenge.....7½@7⅞
1265 Dayton.....6¾@6¾
805 Eureka Con.....4@4½
110 El Dorado South..15@50c
115 Eureka G V.....7
1025 Empire I.....50
460 Europa.....2@2¾
415 Gilson.....4½@4⅝
1200 G Chariot.....1⅞
150 Geneva.....2
50 Illinois Cen.....5
250 Kossuth.....2¾
1480 Leopard.....1¾@1⅝
545 Lady Wash.....2⅞@3
20 Leo.....1¾
200 Leviathan.....1¾
750 Mansfield.....90@87½c
100 Meadow Valley.....6½@6
465 Maryland.....1
400 Mint.....57½@60c
220 Mides.....4½@4⅜
100 M Star.....3½
455 Monumental.....60
445 New York.....4
150 N Carson.....35@40c
895 Occidental.....5½@5¾
50 O G Hill.....2¾
1480 Pacific.....1¾@1⅝
720 Pict u.....50c
600 Poorman.....33½@37½
165 Prospect.....4@6
80 Raymond & Ely..46@45⅝
430 Rock Island.....3½@3¾
100 Rye Patch.....1¾
600 S Mountain.....1
500 Senator.....1
625 Tyler.....1⅝
100 Wells-Fargo.....1
305 Woodville.....3@2⅞

WEDNESDAY A. M. Aug. 18.

345 Alpha.....27¾@27
1282 Best & Belcher.....58@58¾
50 ...do.....h 10..58⅝
130 ...do.....b 5..59¼@59½
130 Bullion.....54@55
328 Belcher.....28½@29
140 Baltimore Con.....5
20 Bacon.....7
255 Chollar.....113@110
805 Crown Point.....25½@35⅝
177 Con Virginia.....328@325
540 Caledonia.....27½@28
2015 California.....67¼@66¾
140 ...do.....b 5..67
135 Confidence.....29@28½
50 Challenge.....75
230 Dancy.....1
800 Dayton.....6¼@5¾
95 Empire Mill.....8
115 Exchequer.....220
155 Globe.....62½c
745 Gould & Curry.....24½
200 Gold Hill Q.....4
760 Imperial.....12¾@12⅞
100 ...do.....h 5..12⅝
385 Hale & Norcross.....58½@60
805 Justice.....b 5..72
363 Julia.....32@33½
50 ...do.....s 30..33
100 ...do.....b 30..34
500 Knickerbocker.....3¾
80 Kentuck.....17¼@16½
735 Lady Bryan.....2½@2¾
855 Mexican.....26¾@26½
650 Ophir.....72¾@71¾
150 ...do.....b 5..72
620 Overman.....76@75
465 Rock Island.....3½@3¾
60 Savage.....136@140
20 ...do.....b 30..140
170 ...do.....b 30..20¼@20
20 Seg Belcher.....95@96
1855 Silver Hill.....13@ 2¾
200 ...do.....b 5..13
1110 Union Con.....10¾@11
195 Utah.....15
295 Yellow Jacket.....98@96

AFTERNOON SESSION.

60 Am Flat.....3¾@4
855 Andes.....4¼@4½
600 Cosmopolitan..37½@40c
300 Cromer.....3
615 Eureka Con.....36¾@37½
400 Empire t.....50c
320 Gila.....4¼@4⅜
700 Geneva.....2⅝@2¾
825 G Chariot.....1⅝¼
50 Illinois.....4½

205 Jackson.....1⅝
300 Jefferson.....4¾
60 K K Con.....5¼
510 Leopard.....17@17¾
45 Lady Wash.....2⅝@2¾
300 Leviathan.....1½@1¾
1300 Mides.....4¾@3
375 Meadow Valley.....6¾@6
35 Maryland.....5c
150 Mint.....55c
430 Monnmental.....60c
60 N Belle.....28@27
275 New York.....3¾@4
450 N Carson.....35@40c
220 Occidental.....5½@5¼

SALES OF LAST WEEK AND THIS COMPARED.

THURSDAY, A. M., Aug. 12.

185 Alpha.....24¼
1 0 Baltimore Con.....4¾@4⅞
125 Belcher.....28@28¾
100 Bacon.....6
2235 Best & Belcher..56@57½
200 ...do.....h 10..57@56¾
400 ...do.....b 5..56¾@57¼
30 ...do.....h 30..58½
210 Bullion.....55
100 ...do.....s 30..55½
140 Chollar.....10@108
220 Caledonia.....27@26¾
775 Crown Point.....3¾@35⅝
100 ...do.....h 10..35½
200 Confidence.....27@27 x
3250 California.....65@65¾
50 ...do.....h 10..65¾
5 C G Hill.....4¼
135 Con Virginia.....32@330
50 ...do.....b 5..324
220 Empire Mill.....7¾@7⅞
1000 Gould & C.....24@23⅝
100 ...do.....h 30..24⅛
925 Globe.....150
200 Hale & Nor.....62½@60
1750 Imperial.....13@13¾
265 Justice.....17½@16¾
10 ...do.....h 10..167
680 Julia.....23@22½
190 Kentuck.....17¾@17⅞
185 ...do.....b 5..18
245 Bal Con.....c@5¼
90 Buckeye.....90c
55 Choller.....118@117
610 Crown Point.....36⅝@36
120 ...do.....b 5..36⅞
470 Confidence.....29½@30
50 Con Virginia.....330@329
75 ...do.....b 5..330
1900 California.....63¾@59
460 Caledonia.....31@30
250 Dan-y.....1
245 Empire Mill.....8¼@8⅛
40 Ex-hequer.....22@22⅝
50 Gold Hill Q.....1
350 Globe.....150@155
380 Gould & Curry.....25¼@24¼
100 ...do.....h 10..25⅛
160 Hale & Nor.....60@59
1515 Imperial.....13@13¾
525 N Nevada.....3@2¾
135 Justice.....40@38½
225 Kentuck.....17@17½
10 ...do.....b 5..17
255 Knickerbocker.....3¾@4
80 Lady Bryan.....2¼@2⅜
1005 Mexican.....2¾@2⅝
815 Ophir.....72½@72¾
450 Overman.....79@80
360 Savage.....142½@145
385 Silver Hill.....12⅝@13
530 Succor.....13¾@13⅝
335 S Nevada.....20¼@20½
1155 Utah.....15@15⅛
1150 Union Con.....11@11⅝
180 Y Jacket.....101@99
150 ...do.....b 5..100

AFTERNOON SESSION.

1512 Andes.....4⅜@4½
70 Belmont.....3¾
350 Cosmopolitan.....40@35c
35 Cromer.....3
390 Challenge.....7½@7⅞
1265 Dayton.....6¾@6¾
805 Eureka Con.....4@4½
110 El Dorado South..15@50c
115 Eureka G V.....7
1025 Empire I.....50
460 Europa.....2@2¾
415 Gilson.....4½@4⅝
1200 G Chariot.....1⅞
150 Geneva.....2
50 Illinois Cen.....5
250 Kossuth.....2¾
1480 Leopard.....1¾@1⅝
545 Lady Wash.....2⅞@3
20 Leo.....1¾
200 Leviathan.....1¾
750 Mansfield.....90@87½c
100 Meadow Valley.....6½@6
465 Maryland.....1
400 Mint.....57½@60c
220 Mides.....4½@4⅜
100 M Star.....3½
455 Monumental.....60
445 New York.....4
150 N Carson.....35@40c
895 Occidental.....5½@5¾
50 O G Hill.....2¾
1480 Pacific.....1¾@1⅝
720 Pict u.....50c
600 Poorman.....33½@37½
165 Prospect.....4@6
80 Raymond & Ely..46@45⅝
430 Rock Island.....3½@3¾
100 Rye Patch.....1¾
600 S Mountain.....1
500 Senator.....1
625 Tyler.....1⅝
100 Wells-Fargo.....1
305 Woodville.....3@2⅞

THURSDAY, A. M., Aug. 19.

385 Alpha.....25¾@26
1700 Best & Belcher 54¾@55½
270 Belcher.....29@28½
140 Bullion.....53½@54
155 Baltimore Con.....5
270 Buckeye.....70c
460 Crown Point.....33¾@34
125 Chollar.....10¼@1 5
630 Confidence.....27@28
215 Caledonia.....28½@29
1140 California.....65½@65¾
225 Challenge.....7¼@7½
50 Dardanelles.....3
380 Empire Mill.....6¾@6¾
1510 Imperial.....12@12½
980 Justice.....36½@37
275 Julia.....34@34½
335 Kentuck.....16¾
4255 Knickerbocker..3½@3¾
570 Lady Bryan.....2⅞@2¾
1315 Mexican.....25½@25¾
250 New York.....4
1135 Ophir.....67@68
615 Occidental.....5¼@5¾
310 Overman.....72¾@74
100 Phil Sher.....1¼
755 Rock Island.....4@4¾
360 Savage.....128@140
340 Sierra Nevada...18¾@19
200 Succor.....13¼@13¾
250 S Bill.....12¼@12½
10 Seg Belcher.....95
100 Union Con.....10@10¼
100 Utah.....14½@14¾
480 Woodville.....2⅞
270 Yellow Jacket...91¼@93

AFTERNOON SESSION.

50 Am Flag.....2
1370 Andes.....4@4¼
400 Alps.....56c
300 Cosmopolitan.....40c
10 Europa.....2
100 Eureka Con.....38@39
50 Empire.....5c
450 Gila.....4@4¼
600 Golden Chariot...11¼@1⅝
190 Gould & Curry.23¼@23⅝
100 Hale & Nor.....60
100 Illinois Cen.....4½
100 Jackson.....1¾
80 Jefferson.....4¼@4½
100 K K Con.....5½
300 Kossuth.....2½@2¾
100 Leo.....1¼
170 Lady Wash.....2¾
300 Leopard.....18¾
100 Leviathan.....1¾
630 Mexican.....25¾@26
450 Meadow Valley.....5¾@6
400 Mansfield.....85@90c
300 Monumental.....6½c
50 Mahogany.....2
50 Maryland.....75c
400 M Star.....3½
250 N Carson.....4 c
100 Ophir.....68¾@69
240 O G Hill.....2@2½
100 Prussian.....1
100 Panther.....1¾
50 Poorman.....3⅝
300 Pauper.....25c
115 Pro pect.....5¾@6
70 Raymond & Ely..41@43⅝
120 Rye Patch.....1¾@1½
830 South Mountain.....1
450 Wells-Fargo.....2@30c

MINING STAKEHOLDERS' DIRECTORY.

Compiled every Thursday from Advertisements in the Mining and Scientific Press and other S. F. Journals.]

ASSESSMENTS.—STOCKS ON THE LIST OF THE BOARDS.

Company.	Location.	No. Amt.	Levied.	Delinq'nt.	Sale.	Secretary. Place of Business.
Alpha Cons M Co	Washoe	7 1 00	Aug 12	Sept 17	Oct 7	Wm Willis 419 California st
Battle Cons M Co	Washoe	2 25	Aug 13	Sept 16	Oct 6	Theo O Kibbe 419 California st
Baltimore Cons M Co	Washoe	9 1 00	June 30	Aug 3	Aug 23	C A Sankey 331 Montgomery st
Buckeye G & S M Co	Washoe	14 25	July 7	Aug 7	Aug 26	C A Sankey 330 Montgomery st
Caledonia S M Co	Washoe	13 3 00	July 7	Aug 11	Aug 31	R Wegener 414 California st
Cherry Creek M & M Co	Nevada	4 50	July 15	Aug 19	Sept 14	D V Verdenal 409 California st
Condor M Co	Ely District	4 50	July 9	Aug 16	Sept 7	G T Grimes 240 Montgomery st
Cosmopolitan M Co	Washoe	2 25	Aug 11	Sept 15	Oct 4	M Landers 507 Montgomery st
El Dorado South Cons M Co	Nevada	6 1 00	July 6	Aug 11	Aug 31	W Willis 419 California st
Empire M Co	Idaho	10 50	July 7	Aug 12	Sept 1	W Willis 419 California st
Europa M Co	Washoe	4 25	July 23	Aug 27	Sept 14	R B Noyes 419 California st
Globe Cons M Co	Washoe	6 75	July 20	Aug 21	Sept 13	Joseph Mesguire 419 California st
Ida Ellmore M Co	Idaho	18 1 00	July 20	Aug 27	Sept 18	C B Higgins 402 Montgomery st
Kossuth M Co	Washoe	4 1 00	June 12	July 15	Aug 21	E F Stone 419 California st
Lady Bryan M Co	Washoe	8 50	July 9	Aug 12	Sept 3	F Swift 419 California st
Mahogany G & S M Co	Idaho	16 2 00	July 15	Aug 21	Sept 11	C B Higgins 402 Montgomery st
Meadow Valley M Co	Nevada	19 15	Aug 18	Sept 29	Oct 26	D A Jennings 401 California st
Omega Table Mt M Co	Cal	7 5	July 27	Aug 31	Sept 20	David Wilder Merchants' Ex
Pauper M Co	Idaho	5 30	July 24	Aug 30	Sept 22	W F Sogart 402 Montgomery st
Phil Sheridan G & S M Co	Washoe	3 50	Aug 6	Sept 8	Sept 29	W R Townsend 330 Pine st
Pictou M Co	Washoe	8 25	July 2	Aug 6	Aug 23	S Phillips 408 California st
Pioche S M Co	Ely District	10 1 00	July 13	Sept 21	Oct 12	Chas E Elliott 419 California st
Pioche West Ex M Co		8 2 00	July 12	Aug 18	Sept 10	T L Kimball 409 California st
Rocky Bar M Co	Washoe	3 10	Aug 6	Sept 16	Oct 6	J P Cavallier 513 California st
Rye Patch Cons M & M Co	Nevada	4 50	July 30	Sept 6	Sept 30	D F Verdenal 400 California st
Silver Central Cons M Co	Nevada	2 10	Aug 3	Sept 8	Sept 29	Lucien Hermann 330 Pine st
Silver Cord M Co	Idaho	1 00	Aug 20	Aug 28	Sept 20	C G Emmons 402 Montgomery st
South Mountain Cons M Co	Idaho	1 2 00	Aug 9	Sept 14	Oct 4	Wm Willis 419 California st
S Overman S M Co	Washoe	3 1 00	Aug 6	Sept 7	Sept 27	David Wilder Merchants' Ex
St Patrick G M Co	Cal	11 50	Aug 12	Sept 15	Oct 7	D F Verdenal 409 California st
Succor Mill & M Co	Washoe	12 50	Aug 18	Sept 22	Oct 13	Wm H Watson 302 Montgomery st
War Eagle M Co	Idaho	10 1 00	June 30	Aug 5	Aug 25	L Kaplan Merchants' Ex
Ward Beecher Cons M & M Co	Nevada	5 50	July 14	Aug 25	Sept 22	D A Jennings 401 California st

OTHER COMPANIES—NOT ON THE LISTS OF THE BOARDS.

Annie Belcher Q M Co	Cal	2	25	Aug 17	Sept 20	Oct 7 J M Buffington 311 California st
Blue Jacket M Co		2	1 00	July 30	Aug 31	Sept 18 O J Eaton 724½ Market st
Cascade Blue Gravel M Co	Cal	3	10	July 20	Aug 28	Sept 13 J M Buffington 311 California st
Cons Poe M Co	Washoe	8	25	July 24	Aug 24	Sept 24 Jas H Kinrad Reno Nevada
Cosmopolitan Sand G M Co	Oregon	1	10	June 8	Sept 15	Oct 21 F F Reynolds 111½ Leidesdorff st
El Dorado W & D G M Co	Cal	10	10 0	Aug 5	Sept 6	Sept 21 Hugh Elias 416 Montgomery st
Enterprise Cons M Co	Cal	4	10	July 29	Sept 6	Sept 24 F J Hermann 418 Kearny st
Georgia S M Co	Washoe	1	10	July 29	Sept 2	Sept 22 B Wegener 414 California st
Gold Mountain M Co Amador Co Cal		4	25	July 1	Aug 7	Aug 23 W A Knapp 116 Leidesdorff st
Gravelly Valley Blue Gravel M Co	Cal	4	30	July 7	Aug 9	Aug 27 A D Carpenter 605 Clay st
Hayes G & S M Co	Nevada	7	20	Aug 18	Sept 28	Oct 25 Geo R Spinney 320 California st
Howard Hill G M Co		3	35	July 28	Sept 6	Sept 24 F J Hermann 418 Kearny st
Missouri Q M Co	Cal	2	50	June 22	July 26	Aug 24 F H Rogers 330 Pine st
Mount Savage M Co	Utah	2	10	June 12	July 26	Aug 17 D V Verdenal 409 California st
North Bloomfield G M Co	Cal	3	1 00	Aug 7	Sept 12	Oct 12 Thos Burby 320 California st
Omega Table Mt M Co	Cal	7	5	July 27	Aug 31	Sept 20 D Wilder Merchants' Ex
Orleans M Co	Cal	6	1 00	July 23	Aug 28	Sept 13 Geo P Thurston 315 California st
Pinacate M M Co	Cal	1	10	Aug 2	Sept 13	Oct 18 Ford H Rogers 330 Pine st
San Francisco Copper M Co	Nevada	2	10	Aug 4	Sept 6	Sept 30 R D Swinnerton Front & Jackson st
Silver Sprout M Co	Cal	5	10	July 3	Aug 10	Sept 1 T B Winyard 316 California st
Tolman & Miller M & M Co	Cal	2	30	July 14	Aug 16	Sept 6 O H Bogart 402 Montgomery st
Union Gravel M Co	Cal	15	1 00	July 16	Aug 23	Sept 14 T Derby 320 California st
Victoria & Imperial Tun'l & M Co	Utah	5	10	July 8	Aug 12	S pt 2 W H Watson 302 Montgomery st
West Point G & S M Co	Cal	1	10	July 23	Aug 24	Sept 13 J O'Connel 409 Montgomery st
Wm. Penn Cons G & S M Co	Washoe	1	6	Aug 7	Aug 31	Sept 30 John F Pope 24 Montgomery st
Woodside M & M Co	Cal	2	25	July 17	Aug 17	Sept 2 J Glassman 335 Montgomery st
Wyoming G M Co	Nevada Co Cal	7	35	July 13	Aug 17	Sept 4 J M Buffington 311 California st

MEETINGS TO BE HELD.

Name of Co.	Location.	Secretary.	Office in S. F.	Meeting.	Date.
Annie Belcher Q M Co	Cal	J M Buffington	311 California st	Annual	Aug 23
Beaver M Co	Nevada	W G Hugher	309 California st	Annual	Aug 25
Cuervo M Co		Wendell Easton	419 California st	Special	Sept 1
Gold Run M Co		C O Palmer	41 Market st	Annual	Sept 6
Great Western Cons M Co	Inyo Co Cal	H Wegner	414 California st	Annual	Aug 30
Hartford M Co	Wa hoe	Edward F Stone	419 California st	Annual	Sept 2
Hartford M Co	Washoe	Called by Trustees	419 California st	Special	Sept 20
Julia G & S M Co	Washoe	Called by Trustees	419 California st	Special	Sept 7
Los Prietos M Co	Cal	S H Smith	6 Montgomery Av	Annual	Aug 23
Meadow Valley M Co	Ely District	T W Coburn	419 California st	Annual	Aug 26
New York M Co	Nevada	Called by Trustees	419 California st	Special	Aug 24
Oakland G & S M & M Co	Washoe	Wm H Watson	302 Montgomery st	Adjourned	Aug 21
Sez Caledonia M Co	Washoe	A O Ryce	308 California st	Annual	Aug 28
Senator S M Co	Washoe	J H Sayre	331 Montgomery st	Annual	Aug 25
South Comstock M Co	Washoe	H Errington	311 California st	Annual	Sept 15
Sutro M Co	Washoe	Called by Trustees	434 California st	Special	Sept 8
Virtue G M Co	Oregon	R H Brown	402 Montgomery st	Annual	Sept 6

LATEST DIVIDENDS (within three months)—MINING INCORPORATIONS.

Name of Co.	Location.	Secretary.	Office in S. F.	Amount.	Payable.
Black Bear Quartz	Cal	W L Oliver		25	July 19
Cons Virginia M Co	Washoe	Chas H Fish	401 California st	10 00	Aug 7
Empire G M Co	Sierra Co Cal	C Collischon		5 00	Aug 7
Empire M Co	Nevada Co Cal	T W Jennings	401 California st	50	Aug 16
Eureka Consolidated M Co	Nev	W W Traylor	419 California st	1 00	Aug 5
Excelsior M & M Co		Frank Swift	419 California st	1 00	April 10
Gila S M Co	Nevada	W Aug Knapp	116 Leidesdorff st	25	Aug 16
Jefferson S M Co		C A Sankey	331 Montgomery st	50	May 15
Leopard M Co		R H Brown		50	July 15
Lyon Mill & Mining Co	Washoe	E F Stone	Bayward's Bldg	50	Aug 18
Manhattan S MCo	Nevada	Chas S Neal	419 California st	1 00	June 15
Northern Belle M & M Co		W Willis	419 California st	1 00	Aug 16
Oneida M Co		L Kaplan	Merchants' Ex	50	July 23

The Mining Share Market.

The present aspect of the market cannot be said to be favorable to a maintenance of high prices. Saturday last the market closed feverish and excited, but ths week was opened with with a more healthy feeling though wanting in activity. Yesterday a degres of softness in leading stocks was apparent snd hy evening thers was a geueral downward tendency. To-day there is no improvement hnt rather the opposite. The market is decidedly weak and the timid ones are fearful of hrsaksrs ahead. The hsuks complain of the scarcity of money and are pnshing their customsrs for settlement. This, of course, has a dspreciating effect and will account for the weakness of the msrket. It is hiuted that this apparent "stringency" is bnt an item in the wsll arranged programme of the hear element.

Since our last the Empire gold mining company, of Sierra county, Cal., has declared a dividend of $5 psr share payable after August 17th, and tbe Empire mining company of Nevsda conuty, California, has dsclared a dividend of fifty cents per shsre which was payable on the 15th inst. The Lyon mill and mining company of Washos district has declared a dividend of fifty cents per share payable on the 18th inst.

A mssting of the stockholdsrs of the Hartford mining compsny has been called for Ssptemher 20th, to act upon a propoeition to increase the capital stock of the company.

At a meeting of the Savage mining company on the 17th inst. it was decided to increase the nnmber of shares to 112,000, and the capital stock to $11,200,000.

Reports from the Comstock continue of the most flattering character and there ie no doubt that the legitimate mining interests of the coast are in a more favorahle condition than ever before.

JUSTICE MINE.—On the 800-ft level excellent progrese ie heing made in the south drift, with very favorahle indications.

METALS.

[WHOLESALE.]

WEDNESDAY M., August 18, 1875.

American Pig Iron, ℔ ton	38 00	@	39 00
Scotch Pig Iron, ℔ ton	40 00	@	44 00
White Pig, ℔ ton	— —	@	38 00
Oregon Pig, ℔ ton	— —	@	28 00
Refined Bar, bad assortment, ℔ ℔	— —	@	— 3½
Refined Bar, good assortment, ℔ ℔	— —	@	— 4
Boiler, No. 1 to 4	— —	@	— 6½
Plate, No. 5 to 9	— —	@	— 5½
Sheet. No. 10 to 14	— —	@	— 5¾
Sheet. No. 16 to 20	— 5¾	@	— —
Sheet. No. 22 to 24	— 6	@	— —
Sheet, No. 26 to 23	— 6½	@	— —
Horse Shoes, per keg	7 50	@	8 00
Nail Rod	— 10	@	— —
Norway Iron	— 9	@	— —
Rolled Iron	— 6	@	— —
Other Irons for Blacksmiths, Miners, etc.	— —	@	— 4½
COPPER.—			
Braziers'	— 35	@	— —
Copper Tin'd	— 37½	@	— —
O'Neil's Est	— 37½	@	— 40
Sheathing, ℔ ℔	— 24	@	— 40
Sheathing, Yellow	— —	@	— 25
Sheathing, Old Yellow	— —	@	— 12½
Composition Nails	— 24	@	— —
Composition Bolts	— 20	@	— —
SPELTER.—English Cast, ℔ ℔	— 20	@	— 25
Anderson & Woods' American Cast	— —	@	— 16½
Drill	— —	@	— 16½
Flat Bar	— 18	@	— 22
Plow Steel	— 9	@	— 10
TIN PLATES.			
10x14 I C Charcoal	11 50	@	12 00
10x14 I X Charcoal	13 50	@	14 00
Roofing Plate I C Charcoal	10 50	@	11 00
Banca Tin	— —	@	— 30
Australian	— 25	@	— 30
ZINC.—By the Cask	— —	@	— 11
Zinc, Sheet 7x3 ft, No 7 to 10 ℔ ℔	— —	@	— 11
do do 7x3 ft, No 11 to 14	— —	@	— 11½
do do 8x14 ft, No 8 to 10	— —	@	— 12
do do 8x14 ft, No 11 to 10	— —	@	— 12
NAILS Assorted sizes	— —	@	4 10
QUICKSILVER, per ℔	— 65	@	— 70

LUMBER.

CARGO PRICES OF REDWOOD.		PUGET SOUND PINE —Retail Price.	
Rough, ℔ M	$18 00	Rough, ℔ M	22 50
Rough refuse, ℔ M	14 00	Fencing, ℔ M	22 50
Rough clear, ℔ M	30 00	Flooring and Step, ℔ M	32 50
Rough clear refuse, M	20 00	Flooring, narrow, ℔ M	35 00
Rustic, ℔ M	22 50	Flooring, 2d quality, M	25 00
Rustic refuse, ℔ M	24 00	Laths, ℔ M	3 50
Surfaced, ℔ M	30 00	Furring, ℔ lineal ft	— —
Surfaced refuse, ℔ M	20 00	**REDWOOD—Retail.**	
Flooring, ℔ M	28 00	Rough, ℔ M	22 50
Flooring, refuse, ℔ M	20 00	Rough refuse, ℔ M	18 00
Beaded flooring, ℔ M	30 00	Rough Pickets, ℔ M	18 00
Beaded floor, refuse, M	25 00	Rough Pickets, p'd, M	20 00
Half-inch Siding, M	22 50	Fancy Pickets, ℔ M	30 00
Half-inch siding, ref, M	16 00	Siding, ℔ M	25 00
Half-inch, Surfaced, M	25 00	Surfaced and Beaded	37 50
Half-inch Surf, ref., M	18 00	Flooring	35 00
Half-inch Battens, M	22 50	Do do refuse, ℔ M	25 00
Pickets, rough, ℔ M	13 00	Half-inch surfaced, M	32 50
Pickets, rough, p'ntd	16 00	Rustic, No. 1, ℔ M	40 00
Pickets, fancy, p'ntd	25 00	Battens, lineal foot	½
Shingles, ℔ M	3 00	Shingles, ℔ M	— —

LEATHER.

[WHOLESALE.]

WEDNESDAY M., August 18, 1875.

City Tanned Leather, ℔ ℔	26@29
Santa Cruz Leather, ℔ ℔	26@28
Country Leather, ℔ ℔	24@29
Stockton Leather, ℔ ℔	26@29
Jodot, 8 Kil. per doz	$50 00@ 54 00
Jodot, 11 to 13 Kil., per doz	68 00@ 79 00
Jodot 14 to 19 Kil., per doz	82 00@94 00
Jodot, second choice, 11 to 16 Kil. ℔ doz	57 00@ 74 00
Cornellian, 12 to 16 Ko	57 00@ 67 00
Cornellian Females, 12 to 13	63 00@ 67 00
Cornellian Females, 14 to 16 Kil	71 00@ 76 50
Simon Ulimo Females, 12 to 13, Kil	60 00@ 63 00
Simon Ulimo Females, 14 to 15, Kil	70 00@ 72 00
Simon Ulimo Females, 16 to 17, Kil	60 00@ 63 00
Simon, 18 Kil. ℔ doz	61 00@ 63 00
Simon, 20 Kil. ℔ doz	65 00@ 67 00
Simon. 24 Kil. ℔ doz	72 00@ 74 00
Sobert Calf, 7 and 9 Kil	35 00@ 40 00
French Kips, ℔ ℔	1 00@ 1 15
Chesnut Kip, ℔ doz	40 00@ 6* 40
French Sheep, all colors, ℔ doz	8 00@ 15 00
Eastern Calf for Baoks, ℔ ℔	1 00@ 1 25
Sheep Roans for Topping, all colors, ℔ doz	9 00@ 13 00
Sheep Roans for Linings, ℔ doz	5 00@ 10 00
California Kuneett Sheep Linings	1 75@ 4 50
Best Jodot Calf Boot Legs, ℔ pair	5 00@ 5 25
Good French Calf Boot Legs, ℔ pair	4 00@ 4 75
French Calf Boot Legs, ℔ pair	4 00@ —
Harness Leather, ℔ ℔	30@ 37
Pair Bridle Leather, ℔ doz	48 00@ 72 —
Skirting Leather, ℔ ℔	33@ 37½
Welt Leather, ℔ doz	30 00@ 50 00
Buff Leather, ℔ foot	17@ ½
Wax Sida Leather, ℔ foot	17@ —

Gold, Legal Tenders, Exchange, Etc.

[Corrected Weekly by CHARLES SUTRO & CO.]

SAN FRANCISCO, August 18, 3 P. M.

LEGAL TENDERS in S. F., 11A. M., 88½ to 88¾.
GOLD in N. Y. 113¼
GOLD BARS, 890. SILVER BARS, 6½ and 7½ per cent. discount.
EXCHANGE on N. Y., 60-100 per cent. premium for gold; on London bankers, 49; Commercial, 49¼; Paris, five francs per dollar; Mexican dollars, three to five per cent. discount.
LONDON — Consols, 93 to 93¾; Bonds, 102½
QUICKSILVER in S. F., by the flask, per ℔, 650.

MINING AND SCIENTIFIC PRESS.—On the 3d inst. this paper, published by Dewey & Co., at 224 Sansome street, San Francisco, entered upon its thirty-first volume. It is, beyond a doubt, the best journal published on the Pacific coast for the scientist, mechanic and miner, and should receive the most liberal support. It costs much money, to say nothing of patience and endurance, to publish an ordinary paper; but the amount required of all these to publish such a paper as the PRESS can hardly be realized by amateurs or those not having had any experience in the publishing and printing business.—[Panamint News, July 14th.

MINING SUMMARY.

THE following is mostly condensed from journals published in the interior, in proximity to the mines mentioned

California.

AMADOR.

PLACER CLAIM.—*Foothills Ensign*, August 13: Some months ago R. Paterson and two others located a claim in the bed of Sutter creek, passing through the town, extending from the Mahoney dam to the west side line of the Maxwell quartz mine, containing about 16 acres of land. The claim was recorded last week. The owners are now engaged in working the central portion, which is paying good wages, some of the ground having never been worked. The claim will take at least two years to work out, and is expected to prove very rich as work is pushed toward the Eureka mill.

NEW WORKS FOR THE KEYSTONE.—Some 12 carpenters were put to work early this week to erect new hoisting works at the Keystone mine. The dimensions of the building will be 40x80 ft, and one month will be required to complete the work. Sutter creek is left minus a carpenter for the time being.

COLUSA.

QUICKSILVER.—Colusa *Sun*, August 14: From a gentleman just in from the mines, we learn that the Rathbun and the Lovelace claims are prospecting very finely. The Rathbuns have just uncovered a vein of fine cinnabar by a shaft 12 ft square. The vein is some 18 inches thick. They have enough of this to make 10 or 12 tons of quicksilver, in sight. They have made a contract with the Turner mine to run through their second grade ore, but they will put up a retort for their rich ore. The improvement on the Abbott furnace has been completed and works as well as was expected.

EL DORADO.

SAMPLE ORE.—*Mountain Democrat*, August 14: We have on our desk a sample of the quartz which is being taken from the bottom of the shaft in the Rosekranz mine, Greenwood district. This sample is beautifully seamed with galena sulphurets and exhibits a fine display of free gold. We are assured that this is but an average sample, and that there has been a steady improvement in the quality of ore as the shaft has descended. As ore of this quality will doubtless mill at least $30 per ton, there is little risk in predicting a bright future for the Rosekranz.

INYO.

TRANSFER OF MINING PROPERTY.—*Independent*, August 14: George D. Roberts and the Brown brothers recently disposed of their interests in the following named Coso mines to the Cerro Gordo Consolidated silver mining company: Grant, St. Louis, Capital and Mammoth, together with certain water privileges and other Darwin property. We have not heard the amount of the consideration but must have been a good round figure, as these all rate as first class mines. The same parties also sold the New York, St. Lawrence, Gen. Lee, San Francisco, Grant, London, Washington, Glasgow, Mt. Ophir, Vanderbilt, Rothschilds, Boston and Monster mines, all in the same district, to the Darwin Consolidated silver mining company. Chas. E. Elliot also made a sale of the Guervo mine, to the Goervo silver mining company. All of the foregoing mines have been incorporated with an aggregate capital of $10,000,000. The transfers have been duly recorded in the Clerk's office of this county. Darwinites are highly elated at the flattering outlook for their camp, and have good reason to be.

ITEMS.—A shipment of 75 bars of bullion was made from Darwin this week. The net weight was 7,000 pounds and the assay value of $280 per ton. This is the first for the district, and is from the Tyler or Union company furnace. This is a small furnace and when first started up got out 3 bars and then froze. It was soon cleared, however, and the next run was 80 bars. It is to be rebuilt, being too small for effective work.

WE are pleased to know that Pinte district, opposite Bishop creek, after so much talk, is at last to have a mill. Mr. R. M. Johnson has purchased the old Deep Spring mill, which is to be rebuilt and put in operation at Piute immediately.

THE galmadore at Pine mountain was completed the other day. The work was accomplished in less time and at less expense than was anticipated when the change was made. Everything works splendidly now, and there will be a shipment of bullion in a few days.

MR. WINGARD rode into town last night saying the boys had made a strike—not for higher wages, but of a higher grade of ore in the Silver Sprout. Messrs. Wingard and Page started early this morning for the scene of action.

KERN.

MINING MACHINERY.—*Californian*, August 12: We learn that the machinery, etc., for three furnaces for the antimony mines in San Emedio canon, has been shipped to this place from San Francisco. From here the machinery will be taken by teams. It is estimated that about twenty tons of the metal will be run out every twenty-four hours. It will be shipped by rail from Bakersfield to San Francisco, thence to parts of the world where it is used.

PLASTER OF PARIS.—In the San Emedio mountains, near the antimony mines, a mine of what is pronounced, on scientific test, a good article of plaster of Paris, and there has been developed an abundance of it.

THE SUMNER MINE.—Bakersfield *Courier*, August 14: From a private letter we learn that $46,000 in bullion has just been sent below—the proceeds of thirty days' run on the Sumner mine. The mill was run only daytimes. The same letter says that a new deposit has been struck in the mine that is much richer than the rock they have been working. The mine will now be kept running day and night, and we may expect that the next clean-up will make a startling exhibit. In Bright Star there have also been some rich developments recently made.

LOS ANGELES.

THE CHARLOTTE MINE.—Los Angeles *Express*, August 14: Our friend, Mr. E. G. Gaertner, arrived to day from the Charlotte mine. He has just completed the erection of a second arastra. Mr. G. exhibited to us the gold realized from the crushing of one ton of Charlotte rock. It is beautiful bullion, and amounts to a little over $50. It was crushed in the new arastra, and as the cracks had of course to be filled up, this yield is equivalent to at least $80 a ton. He can now crush with the two arastras combined, two and a quarter tons of rock a day. The shaft is down 25 ft in the Charlotte, and the vein is three ft wide. The Poyoreno also promises well. There is little doubt but that a gold mine of great value, and which will yield handsomely from the start, has at last been found in Los Angeles county.

THE WINSTON MINE.—The editor of the *Express* has lately visited the Winston mine, situated in San Gabriel canon, about 25 miles from Los Angeles. We extract from his published account: At a distance of perhaps five miles from the mouth of the canon, we reached the Winston mine. We found it located on the right bank of the river, and in a mountain perhaps 1,000 ft in hight. The houses are situated on a bench in the side of the mountain, some two or three hundred feet above the river, and within a few feet is an excellent spring of pure, sweet water. The hill has been prospected at three different points. A tunnel has been run 700 ft into the mountain at a point perhaps 100 ft above the river level. Another tunnel has been opened about half way up the hill, and still another at about 700 ft above the river bed. The lower tunnel cuts through ore at a distance of about 200 ft from its mouth, but runs in barren matter to the point of cessation. But, lately, a drift has been carried from a point beyond where the ledge was grazed, some 50 ft, at right angles from the course of the tunnel, opening into a body of ore which is manifestly the ledge itself. Standing in front of the lower tunnel and drawing a straight line with the eye from the top of the monotain, it will be seen that the tunnels are all in a direct range, and as the ledge has been opened in each, it is a fair presumption that the several works show conclusively the existence of a continuous vein all through the mountain. Ore has been taken out at every point, but in the upper tunnels the work has been done so as to show that the ledge is a very wide one. It is at least 35 ft in width in the upper tunnel, and the middle tunnel developments indicate a width of 50 ft. There is ore there in ample quantity, and the only question to be determined is as to its working value. The assays made have varied. There have been very high assays had and very moderate ones. The general average value of the vein rock can only be determined by working it, and, so far as we can learn, no large quantity of the ore has ever yet been crushed.

NAPA.

THE BELLA UNION.—Correspondence of the Napa *Reporter*, August 14: The Bella Union quicksilver mine is doing well under the supervision of James McQuid. They are at present working about 45 men, principally Chinamen, and have shipped altogether 64 flasks. The first shipment consisted of 40 flasks, product of 20 days' run with one furnace. The next was 24 flasks, which Mr. McQuaid informs me was only one week's run, making an average of four flasks per day. They have just started another furnace, so we may look out for larger shipments soon.

NEVADA.

CLEAN-UP OF THE NEW YORK HILL.—Grass Valley *Union*, August 13: The New York Hill mine has again been doing a big business. After a three weeks' run of the mill, 16 stamps operating, 360 loads of ore were reduced, and a clean up was made. The result is about $26,000, including the value of the sulphurets. That is about $72 to the load.

CLEAN-UP OF THE PITTSBURG.—*Union*, August 15: The Pittsburg mine, located near Deadman's Flat, and about four miles distant from Grass Valley, owned by Sanford and the McCook brothers, has had a crushing and a clean-up. Thirty-two loads were put through the mill, and yielded, in free gold alone, at the rate of $55 per car load, or a total of $1,760. From this crushing four tons of very rich and heavy sulphurets have been saved.

FIRE AT THE HARTERY MINE.—*Union*, August 17: Yesterday morning at about one o'clock, a fire alarm was sounded and the firemen turned out in force. The alarm was caused by the burning of the Hartery mill buildings, situated about two and a half miles south of Grass Valley. The buildings at the mine were entirely consumed, and the machinery much injured. The Hartery mill has been idle for some years, and no fire has been used in or about the mill for the same time. It is supposed that the fire was caused by an incendiary, who wants to destroy the machinery in the building. The loss cannot be estimated. The building burned was an old one and much decayed. The machinery cost about $9,000 and was very good. We set the loss down about $5,000, with no insurance.

SAN FRANCISCO COPPER MINE.—*Foothill Tidings*, August 14: The shaft is down 150 ft. At the depth of 45 ft the first level is made, from which ore is now being extracted. They have here drifted through the ledge, which is 76 ft thick and much of it of a very high grade. At the 150-ft level, a cross-cut of 40 ft has not reached the other wall of the ledge. The size of the ledge insures easy working; six men being able to break and send up 40 tons a day. On the surface the ore is piled no around brick flues in a conical shape, set on fire and allowed to burn until the fire extinguishes itself, showing that the sulphur is burned out. This takes from two to four months, and 80 tons are reduced in each cone.

RICH IRON ORE.—Mr. Caleb Harrington, of this place, showed us yesterday a sack of iron ore, just brought up from a newly discovered mine, only about six miles from Grass Valley. The ore, to all appearance, is very rich in iron, almost as pure as cast iron, and from all we can learn the deposit is very extensive.

PLACER.

CLEAN-UP.—Placer *Herald*, August 14: The Auburn gravel and ditch company, after a run of about 20 full days, made their first clean-up at the beginning of this week. According to the estimate of the engineer, they had washed 17,500 yards of gravel, and from this they cleaned up 30 pounds of retorted gold. This, at $200 a pound, would amount to $6,000, which, as will readily be seen, is a low estimate. The result is highly satisfactory to the stockholders. It assures them that the enterprise is a paying one, and acting on this assurance they have already let the contracts for extending the pipes and fitting up Tunnel hill, on which they expect to be ready to commence washing in about a month.

DEVELOPING THE KIRKLAND.—The Kirkland quartz mining company, whose claim lies near the town of Ophir, have begun the work of developing their mine in earnest. F. R. J. Dixon, an experienced miner of that district, has been appointed superintendent, and we learn from him that it is the intention of the company to sink 600 ft at once. If they do we predict flattering results, for it is the universal opinion of miners here that depth only is needed to insure the permanency of the mines in this district.

PLUMAS.

MINING ITEMS.—Plumas *National*, August 14: Two more companies were to commence work on Monday last, on locations adjoining the blue gravel claims of Pierson, Winters & Co., near Nelson. The prospects of that part of the country are improving every day, and it promises soon to be a lively camp. The East Branch company has quit piping for a short time. It will take about three weeks to get the water through to the White or Wing claims, which are known to be rich.

TUOLUMNE.

THE UNION MINE.—Tuolumne *Independent*, August 14: The 5-stamp steam power mill at Rock gulch, near Columbia, is almost ready for crushing. The lode formerly six inches, has widened out to two feet. The rock shows gold from the top down, a distance of 70 ft, with the naked eye.

REED & Co's. "HI-A-PO."—A number of "quartz sharps" recently visited this famous pocket lead a few miles above Columbia, and report that while there, the boys chipped off over $100 and left plenty more in sight; that when they strike gold it is nearly all gold and but little rock. Eighteen pounds of ore were taken from one of these pockets a short time ago.

THE Goss & Farley mine, at Summit pass, near Columbia, have their 5-stamp water mill ready to start up. The vein runs across the Royal lead, running east into the Pasco sink, where big money was taken out in early days. The quartz is decomposed and resembles salt. They are down 70 ft on a 2-ft vein which prospects well.

QUARTZ STRIKE.—In the early part of last week a nice strike was made by an Italian or Austrian named Antone Ivancovich of $1,500, and two or three days previously he struck the pocket when he got out $500 more, making in the week $2,000. Last year the same person was lucky enough to take out in a pocket $8,000.

VENTURA.

THE NEW MINING DISTRICT. — *Californian*, August 12: That section of country known as Frazier mountains, in Ventura county, is now attracting considerable attention as a mining district. J. B. Tungate has just returned, bringing with him some fine samples of quartz to be found there. In that part of the country is where Dave Menzies and Joe Acklin made their pile last winter while placer mining.

Nevada.

WASHOE DISTRICT.

CONSOLIDATED VIRGINIA.—*Territorial Enterprise*, August 14: The work in the C. and C shaft goes steadily on. The new engine therefor arrived Thursday. It is an immense affair. The cylinder is 40 inches in diameter and has a stroke of 8 ft. As everything is in readiness, the work of putting it in place will be speedily accomplished. The connection will be made directly from the crosshead of the engine to the bishophead of the bob, thereby doing away with all intermediate gears, shaftings, etc., and effecting a great saving in friction, besides running no risk of breaking gears. It is the largest engine ever brought to the Comstock. The bed-plate weighs 29,700 pounds, and the cylinder itself weighs 30,050 pounds. These are the heaviest pieces of machinery ever brought to this city. The valve motion is controlled by what is called cataract gear, so arranged as to work the engine either single or double-acting, and will so regulate it as to make 1 stroke in 10 minutes or 10 strokes in 1 minute, or any intermediate number required, and according as the quantity of water in the shaft may render necessary. The pump shaft is 5 ft 4 inches by 6 ft. The pumps to be attached to this monster engine are 12 inch plungers, 7 ft stroke, placed each 200 ft vertically above each other, and are to be arranged in the shaft so as to give as much room as possible that the balance of the space may be utilized for the purpose of conducting compressed air, etc., to the depths below.

CALIFORNIA.—The developments in the depth of the California continue to be of the most interesting character. The drift north on the 1550-ft level is still advancing and is encountering the richest kind of ore. The assays that have been made of the ore as taken from the drift, and without any selection being made, have run from $550 to $750 per ton. On this level two cross-cuts have been started, with a view of still further opening up this wonderful deposit and connecting it with the shaft. The faces of both are in the same quality of ore as the drift above mentioned. On the 1500-ft level the lateral drift in the ore vein, running northward from cross-cut No. 5, is steadily advancing, the face still in rich ore. The drifts in the ore vein are also being run from cross-cut No. 5. One of these drifts is going southward to connect with the lateral drift from cross-cut No. 6, and the other north to connect with the Opir. The face of both drifts are in good ore. On the 1400-ft level the face of the north drift is steadily advancing toward the Ophir line. The developments are better and better as the drift proceeds, the ore being of good quality. The work on the new mill still progresses favorably. The frame of the battery mill is going up, and is being constructed in the most thorough manner, nothing being left undone which can contribute to its strength or durability.

CHOLLAR-POTOSI.—The work of drifting south on the 1500-ft level still goes on and good progress is made. It is the intention to continue this drift and the one in the same direction from the 1250-ft level through to the south line. The latter drift is also advancing rapidly. The drift on the 1350-ft level is being driven on, an average of 2 ft per day being made. There are no new developments to be recorded. The daily yield of ore from the upper levels exceeds an average of 90 tons per day. The Combination shaft is encountering hard rock, but is making good progress, averaging over 3 ft per day, which, considering the size of the excavation, is good work. It is being thoroughly timbered as fast as sunk and with the best mountain spruce.

SAVAGE.—Work has been resumed on the 2000-ft level. The drift north toward the Gould and Curry is being cleaned out, and will be pushed on to the connection, for the purposes of ventilation. The work on and below the 2200-ft level is making good headway. The drifts north and south still hug the wall of the vein. The winze 100 ft north of the south line of the claim is going down at the usual lively rate, without material change in the formation encountered. The rock in the incline below the 2200-ft level is very hard and the water encountered hot, but the work is making good progress.

OPHIR.—The works are being so thoroughly reconstructed as to be hardly recognizable. The retimbering of the shaft has been completed. The guides are all in, hoisting water has commenced and work will be resumed Monday. The machinery is running to-day. Everything in and about the place has a very busy though quiet and orderly look, and the amount of work going on at all points is astonishing. When the incline machinery and new machinery are ready to start up the developments of the mine will go rapidly and systematically on.

BEST & BELCHER.—Still timbering and enlarging the main drift connecting with the Gould & Curry on the 1700-ft level. Cross-cutting will soon be commenced, and the ore vein, along which the drift runs without penetrating, will then be laid open.

BELCHER.—The upper levels continue their yield of 450 tons per day, and appear unchanged. The air shaft is being led down below the 1200-ft level, and is needed to ventilate the mine. The prospecting drifts on the 1600-ft level are making good progress, and in favorable working ground. The ore stopes on the 1500-ft level are being prepared for use.

GOULD & CURRY.—Still timbering and enlarging the drift connecting the 1700-ft level with the Best & Belcher. The progress is slow, on account of the heat. Cross-cutting will soon commence, and then look out for developments. The drift has only followed the wall of the ledge, without penetrating the ore vein.

JULIA.—Still sinking and drifting on the 1000 ft level, and making good progress in both. The shaft has passed the 1450-ft level, and is in rock favorable for rapid progress. The drift south has run 1116 ft, and has encountered soft clay and an increase of water. The working force has been increased during the week by the addition of two more Burleigh drills, and a lathe has been set up at the works for convenience in repairs, etc.

NORTH CONS. VIRGINIA.—The new hoisting works have been placed in position and are found to work admirably. They are of sufficient power to sink 1200 ft. Sinking is making good progress.

Popular Lectures.

Economy of the Vegetable and Animal Kingdoms.

Seventeenth Lecture delivered before the University of California College of Agriculture, on Monday, February 15th, 1875, by Prof. C. E. Bessey. (Concluded.)

[From Pacific Rural Press']

Production of New Breeds by Crossing.

From what has been said, it will readily be seen that there are many difficulties in the way of producing hybrid or cross breeds which shall be of permanent value. From the very nature of the case it is usually the desire to cross two forms which are very widely separated.

We first meet the difficulty of sterility, either as an absolute sterility of the individuals concerned, or a sterility of the offspring; next we encounter prepotency, and then reversion may after all spoil all our work. The first difficulty must be gotten over by what may be termed a gradual approach; that is, if it is desired to cross two forms which are found upon trial to be sterile, it may be accomplished by ameliorating one or both of the forms. For example, it is quite desirable that in the United States we produce a cross or hybrid between the cultivated apple and the wild crab apple. This has not as yet been as successful as we wish it to be, doubtless, because of the considerable difference between the two forms. The proper course then to pursue is to bring this wild form into cultivation for a series of years, until it has become somewhat modified, when no doubt the desired crosses can be successfully made. In some cases it may be done in this way:

First cross with some intermediate form and then cross these intermediate hybrids by a careful use of propotent individuals; the results of these last crossings may be made much more valuable and the danger of reversions be removed to a considerable extent.

Crosses by Grafting.

I cannot take leave of this subject of crossing without calling your attention to another form but little understood as yet, that is, crossing by grafting or budding, that is, by the union of two individual plants. It has long been known that changes could be wrought upon a variety by grafting it upon another, although nothing definite has as yet been worked out regarding it. We have a good many scattered observations but as yet none which have been followed to some definite result. I have known of some hybrids being formed in this way which were almost as well marked as if they had been made by sexual crossing.

In one case which came under my notice a Blackheart cherry was grafted upon a very sour Morello stock and the result was that the cherry was changed in taste so greatly as to make it almost inedible, its size was reduced and its appearance otherwise changed. Want of time prevents a further discussion of this subject, which as you can readily see is of very considerable importance to all cultivators of plants. Nearly allied to the preceding kind of cross is that which is produced upon the stock when grafted with a cion from a different variety. Of this we know even less than of the preceding. But we do know that in many cases the stock is considerably changed after the graft has been set in. No doubt if we made a proper use of this fact we could secure many of those nicer shades of difference in plants which it is so difficult to get otherwise. Closely allied to this is the influence of fœtus upon the mother in animals. It is well known that if a female gives birth to a hybrid, she herself has become possessed of some of the characters of the hybrid. Hence it is the practice of our best breeders *never to allow the females of their flocks and herds to cross with the males of inferior stock*, as all of the subsequent offspring of such crossed females will be to a slight extent hybridized.

Bud Variations.

In growing plants, especially such as are under high cultivation, we cannot but observe that more or less frequently parts of a plant will vary from the form and appearance of the remainder. Frequently this shows itself in the absence or presence of color in the leaves of a particular shoot or branch, or it may be in the different color of the flowers on a branch; less frequently it shows itself in a changed form for leaf or flower, and less frequently still in differences in fruit. To these changed forms, to these "sports," as the gardener terms them, we apply the term *bud variations*.

As I told you in my last lecture, reversions may take place in this way; that is, a plant may revert in one of its branches, by a variation of its buds, backward to its original form. This matter of *bud variations* is, however, of more interest to us when these changes are, so as we can see, not of the nature of reversions, merely, but when they seem to produce *new* forms. If any of you will take the trouble to look up the history of any of the geraniums with gayly colored leaves, you will find that such varieties originated from "sports" which appeared upon plain leaved plants. The two forms now so deservedly popular, named by florists, "Mrs. Pollock" and "Cloth of Gold," originated in this way; the former, as I know, from a very plain variety, the "Emperor," which has been remarkably prolific in bud variations. A few years ago, while in charge of a greenhouse in the East, this old variety, "Emperor," showed its tendency to vary, in a remarkable way. From near the root a bud pushed out which developed into a shoot bearing leaves white throughout, with the exception of a very faint pink zone in the central parts. Now, this certainly was not a reversion but a pure sport or a bud variation.

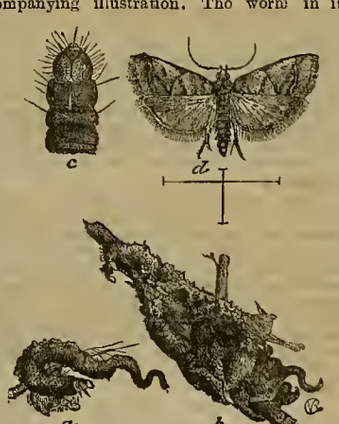
By propagating such sports by slips, buds or grafts, such varieties may be retained for a considerable time. In this way many of our varieties of flowers, and some of our fruits have been obtained. In some cases they are quite stable, sufficiently so to be propagated by seeds, as is the case with the varieties of Indian corn and wheat, some of which are no doubt bud varieties.

Allied to the bud varieties in plants, are the sports, so called, in animals, although they differ considerably in some important particulars. I refer not to the monstrocities which now and then occur, and to which the term "sports," has occasionally been applied, but to the perfectly formed originals which differ remarkably from the other individuals of any particular variety.

In many cases new breeds have thus arisen, which have been of great service to man. In fact it may be said, that most of the animals which have exerted a strong influence upon our different breeds were sports. The famous Morgan breed of horses, according to some authorities, had its origin in this way.

The Leaf Crumpler.

We give to-day another portrait from our horticultural "rogues' gallery;" introducing to our readers the leaf crumpler, as seen in the accompanying illustration. The worm in its



Apple-leaf Crumpler.

case is seen at *a*; the curled leaves with a bunch of these cases is seen at *b*; the head of the worm, magnified, is seen at c, while *d* represents the perfect moth.

The apple is the favorite of this insect; indeed, it is principally known as the "apple leaf crumpler;" but besides this it infests the cherry, plum, quince, crab apple and pear. The wild trees of the above named fruits are also infested with the leaf curler, or crumpler, and this adds to the difficulty of exterminating it.

Their presence is most readily seen when the trees have shed their healthy leaves. Those in which the crumpler worms are encased will then adhere to the tree, being fastened thereto by the silk of which their cases are formed. Here they remain, completing their growth; and at the return of warm weather and the opening of the new buds they are ready to devour the fresh and tender leaves. Having now arrived at the stage when most is required to support them, and the tree being at this time in a condition when the season's foliage is most easily damaged, it is at this period that the leaf crumpler is most destructive. Where they are very abundant they will sometimes consume the leaves as fast as they appear; thus cutting off the season's supply of foliage.

In countries where the winters are long and severe, it is in June that the full-grown worm changes to the pupa state, inside the tubes, and in July hatches out as the moth or "miller." This is a small, grayish brown insect, well represented in our illustration. It commences at once to lay its eggs upon the twigs of the tree; and from these eggs minute worms are soon hatched which at once take to the tender leaves and commence feeding upon them, and to construct for themselves little tubes of silk to serve for their protection. They eat and grow, making additions to their tubes and extending their ravages.

Hard to Fight.

There are several circumstances surrounding the leaf crumpler which render its extermination difficult, and give a discouraging aspect to a course of warfare against it. In the first place it never goes into the ground; consequently it escapes the perils to which insects in the grub state are subjected. In the second place there are, as yet, no birds known that will devour them; and were they so disposed they are so thoroughly protected in their cases that they have little to fear from such attacks. Again, the firm adhesion of the cases to the twigs of the tree makes their removal, even by hand, quite difficult. It has some insect enemies, but these, like the birds, can effect but little in the way of extermination, on account of the worms' invulnerable case. It has been suggested that poisonous solutions be tried, as in fighting the canker worm.

The leaf eating insects are really more dangerous enemies than those that prey upon the fruit; the latter only consuming the product of the tree, while the former virtually consume the tree itself. But in thus placing the highest possible estimate upon the capacity of the leaf crumpler, both for mischief and endurance, we are not striving to produce a feeling among the fruit growers of California that will induce them to cut down their trees or give up to this insect when it is discovered upon the twigs in their orchards. What we have said is with a view to impress our readers with the importance of watching their trees closely, even in summer, and pick off all leaves that are beginning to curl; and in winter remove the fastened cases, even though it be a slow and difficult job.

In entomology this insect is known as the *Phycita nebulo*; sub-order—Lepidoptera; family —Pyraidæ.

Hair vs. Leather Belts.

For some time hair belts have been introduced and manufactured in Germany, great advantages being claimed for them, namely: greater strength and more adhesion, so that thinner and narrower belts could be used for the transmission of the same power for which thicker and wider leather belts were required. In order to settle the dispute in regard to this important matter, which had sprung up among manufacturers, L. Stark & Co., of Mayence, made a series of experiments, the results of which were:

1st. In regard *to strength*. When three leather belts one-quarter inch thick and two inches wide broke respectively at a charge of 2,300, 2,010 and 1,900 pounds, three hair bolts of the same thickness and half an inch wider, broke respectively at 1,668, 1,734 and 1,580 pounds. The hair belts were thus found to have a disadvantage of some twenty-four per cent. on the average instead of an advantage, as was claimed by the hair belt manufacturers.

2d. Experiments in regard *to friction* gave an advantage of eighteen per cent. in favor of the leather belts. When the same sizes of belts made of hair and of leather were tried alternately, and resistance to the motion was applied, the hair belt slipped, while the resistance could be increased eighteen per cent. before the leather belt slipped.

3d. *Price*. Hair belts cost about thirty per cent. more than leather belts, while their price increases for width and thickness in a greater ratio than for leather belts.

4th. *Shifting*. When a belt has often to be shifted from one pulley to another, the edges suffer much, and when this is the case with a hair belt the edges become loose and the belt dissolves in single strands, so that hair belts cannot be used where shifting is often required.

5th. *Repairs*. The repairing of hair belts is infinitely more troublesome than it is with leather belts.

6th. *Splicing*. Leather belts are easily connected by several methods, as lacing, riveting, gluing and hooks and eyes, while hair belts are very difficult to splice, and are in this respect even worse than rubber belts.

7th. *Age*. When hair belts become old, they lose their friction-promoting covering with which they are provided, and become smooth sooner than leather belts.

All these are undoubted disadvantages, and the use of hair belts will never be adopted, except in special cases where the exposure to vapors and acids would exclude the use of leather.—*Manufacturer and Builder*.

Compression in Castings.—Col. Uchatius, director of the arsenal at Vienna, whose name is coupled with a peculiarly fine and tenacious steel made in Sweden, has lately given the results of an exhaustive series of experiments on compressing bronze when in a state of fusion, and otherwise treating so that it acquired many of the properties of steel. With an alloy of ninety per cent. of copper and ten per cent. of tin, and a pressure of eighty tons, a very hard, tenacious metal was produced, but one with little more elasticity than ordinary bronze. On cold rolling this bronze cast, under pressure, into an ingot, its power of resistance, its elasticity and hardness were increased. After repeated experiments it was found that an alloy of ninety-two per cent. of copper and eight per cent. of tin was the best and most economical. In casting the bronze to produce a homogeneous mass, after repeated and varied trials a double mould with a solid forged copper core 0.05 metre in diameter was decided to be the best. The bronze produced in this manner is declared to have all the hardness, homogeneousness, and power of resistance of steel tubes. Its wearing qualities are as great, and the cost of bronze guns made in this way is much less than steel if the value of the old metal is taken into account.

Work upon the Tasajara coal mine is progressing finely. The shaft is being put down very substantially, and the quality of coal is improving splendidly. The owners of this mine feel sanguine of having a permanent strata of coal and of an excellent kind.

The Universal Use of Arsenic.

Prof. Henry Wiertz writes as follows in the *American Gas Light Journal:*

We object not only to allowing Paris green to be spread over our fields, to contaminate the soil of our market gardens, but even to its being allowed, as it is, to be kept on open sale in our shops, so that an amount of poison which would sicken a city—by introduction into a distributing reservoir, for example—could at any time be purchased, without suspicion, by any maniacal or fiendish individual, and so introduced, with far less trouble or liability of detection than many of the murderous performances of such individuals.

In America we are happily endowed by nature with a general absence of this deadly mineral arsenic from our rocks, our soils and our mineral waters, and we ought to keep ourselves so. Whether this is one cause or not of the known longer average of human life in America than in Europe, it will be safer and better for us to admit that it is one such cause, and not to throw away or destroy our advantage in this respect by sprinkling arsenic over our vegetation all through the land. It is true the predatory insects must be destroyed, but let it be with such poisons—and they are known to be many—which have been given us by God for these special uses—which are endowed with deadly doom for all the insect tribe, while, almost without hurt for man. Among such none are more prominent or more familiar than the gas tar products, of which we spoke in this same connection in our last issue. Let these be used instead of arsenic.

Arsenic is, in fact, getting to be, throughout the world, almost as common as dirt. We doubt very much whether it would not be impossible, at the present day, in any country, to convict on chemical evidence before any jury, the most bungling arsenical poisoner, if he or she had a legal defender who would make such use as he might of the argument furnished him by the almost universal distribution of the venomous element throughout our most familiar walks of life. We have received medicines, ourselves from drug stores, wrapped in arsenical papers put up in Paris-green paper boxes, with arsenical paper caps tied over the corks, etc. We have often seen confectionery exposed for sale to young children wrapped in the deadly green paper. We have often found young children sucking toys painted with the horrible stuff, and with their mouths stained throughout with the venom, The Paris-green paper is one of the commonest in use for binding school books, and we have more than once taken such books away from our own young children, which had been given them by their teachers. Numerous deaths of children are well known to have been thus occasioned. No country can be called civilized in which such suicidal ignorance, such stupid slaughter of the innocent, is common. One more illustration only. It is very common to see a lawyer or his clerk, put into his mouth, to moisten the gummed side of it, a beautiful green paper disk, with scolloped edges, to attach to some document. These things are found in every lawyer's office in the land, and used constantly. They are seldom made of any other than the Paris-green paper. Can this be ignorance, or are our lawyers all fatalists, and believe they can only "die when the time comes?" In commencing to write we had in our mind to refer to some of the wonderful facts developed of late, in Great Britain especially, of open carts loaded with white arsenic passing in open day through the country in some districts, with drivers sitting on the top of the hideous heap; such carts being often exposed all night openly to the rain; of strongly arsenical waters flowing from mines and metallurgical works, into streams of water afterward drank by large populations, and so on. Those are facts. Everybody will remember the cargo of salt and arsenic together shipped to us from Europe a few months ago, which got a little mixed during a rough passage. This particular mixture was discovered in time, but have all such been discovered? The water we ourselves drink comes from a stream, on one of whose tributaries is a large chemical works, which so contaminates the said tributary with arsenic that cattle drinking of it have been poisoned to death. These things, we say are facts, on both sides of the Atlantic; but really while we wrote the first part of this article—especially when we thought of the recklessness of the public press, which has actually recommended their rural readers, in many cases, to pile on the Paris-green on their potato patches with a perfect looseness—these other things seem trifles as flat and stale as they certainly are unprofitable; and our enthusiasm and zeal for the cause of humanity seems to wilt down into a sort of sentimentality, which is certainly ludicrously lame and impotent, if not downright sickly.

Grasshoppers not an Unmitigated Evil.—It is stated as a curious fact in connection with the grasshopper ravages in Western Missouri that wherever pastures have been destroyed by these insects, new varieties of grass, never before seen in those localities, have sprung up. The principal species is a bunch grass of luxuriant growth, covering ground formerly producing nothing but blue grass. It is said that cattle eat this new species of grass with avidity. It is generally thought that the seed of this new grass has in some way been brought to the region designated by the hoppers. But it is not known where the grass originally grew, or what may be expected of it if its growth continues. It is thought by some that after all, grasshoppers may not prove an unmitigated evil.

Useful Information.

California Oysters.

The first business trains which crossed the Pacific railroad contained cars freighted with oysters. As it was known that California did not possess any edible quality of this bivalve, Mr. A. Booth, of Chicago, undertook the transportation and planting of many thousand baskets of oysters on the Pacific coast. Similar changes which oysters undergo when transplanted along the Atlantic coast have already been proved to take place on the Pacific coast with the oystors coming from the Eastern regions.

In going south, the round shape of the shell is elongated until off the coasts of Georgia and Florida they assume a razor-shaped shell. In California our transplanted oysters loses its oval or round shape and lengthens out. The Northern oysters planted in San Francisco bay are put out in four or five feet of water, and mature and fatten rapidly in from six to twelve months. In New York bay this takes from two to four years. Every year some 500 car loads of small oysters are transported across the continent, to be brought up in the Pacific.

There are some peculiarities as to the character or origin of the oyster to be transplanted. They always come from Egg harbor, Raritan bay, Newark bay and Long Island sound. The more Southern seed invariably dies. There appears to be a limit to the growth of any kind of Eastern oysters in the Pacific waters; after a certain period, a year and a half at the utmost, for some reason as yet not well understood—perhaps the meat becoming too large for the shell planted—the oysters die. A great deal of precaution is necessary in guarding these planted oysters. A fence of pickets six inches apart is placed around the California oyster park. The enemies of the oysters are the stingaries and star fish; at low tide the oyster shepherd goes in and kills such marine wolves as may be devouring his flock. There is a small clam, a native of the California coast, which is quite edible; further north, on Puget's sound, there are clams twelve inches long, eagerly devoured by the Indians, while the native oyster from Oregon is very small in size, and has the coppery flavor of the worst European bivalves.—*Manufacturer and Builder.*

Singular Explosion—At the works of Hewes & Phillips, N. J., a few days since, it became necessary to remove the rings from a steamboat piston, which was hollow, with two sets of packing rings. The rings were found to be rusted and corroded fast, and the piston was placed on a fire in the blacksmith shop to loosen them by heat. In a few minutes an explosion occurred, and the piston was blown to pieces, injuring one man so that he died in a few minutes, and hurting another badly about the face. On a close examination of the pieces, it was believed that marks of an old crack were found. It is thought that, when hot and under pressure, some steam may have leaked through into the piston and subsequently condensed, and the crack may then have been rusted tight. When the piston was heated, this water inside became converted into steam and caused the explosion.

To Protect Maps, Pictures, Etc.—Coat a plate of glass thinly and uniformly with a warm mixture of one-quarter of an ounce of ox-gall and one quart of a solution of glue, which will form a stiff jelly on cooling. When the film is set, render it insoluble by immersion for two or three hours in a solution of acetate of alumina, which may be formed by dissolving one ounce each of alum and acetate of lead in a pint of water, and decanting the clear liquid from the sulphate of lead formed. Then wash and rinse well, give it an additional thin coating of a weaker glue solution, and lay the picture, slightly but uniformly moistened, upon it, face downward; smooth out by gentle rubbing, place in a warm room for three or four days, and remove from the glass when thoroughly dry, by cutting the film around it. The back of the picture may be coated in a similar manner, and it will then lie without a frame.

A Simple Way to Make Badly-Fitting Blinds and Doors Shut Tightly.—When blinds and doors do not close snugly, but leave cracks through which drafts enter, the simplest remedy, recommended by Mr. Schuetze, building commissioner in Dresden, Germany, is this: place a strip of putty all along the jambs, cover the edge of the blind or door with chalk, and shut it. The putty will then fill all spaces which would remain open and be pressed where it is not needed, while the excess is removed with a knife. The chalk rubbed on the edges prevents the adhesion of the putty to the blind or door, which then can be opened without adhesion, and the putty is left in place, where it soon dries and leaves a perfectly fitting jamb.

Lead Pencils.—Wondering what becomes of all the lead pencils is in order. In one week of last month a New York firm received orders for 445 miles of lead pencils. To make these only 83,000 feet of cedar lumber are required, and after they are made they will load six freight cars. This immense consumption of lead pencils is doubtless caused by the attempt of women to sharpen them with a pair of scissors or a dull case knife. Persons who have witnessed these efforts need no longer wonder at the demand.

To Stain and Varnish Walking Sticks.—Make a solution of three parts glue, in 100 of warm water. To this add one part whiting, two parts of orange chrome; mix well. Apply hot with a soft brush to your sticks. When thoroughly dry, rub down with a piece of dry flannel. Apply a second coat of color, if deeper tints be required, or use burnt umber and brown ochre for oak tints. When dry, apply the following varnish: Coarsely powdered copal and glass, each 1 oz.; alcohol, 6 to 8, 1 pint; camphor ½ oz. To be heated over a water bath, with constant stirring, until all the copal is dissolved. When cold, decant the clear portion. Be careful that the alcohol does not inflame.

Green Bronze.—The repeated application to copper or brass of alternate washes of dilute acetic acid and exposure to the fumes of ammonia will give a very antique looking green bronze; but a quick mode of producing a similar appearance is often desirable. To this end the articles may be immersed in a solution of one part perchlorate of iron in two parts water. The tone assumed darkens with the length of immersion. Or the articles may be boiled in a strong solution of nitrate of copper. Or, lastly, they may be immersed in a solution of two ounces nitrate of iron and two ounces hyposulphite of soda in one pint of water. Washing, drying, and burnishing complete the process.

To Preserve the Metallic Luster of Sodium.—Sodium is as white as silver, but this is only seen at a fresh cut, as it quickly tarnishes in the air, and even in the naphtha under which it is preserved. In order to make it bright, when tarnished, the coating of caustic soda, by which it is covered, must be removed by strong alcohol, which dissolves it without igniting the sodium; (of course water cannot be used); it is left in the alcohol until quite clean and bright, then it is placed in chemically pure naphtha ether, and finally in a concentrated solution of naphthalin in naphtha ether. In the latter solution the sodium may be kept in an unaltered condition.

To Clean Coral.—The way to clean coral is, first to soak it in soda and water for some hours. Then make a lather of soap, and with a soft hair brush rub the coral lightly, letting the brush enter all the interstices. Pour off the water and replenish it with clean constantly, and then let the coral dry in the sun.

To Paper Whitewashed Walls.—Make a sizing of common glue and water, of the consistency of linseed oil, and apply with the brush to the walls—taking care to go over every part, and especially top and bottom. Apply the paper in the ordinary way as you please.

Value of Chemical Knowledge.—A cold mixture of sulphuric and nitric acids, with a little kerosene or spirits of turpentine, will start a flame in half a minute. Should not every person understand something of the laws of chemistry, as a safeguard against accidents?

Removing Silver from Copper.—Sulphuric acid containing ten per cent. of nitrate of potash, will remove silver. Gold cannot be removed safely with acid.

Good Health.

Poisonous Gum Boots.

Among the many fabrications in which poisonous colors are introduced, we have not until recently noticed *gum boots* enumerated. We have recently learned from the Oroville *Mercury* that there is strong reason to suspect that many serious cases of poisoning have occured among miners, in this State, from the use of green lined gum boots, and that Dr. Logan, of Sacramento, has been corresponding with Dr. Miller, of Oroville, on the subject.

We do not learn that any positive evidence has yet been adduced to prove that these boots are poisonous; but a correspondent of the *Mercury* says that suspected cases of such poisoning "have been treated for poison, and the patients have been speedily and permanently cured. * * * Complaints have never been made about gum boots lined with any other colored textile; and, in consequence of this very simple argument, every one seems to be satisfied that there is something wrong somewhere. There are some who profess that the above mentioned boots do not affect them; but, having conversed with such, I found that they are not all affected alike—some felt a stiffness in the joints—can't get along so well any more as in former times; walking tires them more, etc., and all this from strong, healthy looking men."

The above writer urges that immediate steps be taken to investigate this matter thoroughly by competent experts, and suggests that the Board of Supervisors of Oroville, in which vicinity many suspected cases of such poisoning have occurred should take this matter in hand, and that they should co-operate with the State Board of Health in the investigation. Since the exposure of the danger of using poisonous dyes for coloring fabrices, intended for wearing apparel, it is the duty of dealers to select their goods carefully, and warranted; for it places them in a position to be held responsible for damages.

Health, Wealth, Intellect, Muscle.

That there are people born who inherit certain imperfections, both of the moral and physical nature, peculiar to their forefathers, is universally admitted. And there is no mystery in all this. Were it otherwise, men might sow tares, only, and expect to reap wheat.

Volumes have been written, experiments made, and lectures upon lecture given, upon the subject of "Hereditary Diseases," equalled only in amount of words by sermons upon "Original Sin" and the necessity of repentance. And what is the result of all this? Simply nothing of any practical good. Time rolls on, and the annals of sin and consumption show a frightful increase, and will continue to do so until their opponents attack them at the right time and in the right way.

We must begin with our children. It is through them that all great and lasting reforms are to be brought about. Parents are their natural teachers, and it is much to be regretted that many of them are most unnaturally taught. To educate the intellectual organs at the expense of the physical ones, is the greatest one of the age, and so long as it continues, an intellectual giant and physical dwarf combined, will be no coriosity. This is all wrong. If we would rid ourselves of "hereditary diseases," we must attach more importance to the strong arm and well developed chest. Our sons and daughters may then live to that good old age which the children of men attained in days gone by, the "good old days" as we are wont to call them, when "wasp waists" were considered a deformity, infant schools unknown, and hereditary disease not yet introduced into fashionable life.

Let the motto be, "Health first, then Wealth." A man had better bequeath to his children a sound constitution than all the wealth of a nation. A sick rich man is a beggar compared with a poor well one.

To those inclined to consumption, then, I would say, go to work with but half of the energy and will to save your body from premature decay that you would manifest to save your house from "the devouring element," and success will crown your efforts—health and long life be your reward. Don't stop to "count the cost." The expense to the State, of one execution, is more than need be spent to prevent ten murders. So does one protracted fit of sickness cost more than all the means and appliances necessary to secure twenty sound constitutions.

Consumptive people are those who generally take cold very easy, and why? Because their lungs are weak. A slight cold is a matter of serious importance to them. They feel very well through the day, but night brings no "refreshing sleep," and morning finds them weak and irresolute, with a pain in the back, between the shoulders, in the side or in the chest, and they enter upon the duties of the day wholly unprepared to sustain their share of its toils and burthens. Who has not heard from the lips of such, the common, though none the less significant expression, "It almost kills me when I cough!"

To such I would say, if there be any truth in the old adage, "A stitch in time saves nine," it has a direct bearing, a pointed application in your case. The bridge that almost precipitates the traveler into the river at one time, is pretty sure to do it at another, if it be not repaired.

Curious Advice in Regard to Sleeplessness.—We find in a contemporary, called *Land and Water*, the following recommendations to produce sleep: 1st, to eat raw onions; or 2d, because in a sleepless person the blood is in the brain and not in the stomach, to call the blood down by eating a few hard boiled eggs, followed by a glass of rum or milk, and the paper says you will fall asleep, and bless the name of Frank Buckland who recommended it. We seriously fear that some sleepless man who tries at night the hard boiled eggs and rum in his stomach, may curse the man who gave this remedy.

Harmless Cosmetic Powders.—The *Journal of Pharmacy* announces the fact that the apothecaries of Copenhagen have agreed on the substitution of certain harmless compounds for the numerous poisonous face powders now commonly used. In avoirdupois weight, the proportion of the ingredients will be about as follows: For white powder oxide of zinc, one ounce; wheat starch, nine ounces; oil of rose, three drops. For red powder, carmine, one ounce; carbonate of magnesia, four ounces.

Egg Drink.—The following drink for relieving sickness of stomach was introduced by Dr. Halahan, and is very palatable and agreeable: Beat up one egg very well, say for twenty minutes, then add fresh milk, one pint; water, one pint; sugar, to make it palatable; boil, and let it cool; drink when cold. If it becomes curds and whey it is useless.

Electricity in the Treatment of Vomiting.—Dr. Lente says that severe cases of vomiting can be controlled by electricity after other remedies fail. He uses the faradic current, applying it from the nape of the neck to the epigastrium?

A Fearful Mortality.—For a month past the deaths in New York city have exceeded the births by about 300 weekly. The mortality is greatest among children, who go off rapidly, in defiance of all medical treatment. Bad drainage and the unhealthy mud flats are the attributed causes of the great prevalence of disease.

Domestic Economy.

How to Prepare Tomatoes.

There is an ignorance which is far too wide concerning the preparation of vegetables for the table. They ought to having cooking very simple and very perfect, and they do not always get it. One of the most delicious and healthful of summer foods is the tomato, and it is also one of the most abused. Raw, it is often brought to table cut up into unshapely lumps with the skin still adhering to them. Cooked, it generally appears merely a watery red mess, interspersed with pieces half done, hard and greenish in color. The ideal dish of tomatoes is thus prepared: Choose only those which are large, comparatively smooth, firm, and thoroughly red-ripe—it is an absurdity to offer small or immature specimens in a salad, and if you can't find such as are here recommended, you must not attempt to eat raw tomatoes. Put them in a tin pan and pour over them boiling water, pouring it off immediately. This so loosens the skins that they can usually be pulled off easily, without any violent application of the knife. Then with a very sharp knife slice them across, discarding the first piece, which has the hard base of the stem, and the last piece which is too small. Make the slices thin rather than thick, keep them large and whole, and pile them carefully in layers in a pretty dish, delicately sprinkling salt and pepper over them. Then put them away to get thoroughly cold in your cellar or refrigerator. Prepared thus they are simply ambrosial, and only a pagan could scorn them. If anybody wants to add sugar and vinegar to the seasoning, that can be done at the table by the eater. Slices of the large yellow tomatoes scattered among the red, sometimes make the dish look very tempting.

For stewed tomatoes, peel as above, but cut in pieces, not in slices. Put these in a two-quart tin basin or a porcelain lined saucepan, and add salt and just enough water to keep them from burning. While they are simmering comfortably throw in very little pepper, a good large piece of nice butter, and enough fresh soda cracker broken into small bits to thicken the mixture without making it like a pudding. It should be thin enough to run easily from the spoon, and yet not be watery. This dish also is exquisitely invitiag. There are other methods of cooking tomatoes — stewing with rice, stuffing and baking, etc.—but in no guise are they so good as in those described above.—*Tribune.*

To Make an Oatmeal Custard.—Take two teaspoonfuls of the finest Scotch oatmeal, beat it up into a sufficiency of cold water in a basin to allow it to run freely. Add to it the yolk of a fresh egg, well worked up; have a pint of scalding new milk on the fire, and pour the oatmeal mixture into it, stirring it round with a spoon, so as to incorporate the whole. Add sugar to your taste, and throw in a glass of sherry to the mixture, with a little grated nutmeg. Pour it into a basin, and take it warm in bed. It will be found very grateful and soothing in cases of colds or chills. Some persons scald a cinamon in the milk they use for the occasion.

To Cook Egg-Plant.—Cut the egg-plant in slices half an inch thick, sprinkle a thin layer of salt between the slices, and lay them one over the other, and let them stand an hour. This draws out the bitter principle from the egg-plant, and also a part of the water. Then lay each slice in flour, put in hot fat and fry it brown on both sides. Or boil the egg-plant till tender, remove the skin, mash fine, mix with an equal quantity of bread or cracker crumbs, add salt, pepper, and butter, and bake half an hour. This makes a delightful dish, and a very digestible one, as it has so little oily matter in it.

To Keep Ice Water Cold.—Place between two sheets of thick brown paper a layer of cotton batting half an inch in thickness; fasten the ends of paper and batting together, forming a cylinder like a section of stove pipe. Place this over an ordinary pitcher filled with ice water, making it deep enough to rest on the table. Put over the top a circular cover made in the same way as the cylinder. This will keep boiling water hot as well as ice water cold, since it excludes the air from either.

To Wash Dress Linen.—A teaspoonful of black pepper put into the first water in which gray or buff linen is washed will keep it from spotting. It will also keep the colors of black and colored cambrics and muslins from running. To make silk which has been wrinkled appear like new, sponge on the surface with a weak solution of gum arabic or white glue, and iron on the wrong side.

To Improve Pickles.—A lady correspondent of the Germantown *Telegraph* says that few people know that pieces of horse-radish with a small bag of allspice, added to the vinegar of pickles, improves their flavor and prevents mold.

German Toast.—To one egg beaten well add one cup of sweet milk or cream; season with a little salt and pepper. Cut stale bread in slices, dip in the milk to moisten, and fry in butter on a griddle. This is a nice dish for breakfast.

MINING AND SCIENTIFIC PRESS.

W. B. EWER.....SENIOR EDITOR.

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COALS TO NEW CASTLE.—Among the curiosities of the English export business, it may be stated that for some time past one of the Birmingham firms have been manufacturing and exporting trays to Japan. The patterns are designed to suit that market, being chiefly a mosaic of Japanese characters inlaid with gold. The price at which the trays are sold is said to be quite remunerative to the manufacturers. It is thought the trade with Japan in this branch of industry is likely to increase and become permanent. Our American manufacturers should be on the lookout to secure a fair share of the trade which is destined to spring up between this wonderful people and the more advanced nations of the world. It is evident that modern machinery will prove more than a match for the cheapest hand labor that can be found even in the densely populated countries of Eastern Asia.

THE GOLD FIELDS OF JAPAN.—Prof. Henry S. Monroe, of the Imperial college, of Tokio, Japan, has recently made an interesting report upon the gold fields of the Japanese island of Jesso. The results obtained give very little promise of the precious metal being mined to any considerable extent, since the highest average does not exceed 3.77 cents per cubic yard, while in a majority of cases the average is reduced to much below one cent. Such gravel might be worked, if it could be found in deep and extensive deposits, and convenient to plenty of water; but the Japanese deposits are in thin beds of limited extent. Professor Monroe thinks that some of the fields might be profitably worked, notwithstanding their limited depth, the dense vegeteble growth by which they are covered and the inefficiency of the labor at command.

NOTHING now prevents the laying of the track between Los Angeles and Santa Monica but the non-arrival of the ties, which are looked for every day. The 6,000 tons of railway iron brought by the *City of Panama*, will uesily finish the road between the two places.

The Fryer Process.

We received a call this week from one of the gentlemen interested in the much-talked-of Fryer process for working ores, which has been successfully tried on a small scale in Nevada county. Work will shortly be commenced on a larger scale at a place about half way between Nevada City and Grass Valley. The works have a capacity of ten tons per day. The machinery, which is being made at three or four foundries in this city, is nearly done and the boilers and engine are on the ground. It is expected that the new works will start up on the 10th of September, at the latest.

The company owning the patent is composed of twelve or fourteen persons, most of them residents of New York city. Robert M. Fryer is the principal one. Mr. Fryer is not a mining or mill man but is a natural genius and inventor, and a practical workman. The owners of the patent do not regard the process as an experiment at all, being perfectly confident from the tests already made, of its ultimate success. They have asked for no money to help them out, and will first work some mines of their own.

It is contemplated of course, after awhile to sell the right for the process to different parties for a royalty, but at present nothing in this direction has been arranged. In fact, they are not anxious for publicity and intend working their own ores until all their patent arrangements are complete.

Naturally, our informant declines descriptions of the process or hints as to its nature. He simply says the programme is entirely new and they do not utilize any of the machinery now in use, from which we infer no stamps or furnaces are used. Whether the process is based on a method of dissolving out the gold from quartz or not, of course we cannot say. Our informant states they have worked gold ores up to ninety per cent. frequently. In some cases other parties took the ores and results, in trying to find out how the work was done, and found that Fryer had worked the ore up to ninety-six per cent. of assay value. The ore will be worked for about the same price as at present by mill process. The machinery does not cost as much as mills of the same capacity nor are so many men required to help run it. The owners expect as good results from work on a large scale as they obtained in their experimental trial. They are perfectly confident that they can prove their assertions, although they say it makes no difference to them what people think, as theirs is a private enterprise, asking no favors from any one. Of course, of a necessity people will buy the right to use it anyhow. The gentlemen with whom we had the conversation giving us the above information, thinks that by this process hundreds of mines now lying idle, will be worked, as a greater margin of profit will be left by working the ores up to a better percentage. We sincerely hope this will be the case. In the fullness of time we can promise our readers a full description of the new process, that is to say, when the proprietors are ready to make it public.

SHOAL DISCOVERED OFF THE FARALLONES—A notice to mariners issued from the Coast Survey office in Washington states that Lieutenant Commander Taylor, United States Navy, Assistant Coast Survey, searched, June 30 th, for the shoal reported by the Farallone egg company to exist one and one-quarter miles south fifty degrees east, from South Farallone light, on the Pacific coast. In the location indicated no shoal water was found, but on a given hearing, that is south fifty degrees approximately, and distant approximately one-half mile from South Farallone light, a shoal or patch was discovered with six and one-half fathoms of water upon it, sloping down from that to sixteen or eighteen fathoms on the inside. The diameter of the shoal on the ten fathom curve is about fifty yards. Its shape is nearly circular; the bottom rocky; the sea breaking upon the shoal only in exceptionally heavy weather.

DEEP GOLD MINING IN AUSTRALIA.—According to the Melbourne *Argus*, the Prince Patrick company's ground, at Stowell, has been opened with good prospects to a depth of 1,100 feet from the surface. The Magdala company, in the same vicinity, is now working at a depth of 1,600 feet, with a most promising aspect for a much greater depth. The Newington company is down over 1,500 feet. The North Cross Reef, at Stowell, has already yielded $3,000,000. The Prince of Wales company, at Ballarat, is taking very rich rock from their 600 foot level, which is lower than any payable rock has heretofore been found in that district. These and and other recent developments are considered of much importance as giving evidence that rich gold bearing quartz may be found at greater depths than have heretofore been obtained.

THE CENTENNIAL.—Notwithstanding the illustrated criticism upon our Centennial in which many of the English journals have indulged, the manufacturers of England are likely to make a very good representation at our Centennial show. The British Commission is now engaged in the erection of four buildings for the use of English exhibitors.

Belt Compressor.

The exhibition of air compressors and drills by the California Rock Drill Co. in the Fair of the Mechanics' Institute, is one of the most interesting and instructive portions of the exposition. The machinery is of such simple character that it is readily understood by the most casual observer, while the scientist and mechanic will find useful information in the accompanying table, which is compiled as the result of actual tests with the belt compressor. A duplicate of the machine illustrated on our first page has been in operation on the Lincoln mine, Sutter Creek, for the past year, giving entire satisfaction. The belt compressor is a powerful machine, made with separate frames, and may be separated for shipping. It has no reservoir in frame. The diameter of the pulley is 72 inches, face of pulley, 18 in.; diameter of air pump bucket, 14 in.; face of air pump bucket, 12 in.; number of cylinders, 2. With these figures and by consulting the following table an idea may be obtained of some of the excellent characteristics of this compressor.

Number of Cubic Inches of Air Delivered per Revolution at Terminal Pressures per Square Inch of

40 lbs	50 lbs	60 lbs	70 lbs	80 lbs
1008	853	739	652	584

No. of Revo'ns per Minute.	Weight.
80	7,450 lbs

H. P. Developed per Revolution of Crank Shaft at Terminal Pressures, per Square Inch of

40 lbs	50 lbs	60 lbs	70 lbs	80 lbs
0.182	0.206	0.227	0.245	0.257

H. P. Developed per Average Number of Revolutions per Minute at Terminal Pressures per Square Inch of

40 lbs	50 lbs	60 lbs	70 lbs	80 lbs
14.6	16.5	18.2	19.6	20.6

The belt compressor is built by the Delamater iron works of New York city, and sold at the depot, No. 328 and 330 Sansome St., S. F.

Optical Phenomena.

If an object habitually seen in motion, as a water wheel, he glanced at when at rest, it appears to be slowly rotating in the opposite direction, and the illusion is only dispelled by a critical comparison with some object known to be at rest. Again, after looking fixedly at a rotating wheel, or a moving belt, if the gaze be suddenly transferred to stationary objects, the latter, or a portion of them seem to be in motion.

The impression of color may be different in the two eyes of the same person. Sitting at a window with the light shining on one side of the face, and looking with each eye alternately at any object, a distinct difference of apparent color is perceived; the eye which is shaded giving the impression of a reddish tint, as compared with the view from the other, and that this is caused by the different light in which the eye itself is placed, irrespective of the object, is proved by simply turning round so as to expose the other side of the face to the light; in a few seconds the effect is reversed.

COMPRESSOR FOR THE OPHIR.—There was yesterday, says the Virginia *Enterprise*, of the 15th inst., received at the depot of the Virginia and Truckee railroad in this city the first carload of the big compressor for the Ophir, which is on its way here from the East. The compressor is of the largest size ever built, and it will take one or two car-loads yet, or possibly more, to bring it all here. The balance is expected right along, and the whole will then be immediately placed in position.

THE artesian well at the Mint in the city has resulted very successfully. It was sunk under the superintendence of Professor Rodgers, who who has charge of the equipment of the refinery. It is 174 feet deep, consisting of an outer casing twelve inches in diameter, second casing ten inches in diameter, third, eight inches in diameter, fourth, seven and one half, which goes to the bottom. It brings up a constant stream, at a head of about five feet above the surface, of 600 gallons per hour.

THE Nevada *Transcript* states that the mine and mill property of the Marietta company, in Washington township, in Nevada county, has been sold to parties in San Francisco. Preparations are being made to commence operations on the mine on a very extensive scale.

WORK on the Nevada county narrow gauge railroad is progressing very favorably. The tunnel between Greenhorn creek and Bear river is completed for the distance of 194 feet, leaving 100 feet yet to be constructed. Grading from Colfax to the west of Buena Vista ranch has been completed.

PERSONAL.—Mr. Robert M. Fryer, one of the inventors of the "Fryer process," was married in Grass Valley, on the 15th inst., to Miss Ida C. Lauder, of San Francisco. This is but another evidence of Mr. Fryar's unbounded faith in the virgin wealth of the Golden State.

AN important mining suit—H. Summers vs. W. S. Bell, *et al.*—for 3,000 feet of the Flagstaff mine, is now before the courts at Santa Rosa. The ground in dispute is a portion of a very rich quicksilver mine in Pine Flat district.

Opening of the Great Fair.

On Tuesday of this week, the tenth Industrial Exhibition of the Mechanics' Institute opened under the most favorable auspices. The directors were, as usual, "on time" with their preparations; but a portion of the exhibits were, as usual, a little behind; but the most delinquent of these will not be allowed to be many days "after the fair."

The opening exercises were of an interesting and appropriate character; commencing with a grand overture by Schmidtt and Schlotts' celebrated band. This was followed by the opening prayer, delived in an impressive manner by Rev. W. H. Beers. After appropriate music, A. S. Hallidie, President of the Institute, delivered an able and intsresting address, which will be found in full on another page.

When President Hallidie had concluded his address, he introduced to the audience Hon. W. J. Shaw, the orator of the day, who delivered an able oration, which was particularly admired for the distinct and pleasant manner in which it wee delivered and ite happily expressed sentiments.

Although the Fair wae not yet in full working order, the attendance for the first dey was larger than could heve been expected. In the evening, of course, there were a great many more visitors than during the afternoon. The crowd continued to ponr into the Pavilion as late as half-past nine.

The Machinery Department this year will, when completed, be better than ever before arranged at our exhibitions. At present it is in an incomplete state, hut vigorous efforts are being made to etraighten it out. Tuesday night the big engine was not ready to run, so no power was furnished. The little Haekin's engine started up by Parke & Lecy, wes too smell for the requirements, it not being intended for such heavy work. Parke & Leoy's fine large air compressor was put in motion to help run down the steem, and a little engine of their's was also run a short time. This constituted all the running mechinery Tuesday night, hut in a few days this department will he one of the chief attractions at the Fair, and when the competitive triels of the drills, pumps, etc., take place, there will be plenty for those interested in such things to see.

The Art Department is under the supervision of the San Francisco Art Association. This department is intended as a feature of instruction and pleasure combined, so that the student can view the best specimens of art available in San Francisco, the public taste can receive instruction, and all enjoy what they see there. The Art Association has very generously tendered its co-operation with the Institute to this end. The artists of this city, at a meeting called by the Art Association, elected Messrs. Scott Tidball, Pietro Mezzara, S. M. Brooks, Edwin Deakin and Benoni Irwin as a committee to directly cooperate with a committee consisting of Messrs. A. S. Hallidie, Henry L. Davis and P. B. Cornwall, appointed by the Board of Managers of the Institute. The first named committee recommended that Mr. Benoni Irwin be appointed superintendent of the Art Department, and Mr. Malmugreu entry clerk and keeper, which recommendations were adopted by the Board of Managers.

Many public spirited citizens have kindly loaned valuable pictures to he exhibited, and all of our local artists will he represented. Oil paintings, statuary and other works of art have been solicited, and the display will he worthy of the occasion. Special watchmen will be appointed to protect all works loaned for the exhibition and the utmost care will he taken in the handling and the safe return of the same to the owners.

The department of the Art Gallery set aside for photographs, will he well filled as usual. The photographers, having taken considerable interest in the matter, are anxious to have as fine a display as possible.

Not the least attractive feature of the exhibition, is the *Fair Daily*, the publishere of which (no egotism) appear to have fairly outdone themselves in their efforts to provide a guide and instructor to the crowds of people who nightly gather in the Pavilion and from whom the eprightly and well arranged columns meet with a heerty welcome.

We shall continue to keep the readers of the SCIENTIFIC PRESS posted in regard to the prominent objects of interest at the Fair from week to week, during its continuance. Opening under such hrilliant anspices it is not too much to anticipate that the Tenth Industrial Exhibition will far surpass its predecessors, and serve as a worthy reflex of San Francisco's wondrous advance in scientific and mechanical progress.

The first train of wood was taken through the Sutro tunnel on Wednesday. Three cars, containing about one cord each, were made into a train and drawn by one mule. The time occupied in transit from the mouth to shaft No. 2 was less than forty-five minutes. It is estimated that one mule with a driver can haul about twenty cords per day, at a cost to the company of about five dollars, or twenty-five cents per cord. This includes all cost but that of hoisting at the shaft.

IT is said that the great iron steamship, *City of Peking*, is a complete failure. Her condition is such that it will cost $250,000 to get her ready for sea again.

A NEW blast is being erected for the forge of the Chico iron works.

Oakland Gang Plow.

We giva on this page an illnstration of a first-class agricultural implement, Dalton's Improved Oakland Gang Plow.

The general appearance of tha implement is shown in Fig. 1; and, we fancy, both the mechanic and the plowman will be favorably impressed with its atyle and character aa there portruyed. One of the apecial points of merit claimed for this plow is tha spring arrangement, as ahown in Fig. 2. The object of this invention is to afford a simple means, whereby the plows may be easily raised and lowered while at work. The essential features of the device, aa aeen in the illnstration, is a coiled spring, which acts npou a crank axle, turning the latter, ao that the plow may work to a depth of nina inches into the ground, or be raised aeven inches above it; and when it is considered that plows, as now constructed, cannot work to a depth of over four inches and a half without requiring chsnging in some manner, and that it is very difficnlt to lift them while in oporation, the advantages of this device will at once be aeen.

Tha ends of the spring are attached to the crank axle and to the frame of the implement, ao that when tha crank, and consequently the frame, is lowered—thus allowing the plows to enter tha ground—the spring is cansed to wind tightly about the axle. The parts are then held by the lever, *A*, which is attached to the crank and aecured as desired by a simple spring-stop in a notched aro, *B*. To raise the plows so that they may operate at any less depth, or be liftad entirely free of the groand, it is only necessary to releuse the spring through the medium of the lever, *A*. The elasticity of the spring then revolves the axle in suoh a direction as to raise tha frame, and with it the plows, more or less, according to the space through which the said axle is allowed to revolve. A long crank axle can be ueed, and thus a wide range of depth of plowing gained.

The invention is constructed of the *best spring steel*, 2½x¾ inches, and the general conatruction of the whole implement is of the most durable description, all parts being of iron, except the pole, foot-rest and plow, tha latter being of superior cast steel; and for light draft, excellent work, dnrability and style, it has no eqnel in the market.

One of the desirable points in this plow is its adaptability to side-hill work. The cranks are so fastened to the axle, hy set screws, that the plane of the wheels can be changed for plowing on side-hills.

Mr. Dalton has produced his plows in the center of a first-class farming community, so that he, as well as his plows, have been subjected to the severest test and criticism. They have stood these tests for seven years, and the manufacturer has the advantage of knowing just what is wanted as well as being able to produce it.

Parties may obtain illustrated circulars and prica lists by addressing H. N Dslton, Pacheco, Contra Costa county, or Frank Bros., 206 Davis etreet, San Francisco, who have the agenoy for this city.

Progress in the Sutro Tunnel.

The following is the report of progress in the Sutro tunnel, for week ending August 15, 1875:

Number of feet in tunnel, August 7	10,413
Nnmber of feet driven during week	82
Distance in, August 15,	10,495

Details of work performed are as follows, heading being 8x10 feet:

Holes drilled	266
Holes blasted	279
Aggregate depth	1,836 feet
Average depth	6.902 feet
Powder consumed	556 lbs
Exploders consumed	279
Rock extracted	1,268 tons

Rock—Clay and porphyry; soft and dungeroue.

Remarks.—Delayed during week laying track, ten hours; timbering bad ground, five hours.

[Signed] A. Sutro, Gen. Supt.

Notice has been given and recorded in the Recorder's office of Fresno county, of a claim for water right by Wm. W. Smith, John T. Jordan and John Barnell. They propose to take water out of the San Joaquin from the west side of "Irrigation district."

The game laws appear to be poorly observed. Salmon are caught and sold daily in the city out of season. The commissioners should prosecute some of the offenders.

It is rumored that tho Southern pacific railroad company propose extending their road from Anaheim to San Diego.

Senator Jones has purchased in New Haven two elegant palace cars and a director's car for his now railroad.

A resident of Sonoma county has invented a steam wagon which is expected to work a revolution in travel on the road.

The Tehama *Tocsin* has made its appearance. Published at Tehama, by Jernegan and Peabody.

It is expected that the Chico water works will be in operation by the close of the week.

Mechanics' Fair.

Address of Presidenl A. S. Hallidie,

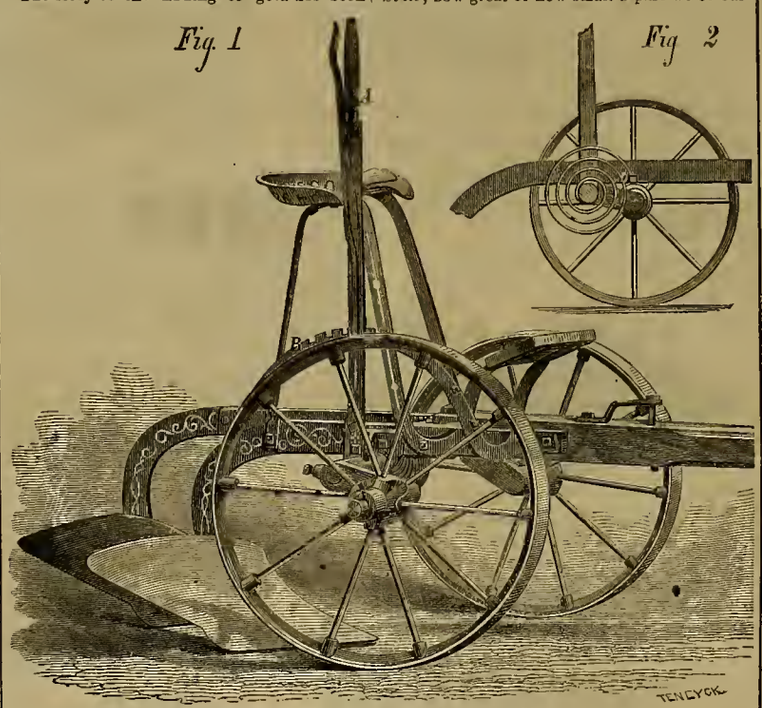
Delivered on the occasion of the Opening of the Tenth Indgstrial Exhibition of the Mechanics' Institute in San Francisco, August 17th, 1875.

Ladies and Gentlemen, Members of the Mechanics' Institute: When California came into the Union, she could little have foreseen her future, much less could ahe have conceived what her influence would be on the civilization of the Pacifio contineots.

During the struggle with Mexico, which terminated by tho cession of California in 1847, to the United Stetes, this territory was not looked npon as uvailable by the people; it was considered hut an outpost of protection against invasion from the Pacifio ocean side, and a natnral western bonndary of our common country. Oregou was better known and understood; it was there the Astors and others cast their eyes, and who either sent out agents or wandered there themselves, in search of wealth and novelty.

That powerful magnet, gold, was yet dormaut, its powers lateut, and California could scarcely have anticipated, from the character of the Argonauts who oame a little later, that they were the precursors of the people of the present day; without that discovery of gold, under the peculiar circumstances of the acquisition of this territory hy the termination of the war with Mexico, California would have been but little kuown and less considered.

The story of the finding of gold hss been



DALTON'S PATENT GANG PLOW.

oft told, in many different ways, and as it is a subject that interests us all, I cannot refrain from telling it as it wss told to me hy William Scott, a millwright, whose acquaintance I made in 1854, and who started for Oregon about 1845, brought up at the south fork of the American river in 1847, and was employed by James Marshall to aid in constructing the saw mill that was being erected for Capt. Sutter at that place, Coloma; those who knew Bill Scott, as he was called, can vouch for his truthfulness, and I have never doubted his ststement.

He said, "Marshall and myself had often had some talk about gold being in the surrounding country; I had no faith in it, but Marshall was enthueiastic, so much so thst many of us made fun of him. One noon I was sitting on my bench, when Marshall, who had been down in the tail race, thut was being cut out by the river, which had been turned in for the purpose of sluicing off the dirt, came up to me, with his old hat in his hand, and a smile all over him, and said, 'Bill, I have found it!' 'Found what?' I said. 'Found some gold', he answered; and from the bottom of his hat he took a piece of stuff that looked to me like brass, and I told him so. I thought it wss a piece of a brass kettle that some of the Indians had been using and had got melted down and run into the gravel. The other boys agreed with me that it was not likely to he gold; but Marshall said he had seen that stuff before and he knew whut it was. It was finally decided that as Mrs. Weimer was making soap, that it should be plsced in the lye over night and if it should not oxidize on exposure to the air they would believe it to be gold."

The rest of the story is well known, and Mr. Marshall is, I believe, in receipt of the priucely sum of $100 per month, granted to him in his old age by the State of California for this discovery.

Under no other influence thsn that arising from the presence of gold in large quantities easily obtained could California have acquired eo sudden an increase of population. Its wouderful agricultural capabilities, its genial climate and glorious scenery, might have been the subject of ever recurring praise and song, but, as compared to the power of its gold fields, would hava fallen dead and cold before the people. And tho extraordinary combination of eveuts that resulted in tha rapid absorption of the country by the American people, can he looked on, by the olose thinker, only in awe, and as the determination of Providence for some high destiny, the law of which we must be careful not to violate.

We see across the Pacifio, as far south as the equator as we are north, a conntry that has developed itself as rapidly and as vigorously under similar circumstances; could successful sheep raising and wool growing, alone, have given Australia in 23 years a population of near two million of souls? No, sir, it requires other means to bring sbout that end; in that case, as with California, it was the inducement offered by the gold discovory that made men ambitious to be better off, und took them to these uuknown lands; and without which we would not to-day be inaugurating our decennial Exhibition in the city of San Francisco.

Our decennial Exhibition reminds us thst time is creeping on, but in the time that has passed, the Mechanics' Institute has been doing somo service in the interest of the State, and which it is to be hoped may be but the beginning of the work it will yet do in the cause of progress and civilzation.

It is 18 years since the first Indnstrial Exhibition was held, snd 18 years is a good share of the 25 this State has been in existence as a State; how great or how small a part we of California may take in the programme of coming eveuts depends entirely upon how well we provide for thst future in looking closely after the present in retaining and cultoring the better part of ourselves, and discarding the worse. Let us not flatter our higher self or attempt to deceive purer thought, with the srgument of our relative value as compared with communities we know to be worse, or discouraging hope or faithful effort by depreciating that whicb is good among us, if we would make it better.

San Francisco has had the experience of a century crowded into 27 years, and it would be curious indeed if errors had not occurred, hut their occurrence is no excuse for recurrence, and we should take advantage of our experience by uvoiding these very rocks ou which so many are wretchedly wrecked.

But if you are disposed to take a gloomy view of affairs, and tremble within yourself, through your forebodings of the future of our western city, I pray you visit this Exhibition, and reason with yourself from what you see here; and if you do not find that which will fill your heart with hope, and your hope with confidence, I shall believe that your vision is defective and miud unappreciative.

Admitting the existence of all tbat which is discouraging in its bearing upon the solid moral future of California, the csreful observer cannot have fuiled to discover the strong substratum of materiul better than else where, that exiets below the surfaco of society and on which we will and must huild, in order to raise up a community possessing those qualities that will command attention and respect.

Public sentiment may start from a wrong hypothesis and commit a mistake for a time, bnt it invariably adjuets itself to the truth, and in the end is never wrong.

Industry and faithfullness is always in accord with public sentiment, and without these, no people can flourish any more then can a fruit tree rotten in the core.

San Francisco does not lack this essential quality, although recently there hava been many examples of unfaithfulness thet might meke the community stand aghast. And whether these derelictions are in the higher or humbler walks of life, whether with the day laborer, confidential clerk, or prond merchant, they should receive their full and equal share of jnst retribution. When a mechanic uses inferior aud improper material in his work, for tha purpose of meking a trifle mora profit on the job that has been given to him in good faith, he is as much a swindler and a fraud as the merchaut who spends his creditor's money in illegitimate stock speculations, or the clark who violstes the confidence of his employer.

The best evidence of the material growth of this city is the development, year by year, of many new industries, and the increasiug success of those already established, and as this is our decennial Exhibition it may be appropriate to draw some comparisons between ten years ago and now. For instance: The population of this city ten years ago was 112,700; now it is 230,132. The total assessshle property in San Francisco ten years ago was $80,736,165; to-day it is $264,116,294. In 1864 the average attendance at the public schools was 5,776, or thirty-nine per cent. of the averege enrollment; for 1874 the averege attendance was 19,381, or 96.3 per cent of the average enrollmont. In 1864 5, 2,096 vessels, huving a tonnage of 139,190 tons, arrived in this port; ten years later 4,236 vessels arrived, having a tonnage of 1,625,544 tons. Ten years ago we exported merchandise to the value of $13,271,752 and our exports of merchsndise for last year was $27,441,611. In 1864 our total exports of wine only amounted to $41,931; in 1874 we exported wine to the value of $399,663. Ten years ago California exported 425,221 centals of wheat, valued at $771,963; last yesr, whieh was not one of the best, we exported 8,044,279 centals of wheat, valned at $14,125,541. Which latter item shows thst California has added somathing to the bread of the world, and being sent off by sea, has literally been "cast on the waters" and undoubtedly will bring forth good fruit in due time.

The three leading libraries in this city had in 1864 an aggregate nnmber of 41,620 volumee; they now possess 89,055 volumes I need not say that this fact is strong evidence of the substantial advance of thought and better culture, and is second only to the school statistics given above. If these librariee could be concentrated into one grand, free public library, it would be a still greater source of congratulstion and pride.

But returning again to the actual industries, and taking up the the department of metal working, and that portion of it carried on hy the leading foundries, I have obtained the following facts:

	1864	1874
Number of Foundries from which I have returns	13	19
Number of Hands Employed	835	1,385
Tons of Metal Melted	5,752	17,738
Value of Plant	$ 425,000	$1,290,000
Business Done	1, 823,000	4,204,000

These statistics could be extended until they became tiresome, but sufficient is shown to demonstrate the status of the city of San Francisco of to-day as compared with San Francisco of ten years since; giving evidence that none of her better institutions have decayed during the last decade.

The influence that California has exercised upon the chanuels of the commerce of the world, has been very marked, and will undoubtedly be still more so in the future. The diversion of the tea trade; snpplies to the China Empire; the developing of Japan; the new business relations with Australia, and the establishment of such an important entrepot as San Francisco, are hut a part of the many important obanges so far wrought out.

When California can claim a population equal to that of Ohio, and when San Francisco has 700,000 inhabitants, possessing its own water and gas, having its affairs well administered by faithful officers, and ite institutions of learning and political economy on firm foundations, its influeuce will directly control the trade between Western Europe and Eastern Asia, und through that influence she must have an important bearing on the commerce of the world.

But it is not the influence that San Francisco or California may exeroise on the commerce existing between foreign nations, thst will make her great and prosperous, it must be on interual development, and growth of the natural resources, material industries, and character of the people. What I consider essentisl to the stable prosperity of San Francieco, is to educate the people in the fundamental principles of political economy; to encourage the manufacture of every thing that can be made to advantage here, and it is well to go beyond this, and experiment in those branches of mnnufactures whoee success may seem even doubtful; to offer facilities for trade tuition, and in which so much has been done elsewhere and so little here; to provide rudimental education for all in the fullest sense; to make lszinese abhorrent; to punish unfaithfulnees and peculation, and by the unswerving punishment of offenders, set a high standard for the rising generation; to provide means of intellectual enjoyment for those whose daily labor is their only capital; to extend the influence of free libraries, of free lectures, and of all institutions of culture and lesruing; and not least among these, to periodically gather together, evidence of the industry and the

(Continued on Page 124.)

Banking.

The Merchants' Exchange Bank
OF SAN FRANCISCO.

Capital, Five Million Dollars.

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H. F. HASTINGS.....Manager.
R. N. VAN BRUNT.....Cashier.

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Allow interest at the rate of Four per cent. upon daily balances of Gold and Currency.
Receive consignments of Gold, Silver and Lead Bullion, and make Cash advances thereon.
Invite Correspondence from Bankers, Mining Companies, Merchants and Smelting Works.

French Savings and Loan Society,

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4v27tf G. MAHE, Director.

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ATTORNEYS AND COUNSELORS AT LAW
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429 Montgomery Street,
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Sm Ve Instruments made, repaired and adjusted
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WM. BARTLING. HENRY KIMBALL.

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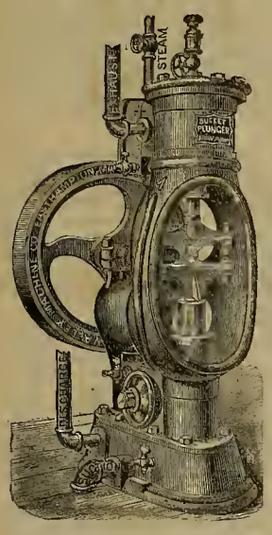
Miscellaneous Notices.

PARKE & LACY,
310 California street, San Francisco



BUCKET-PLUNGER STEAM PUMP.
ALWAYS RELIABLE.
Sole Agents for WRIGHT'S

SAN FRANCISCO
Pioneer Screen Works,
Removed to 32 Fremont Street, near Market.

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J. W. QUICK.
Manufacturer of perforated sheet metals of every description, at reduced rates. Mill owners using Battery Screens extensively, can contract for large supplies at favorable rates. This is the only establishment on the Coast devoted exclusively to the manufacture of screens

Diamond Drill Co.

The undersigned, owners of LESCHOT'S PATENT for DIAMOND POINTED DRILLS, now brought to the highest state of perfection, are prepared to fill orders for the IMPROVED PROSPECTING and TUNNELING DRILLS, with or without power, at short notice, and at reduced prices Abundant testimony furnished of the great economy and successful working of numerous machines in operation in the quartz and gravel mines on this coast. Circulars forwarded, and full information given upon application.

A. J. SEVERANCE & CO.
Office, No. 315 California street, Rooms 1 and 2.
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Averill Chemical Paint,
MANUFACTURED BY THE
Cal. Chemical Paint Co.

PURE WHITE, AND ANY SHADE OR COLOR.

This Paint is prepared in liquid form, READY FOR APPLICATION—requiring no thinner or dryer, and will not spoil by standing any length of time.
It is Cheaper, more durable, more Elastic, and produces a more Beautiful Finish than the best of any other Paint.
It will not Fade, Chalk, Crack, or Peel off, and will last twice as long as any other Paint.
In ordering White, state whether for Outside or Inside use, as we manufacture an Inside White (Flat) for inside use, which will not turn yellow, and produces a finish superior to any other White known.
Put up in ¼, ½, 1, 2 and 5 gallon packages, and in Barrels. Sold by the Gallon.
For further information send for Sample Card and Price List, or apply to the office.

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FACTORY: Cor. 4th & Townsend Sts. SAN FRANCISCO, CAL.

3v9-cow-bp-1y

AMMONIA!
For Washing and Cleaning Purposes.

For Sale by all Grocers.

This article is universally used in Europe, and, recently introduced for general family use in San Francisco and neighborhood, is already in great demand. It is now the intention of the manufacturers to introduce it all over the Pacific Coast, at prices which will bring it within the reach of every household.
It is unequalled for cleansing Woolen Fabrics, Cutlery, Carpets or Crockery; for Scrubbing Floors, Washing Paint, Removing Grease Spots, Shampooing or Bathing.
It renders water soft, and imparts a delightful sense of coolness after washing.
DIRECTIONS.—For Laundry, use two to four tablespoonfuls to a washtub of water. For bathing, use one tablespoonful in the bath tub. For removing grease spots, apply with a brush, undiluted, and wash with water afterward. For stimulating the growth of plants, use a few drops in every pint of water used in watering.
PRICE.—Per Pint Bottle, 25 cents; per quart Quart Bottle, 40 cents; per Half Gallon, 75 cents.
Also, SULPHATE OF AMMONIA for chemical purpose, fertilizing, and the preparation of artificial manures. AMMONIACAL PREPARATION, for the prevention and removal of boiler scale. CRUDE AMMONIA, for general manufacturing, and PURE LIQUOR and AQUA AMMONIA for chemical and pharmaceutical purposes.
☞ Manufactured by the
SAN FRANCISCO GAS-LIGHT CO.
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Manufacturers of Files of every Description
Nos. 39, 41 and 43 Richmond street,
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Sold by all the principal hardware stores on th Pacific Coast. 18v25.1y

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SIGN PAINTERS,
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Persons engaged in the following business can have their Signs Painted at contract prices, for goods or articles in which they trade, viz:

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Bootmakers,	Furniture Dealers,
Hatters,	Jewelers,
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Wine Merchants, Etc., Etc.

JOHN THOMSON. JOHN B. PARKER.

THOMSON & PARKER,
(Formerly with David Stoddart,)
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ENGINEERS and MACHINISTS,
MANUFACTURERS OF
STEAM PUMPS, STEAM ENGINES,
And all kinds of Machinery.
REPAIRING PROMPTLY ATTENDED TO.

Bronze Turkeys
Gobblers, 30 to 40 pounds. Hens 15 to 20 pounds.

Emden Geese
40 to 50 pounds per pair at maturity.
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EGGS, fresh, pure, packed so as to hatch after arrival on any part of the Coast. For Illustrated Circular and Price-List, address
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Highest cash prices paid for all kinds of Machinery.

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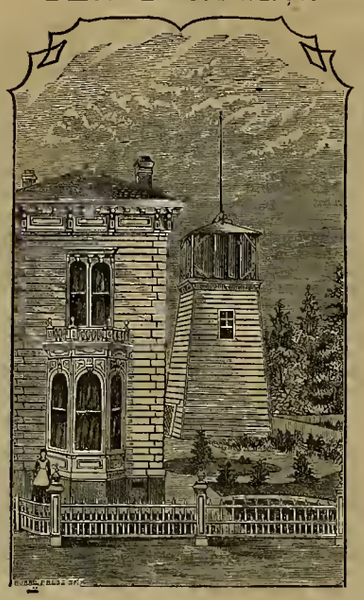
THE TURBINE.



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The Inventor of the Dexter Windmill has made new and useful improvements in Windmills, patented March 16th, 1875, and now feels confident of having the SIMPLEST, CHEAPEST, MOST DURABLE, and
ONLY PERMANENT WINDMILL
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SIMPLEST, because it is less complicated; CHEAPEST, because it never needs repair, standing on a firm foundation; MOST DURABLE, because it is all under cover, and has less rigging to get out of order; ONLY PERMANENT, because the only Windmill in the world that has never been injured by storms. Hundreds of people, who have thought the Dexter perfect, will be glad to observe the SUPERIORITY OF THE TURBINE over all predecessors. Although much improved, the price of mills remain the same as formerly. Persons who study their own interest will investigate the TURBINE before purchasing any other.
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Mills built to order of the best material, and at the shortest notice, by Kimball Manufacturing Company, corner Fourth and Bryant streets, San Francisco. Any orders sent to their address will receive prompt attention.
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Clear Creek Co., Col. Territory,
And now owned by the
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—WILL BE OFFERED—
For Sale at Public Auction
On the 28th day of August next, unless previously disposed of by private contract:

BRICK BUILT MILL,

Main building 140x80, two wings, each 75x50, containing Reverberatory Furnace (capacity 10 to 12 tons per diem) and double hearthed Calciner, two Dodge Crushers, Ball Pulverizer, Sample Grinding Machine, two Force Pumps, Circular Saw, and all other necessary implements for smelting. Laboratory and assay tools, house and office furniture. Machinery run by water power. Large, well built

BOARDING HOUSE,

(Furnished,) and two small detached dwelling houses

Extensive Water-Power Flumes, Etc.

Mill Site, Containing about 10 Acres.

Valuable Pyrites Mine,

Adjoining mill property, claim owned to the extent of 1,900 feet. Ore, copper and iron pyrites carrying gold and silver, a most valuable flux in smelting.
Situation of property on main road, midway between the silver ore district of Georgetown and present terminus of the Colorado Central Railroad, at Floyd Hill. Several gold and silver mines in the immediate vicinity. Supply of water unlimited. Good wood in abundance within three miles. Works most conveniently situated in every respect. Further particulars to be had by application to
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Wanted, by a thoroughly practical mill man, a situation as First Engineer, Foreman, or General Manager. Is an engineer and machinist by trade, and has a fair knowledge of assaying, melting, etc. Apply to A. M. KRUTTSCHNITT,
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—AND—
Chemical Apparatus,
Having been engaged in furnishing these supplies since the first discovery of mines on the Pacific Coast.
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Ores worked by any process.
Ores sampled.
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Plans furnished for the most suitable process for working Ores.
Special attention paid to the Mining and Metallurgy of Quicksilver.

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RODGERS, MEYER & CO.,
COMMISSION MERCHANTS,
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On all kinds of Ores, and particular attention
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MANUFACTURERS OF
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Having the Latest Improved Machinery, we can make it an object to
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OR
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To Contract with us for
SHEET-IRON PIPE.
All Sizes Made and all Work Guaranteed
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OREGON PILE CURE.
To those suffering from Piles—External, Internal and Itching Piles: You can be cured, as hundreds of others have been. Send for Circular and see undoubted testimony. Will send sample bottle for $1, or 6 bottles for $5.
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EXTRA HEAVY AND IMPROVED PATTERNS,

UTNAM MACHINE CO.,

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PES, PLANERS, BORING MILLS, DRILLS, BOLT CUTTERS, DOUBLE NUT TAPPING MACHINES, SLOTTING AND SHAPING MACHINES ON HAND. GEAR CUTTERS AND MILLING MACHINES A SPECIALTY.

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FOR QUARTZ MILLS,

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Examination solicited.

The Ingersoll Rock Drill.

his Drill is used extensively in the Eastern States and all Foreign Countries.

IT CAN BE RUN WITH

ESS POWER, LABOR AND REPAIRS,

—AND—

DO MORE WORK

HAN ANY OTHER DRILL IN THE MARKET. THE

Automatic Feed

an important feature, as it saves labor. We ask for a ial against any competitor. For information regarding the same, send for circular to

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Cor. Clay and Front streets, San Francisco.

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ACHINES

UNIVERSAL WOOD WORKERS

TRADE MARK

WOOD WORKING MACHINERY.

BENTEL, MARGEDANT & CO.

HAMILTON, OHIO.

Send for Catalogue and Price List.

"DEAD STROKE" POWER HAMMER.

IMPROVED ADJUSTABLE CRANK PIN.

STRIKES BLOW HEAVY OR LIGHT, FAST OR SLOW.

Prices Reduced Jan. 1st, 1875.

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CRANK PLANERS.

(Superior Design and Workmanship, Extra Heavy (1400 lb.) DOWN, ANGULAR & CROSS-FEED, TO PLANS IN ENGLAND.

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MACHINE WORK BY CONTRACT.

Estimates given for Special Work of every description. Are fully equipped with first-class Machinery and Tools.

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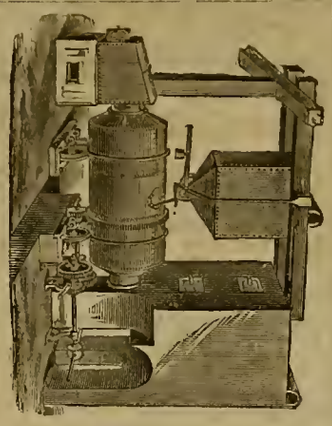
TEATS' PATENT FURNACE.



TEATS' PATENT FURNACE

For Roasting, Desulphurizing, Chloridizing and Oxidizing Ores, etc. For the reduction of Gold, Silver, Lead and other ores, saving a larger percentage, at less cost, than any other invention now in use. Chloridizing Silver ore more thoroughly, in less time, with less fuel, salt and labor; also roasting Lead ore preparatory to smelting, better and cheaper than any other invention. The Furnace is so constructed that one man, of ordinary ability, tends five or more furnaces; controls them with ease; adding heat or air; stopping or starting at will; charging and discharging with ease. Also, Patent "Conveying Cooler," for conveying and cooling roasted ores, heating the water for amalgamation and the boilers at the same time. Saving the large space in mill (covered with brick or iron), and the labor of two men per day, exposed to the poisonous chlorine gases. Also, Patent Air Blast "Dry Kiln," for drying ores direct from the mine or breaker, saving fuel and labor heretofore necessary in drying ores for dry pulverizing. For description refer to MINING AND SCIENTIFIC PRESS, No. 18, October 31, 1874. For particulars address

D. B. MILLER & CO.,

No. 12 West Eighth Street, Cincinnati, Ohio

Circulars, &c., will be furnished, if required.

18v29-3m

BAKER'S

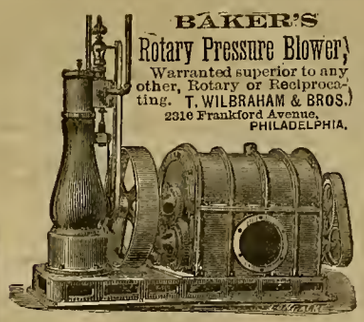
Rotary Pressure Blower,

Warranted superior to any other, Rotary or Reciprocating.

T. WILBRAHAM & BROS.,

2316 Frankford Avenue,

PHILADELPHIA.



For Smelting Works, Foundries,

—AND FOR—

Ventilation of Mines.

Full stock always on hand.

J. C. SENDERLING,

Sole Agent for Pacific Coast, 32 Fremont Street, S. F.

1am-16p

"THE DANBURY"

DRILL CHUCK.

The Favorite Everywhere.

Send stamp for circular.

The Hull & Belden Company, Danbury, Ct.

P. S.—These Chucks are now on hand and for sale at manufacturer's prices by

H. P. GREGORY, Agent,

Nos. 14 & 16 First Street, S. F.

LANE & BODLEY,

John & Water Sts., Cincinnati.

Sole Manufacturers of Bruckner's Patent

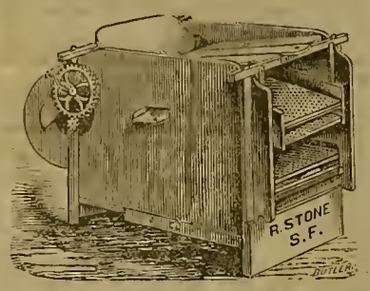
REVOLVING FURNACE

For Chloridizing, Desulphurizing and Roasting Ores. Steam Engines and Mining Machinery.

☞ Send for our Illustrated catalogue.

THE PATENT

Novelty Mill and Grain Separator

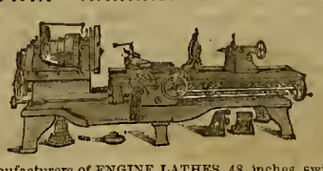


Is one of the greatest improvements of the age for cleaning and separating grain, while it combines all the essential qualities of a first-class Fanning Mill. It also far excels anything that has been invented for the separation of grain. It has been thoroughly tested on all the different kinds of mixed grain. It takes out Mustard, Grass Seeds, Barley and Oats, and makes two distinct qualities of Wheat if desired. For further information, apply to

R. STONE,

eowbp 422 Battery street, S. F.

EDWIN HARRINGTON & SON,



Manufacturers of ENGINE LATHES, 48 inches swing and smaller; VERTICAL BORING MACHINES, suitable for jobbing and boring Car Wheels; UPRIGHT DRILLS, 36 inches and smaller, and other Machinists' Tools.

COR. NORTH FIFTEENTH ST. AND PENNSYLVANIA AVENUE, Philadelphia, Pennsylvania.

IRON AND STEEL

DROP FORGING.

Of Every Description, at Reasonable Prices.

The Hull & Belden Company, Danbury, Ct.

LEVI, STRAUSS & CO.,

Patent Riveted

Clothing,

14 & 16 Battery St.,

San Francisco.

These goods are specially adapted for the use of FARMERS, MECHANICS, MINERS, and WORKING MEN in general. They are manufactured of the Best Material, and in a Superior Manner. A trial will convince everybody of this fact.

Patented May 12, 1873.

USE NO OTHER, AND INQUIRE FOR THESE GOODS ONLY. eow-bp

The National Gold Medal

WAS AWARDED TO

BRADLEY & RULOFSON

FOR THE

BEST PHOTOGRAPHS

IN THE

UNITED STATES,

AND THE

VIENNA MEDAL

FOR THE BEST IN THE WORLD.

No. 429 Montgomery Street,

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WIRE ROPE

For Mining, Shipping, and General Purposes.

All kinds and sizes on hand, or made to order; guaranteed of unsurpassed quality, and manufactured of any length. FLAT ROPES, ROUND ROPES and TAPER ROPES, of IRON OR STEEL.

Patent Endless Wire Ropeway

(WIRE TRAMWAY,)

FOR THE RAPID AND ECONOMICAL TRANSPORTATION OF ORES AND OTHER MATERIAL OVER MOUNTAINOUS AND DIFFICULT ROADS.

This system has been in use for over three years, and given thorough satisfaction.

PATENT GRIP PULLEY,

For transmission of power by means of wire ropes

WIRE.

Fencing Wire and Staples,

ALING WIRE,

SPRING WIRE,

GALVANIZED WIRE,

BROOM WIRE,

STEEL WIRE,

COPPER WIRE,

BRASS WIRE,

And Wire of all kinds, on hand or made to order.

SOLE AGENT FOR

Richard Johnson and Nephews' Celebrated Telegraph Wire.

Full stock on hand in bond, or duty paid.

Wire Cloth and Wire Netting.

FULL ASSORTMENT ON HAND FOR ALL PURPOSES, AND

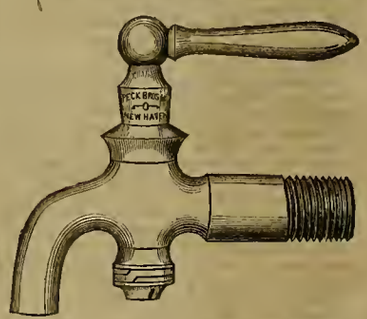
All Kinds of Goods in the Wire Line.

Send for Circulars, Etc., to

A. S. HALLIDIE,

2am 113 and 115 Pine Street, S. F.

IRON PIPE



Pipe Fittings & Brass Goods,

AT BOTTOM PRICES.

JAMES L. BARKER,

406 and 408 Market street, San Francisco.

☞ Orders by mail will receive prompt attention.

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SANBORN & BYRNES.

STAIR BUILDERS.

Mechanics' Mills, Mission Street,

Bet. First and Fremont, San Francisco. Orders from the country promptly attended to. All kinds of Stair Material furnished to order. Wood and Ivory Turners. Billiard Balls and Ten Pins, Fancy Newels and Balusters. 25v8-8m-bp

WOODWARD'S GARDENS embraces an Aquarium, Museum, Art Gallery, Conservatories, Tropical Houses, Menagerie, Seal Ponds and Skating Rink.

(Continued from Page 121.)

genins of the people, as we find in these Industrial Exhibitions.

It is a source of gratification that amidst all the excitement of life in California, and the close attention onr people pay to practical affairs of money making, and money losing; there is a satisfactory amount of energetic brain work done in improving and inventing; and California stands seventh in the list, for petents granted, in propartion to its population.

From the report of the Commissioner of Patents for 1874, the totel nnmber of patents granted in the United States was 13,599, of which California received 1,861, or 14 per cent.; Connecticut is ahead of ell other States, having received 668 patents, or 1 to 304 of its population; while Alabame is behind, having 39 petents, or 1 to 25,564 of its population.

There is an average of one patent granted to 2,956 persnns in the United States; and although Californie is doing pretty well in this respect, yet she is beat by Colorado, New York, New Jersey, Rhode Island, Massachusetts and Connecticut. But she has produced many valuable inventions, some of which can be found on exhibition in this building, and let me urge the good citizens of San Francisco to persuade yonng men to come here, with the spirit of enqniry and research, and a determinetion to imprint and fix in their minds, that which will awaken a desire to improve.

A clear brain awaking to an appreciation of the true principles that nnderlay invention, by being bronght in contact with, and surrounded by, snch results as he finds exhibited in this bnilding, oannot fail to draw from them an inspiration that will develop genius, and may impel him in the front ranks of the inventors of the present age.

The lessons of Industrial Exhibitions cnnnot be told in a short address like this, bnt there is one reflection that forces itself on my mind, and thet is this: if such results as you find in these Exhibitions, are produced by the unaided genius of the people, whet would be the results, if some mode of tnition, as adopted by the Germans, Swiss nnd French, bnt adapted to the temper aud need nf our people, was succ cessfully established here; some scheme of trede tuition and professional teaching that the active brain of Jamee Lick has evidently in contemplation? To thie there can be but one conclusion, which ie, that Americau skill aud geniue would occupy the first rank among all civilized nations.

In my recent vieit to Enrope, at the center of English manufactnring, in Manchester, Birmingham, Glescow, and other pleces, Isaw many works, partly, or entirely furnished with meohinery of American invention, nnd nntebly one case in Manchester, where there is a new screw wnrks jnst etarted, and which is fitted up with machinery entirely of American invention and Americen meke; and at the iron furneces, the Banke rotary pnddler and its modification are largely in use; while in the railroad, the Westinghouse air brake hes compelled ite own introduction, and in recent teste between rivel railroad brakes has come off trinmphantly. The Pullman cer, also, has at last forced its way in English railroeds and is admitted by the people there to be a great improvement and luxury.

I remember when on a visit to Europe eight years ago, sewing machines were looked on with horror; to-day the nnmber of eewing mechines made in England is almost incredible; Wheeler and Wilcon, Grove and Beker, and Singer, and other manufacturers have immense works in different parts of Great Britain, turning ont American ideae by wholesale. If these machines could weave a thread of true Americ-an liberty throngh the minds of the people, freeing them ee it hae freed the shackles nf the poor sewing woman, it would indeed oarry out its mission of usefulness and philanthropy.

The introduction there of American invention and ideas, is largely due to the great industriel exhibitions held in London, Paris and Vienna, and to each nf which the United States hae oontributed snmething, but in all cases has been overshadowed by the local industries and interests of the oontrolling nowers.

Next year the netinns of the world will send their contributions to the International Iudustriel Exhibition, that will open in Philadelphia, under the anspices of the General Government, and in commemnration of the nne hundredth anniversery of this nation's birth. It is no ordinary occesion, and to the mechanics, mnnufacturers and people of California, I venture, as a Californien and a mechenio, to appeal to you and your petriotism, to your recnllection of the dark deys of the uetion's birth, when the Declaretion of Independence was proolaimed, and this struggling oonntry merged from a stete of helplessnesss and dependence into thet of relienoe and abeolnte independence; that as your forefathere in 1776 struggled and triumphed in the battle of life end gave this nation a position and an existence, eo you, with that same indomitable spirit and determinatiou, may fight the same battle over again in the struggle for domination in the industries of the world among civilized netions, and trinnph at thie eecond, '67 the ceutenniel of the nation'e birth, on the same battle ground, in the feir city nf Philedelphia.

We are now advancing well into the year 1876, and while the greater pert of the country ie moving in the metter of the hnndredth anniversary of thie nation's birth, California, young California is, reticent, inactive and indifferent.

But California oannot efford to be behind in the rece, with her vitelity, her genius, her resources and good, hard sense, she mnst take that rank among the States represented that belongs to her.

With the seme tact and ability to mold things well and apply them to good use that Celifornia has displayed heretofore, ntilized at the coming Centennial she will stand pre-eminent as a State among States.

Philedelphia, as tho theatre of the nation, will prodnce no ordinary show, no common pegeentry, in 1876; there esch of the leaning nations of the world will throw its sonl in the struggle for mastery, and woe to the nation that fails. All the nations of Europe will meet on common gronnd; the advantage that Paris gives to France, London to England, Vienna to Austrie, will be lost there. Their host will be the youngest among them, and e gient, if his prowess is not weakened by bad council or apathy.

But we misteke our competitors if we think to find weak antagonists. France, England, Germeny, Belgium, produce artificers equal, in every respect, to our own, and to the Centennial Exhibition they will send the best results of their best skill, and will send their most skillful hands and appreciative brains, to find out the best stnff that is in us.

And what if we are disgraced? How much has California done to avert such a disaster, or to render impossible such a result?

Yonr representatives and those of the other States, decided thet in order to meet the outlay necessary for such an undertaking as proposed, the people of the United States ought to contribute twenty-five cents each. Californie's share was $117,000; she has so far contributed about $3.000.

Congress believed that the one hundredth anniversary of the nation's birth would be hailed with joy and enthusiasm by the whole people, and, in antioipation of this event, public getherings and meetings would be held throughout the oountry. Have yon heard of public meetings in California, or of enthusiasm? The general government and the Centennial Commiesioners thought thet when the people of a State in their individnal cnpacity did not take up its quota of subscription, that the State Legislatnre would make some provision to secnre the success of the Centennial Exhibition. The Legislature of California failed to meke any snch provision. If in the race we run behind, let it not be said that California fettered the rnnner instead of giving wings to hie heele.

Surely some decided means shonld be taken to carry our share of this work, and I am sure that if the people of California will take hold of this matter, in the spirit and manner they have done in timee gone by, on similer occasions, all will be well, and California will ocoupy the proud position she ie entitled to.

The managers of this Industrial Exhibition start in with an indebtednese of eome $70,000, $50,000 of which ie owing to public spirited citizens, who lnaned money without interest to erect thie building. In order to remove this indebtedness and to meet the current expensee of the Exhibition, there ehonld be realized about $100,000; whether thie is realized or not depends upon yonr liberality and patronage.

The menagers have endeavored to bring all the deteils of this exhibition up to the standard of those of former fairs, and in that, I think they have not failed; the oollection of machinery is greater than heretofore, and the character of manufactured goods ie superior. The exhibits in the department of fine arts, the arrangement of the garden and many other parte will beer comparison with those of former years.

Although abont 16,000 feet have been added to the exhibiting space, this has been all absorbed, and exhibitors have been reduced in their epecee fully twenty-five per cent., in order to ecoommodate those who desire to enter goods for exhibitiou.

At an early dey the judges of awards will make their examinations for the purpose of awarding the premiume, which will oonsist of gold and silver medels, the society's diplomes end certificates.

No goods can be entered for competition unless they are in place by the 20st inst., except in the department under the auspices of the Wine Growers' Assooiation, where the time for entries for competition is set at September 1st.

The number of exhibitors exceede that of last year thirty per cent., and although, as usual, they are backward in fitting up their etands, a very few deys will bring order out of cheos. It is expected the Exhibition will continne open about forty days, and I do not doubt bnt that every citizen of San Francisco will vieit it et least once, and leave with a feeling of pride in our mechanics and artisans, then whom no city can produce better, and if there is one time more than another, that I rejoice thet I too am a mechenic, it is when I look aronnd this vast buildiug and witness the trinmphs of their skill and genius.

Taken internally, Dr. Pierce'e Componnd Extract of Smert-Weed, or Water Pepper, relievee, almost instantly, pein in etomach or bowels, crampe and spasme. There is nothing that compares with it for Diarrhœa, Dyeentery, Cholera and Cholera Morbus. Ueed externally, it is a valuable liniment for both men and beast. It ie the people'e friend and all should keep it with them, in fact, so conveniently near thet they can put their hand upon it in the dark, if need be. It is sold by all deelers in medicines.

SUNSCRIBERS are requested to examine the printed address on their papers. If mistakee occur *at any time* please report them to this office. The last figures (at the extreme right) represent the year that your subscription is paid to. Next to these the day and month is represented. For instance, your subscription being paid to July 4th, 1876, it would be represented, viz: jul 4 76; or 4|176; or jul 4,76.

General News Items.

JEFF. DAVIS was invited to deliver an address before the Agricultural society in Rockford, Illinois, but popular indignation thereat, compelled the committee to cancel the engagement.

BLACK & CURRIER, members of the late Boston shoe firm, heve each been sentenced to fourteen months' imprisonment for fraudnlent bankruptcy.

ALEXANDER HAMILTON, one of the surviving sons of the eminent Secretary of the Treasnry under Washington, died in New York on the 2d instant, at the age of 90.

GOLDSMITH MAID was beaten at Rochester, New York, last week, by Lulu; the latter trotting the three best consecutive heats on record, viz: 2:16¼; 2:15½; 2:17.

COMMANDER Morris, who had command of the *Cumberland* when she wes sunk by the *Merrimac* in Hnmpton roads, is dead.

EXAMINATION of the affairs of Duncan, Sherman & Co. show: Liabilities, $4,910,138; assets $2,885,852.33.

GROSS frauds have come to light in the department of the Quartermaster of the Marine Corps.

A MASSACRE of Turks and a general insnrrection is reported from Turkish Croatia, on the Austrian frontier.

PRESIDENT GRANT has been attending a Sunday school camp meeting in Western New York.

LATE reports from the Black Hills, report that distriot to be rich in gold.

THE new trial of Mrs. Norton began at Santa Barbara on the 19th inst.

GENERAL and Mrs. Sheridan are expected to arrive in this city next week.

CHARLES G. FINNEY, President of Oberlin college, Ohio, is dead.

THE people have been shook up a little by an earthqueke at Hollister.

MOODY and Snnkey have arrived in New York.

THE Palace hotel is to be opened on the 1st of October.

THE Mechenics' Institute Fair is in successful operation.

New Incorporations.

The following companies have filed certificates of ncorporation in the County Clerk'e Office at San Francisco:

BALANCE CONS. G. & S. M. Co.—August 12. Directors—B. L. Schmidt, George Hearst, Wm. D. Brown, Geo. W. Kidd and Louis Kaplan. Capital stock, $10,000,000.

DEFIANCE M. Co.—August 13. Location: Inyo county, Cal. Directors—P. Reddy, S. Jewett, J. R. Wilson, G. H. Willard and W. G. Hughes. Capital stock, $10,000,000.

SPRING VALLEY M. & I. Co.—August 14. Location: Cal. Directore—Egbert Judson, Isaac E. Davis, Richard Abbey, William Gregory and Jenkin Morgan. Capital stock, $5,000,000.

ALLEN M. Co.—August 16. Location: Nevada. Trustees—Alpheus Bull Wm. H. Scars, James R. Lee, A. F. Everett and Robert Sherwood. Capital stock, $12,000,000.

EMPIRE & LEXINGTON M. Co.—August 16. Location: Nevada. Directors—G. W. Kidd, A. E. Davis, George S. Roberts, S. Hemanway and R. L. Tracey. Capital stock, $5,000,000.

NEWPORT COAL Co.—August 17. Location: Oregon. Directore—James R. Kelly, James Flanagan, S. S. Mann, Felix Chappellet and Patrick Flanagan. Capital stock, $4,000,000.

JULIA CONS. M. C.—August 18. Location: Nevada. Directore—C. W. Kellogg, James M. Livingston, Thoe. Cole, Jos. C. Palmer and John H. Kincaid. Capital stock, $11,000,000.

Population of Some Foreign Countriea, in Which Dewey & Co. Obtain Patents and Protection for Inventors.

Canada	3,537,887	Baden	1,434,970
Great Britain	31,187,108	Bavaria	4,824,421
France	36,583,559	Portugal	3,996,558
Belgium	4,839,094	Saxony	2,423,686
Prussia	24,043,902	Hanover	386,957
Austria & Hung'y.	35,943,692	Wurtemburg	1 778 470
Russia	77,268,848	Brazil	11,780,050
Spain	16,031,367	Chili	2,000,070
Italy	25,906,937	Peru	2,500,000
Sweeden	4,195,681	N. Grenada	2,794,000
Norway	1,701,478	India	191,000,000
Poland	6,317,362	Australia	1,500,000
Denmark	1,726,724	N. Zealand	926,618

A Good Bindsr for $1.50.

Subscribers or this journal can obtain our Patent Elastio Newspaper File Holder and Binder for $1.50—containing gilt title of the paper on the cover. It preserves the papers completely and in such shape that they may he quickly fastened and retained in book form at the end of the volume, and the binder (which is very durable) nsed continuously for subsequent volumess Post paid, 25 cts. extra. It can be nsed for Harper'y Weekly and other papers of similar size. If not entirel. pleased, purchasers may return them witbin 30 days. Just the thing for llbraries and reading roome, and all wbo wish to file the PRESS. lambp

Thanks for Prompt Attention.

STOCKTON, June 26, 1876.

Messrs. Dewey & Co., S. F.:—

I have received the patent for my invention in wagon brakes, which you prosecuted for me; patented May 11, 1875—No. 163,046. Thanks to you for your prompt attention to the case; you will hereafter be my attorneys in such cases. I recommend all inventors on the Pacific coast to give yon a call, which I tbink they will never have any cause to regret. Very truly yours,

GEO. G. BUCKLAND,
Stockton, Cal.

THOUGHTLESSNESS.—Persons sometimes return thei paper, marked "stop this paper." Their name being pasted on the sheet they think that is all we need to be able to cross their namee off. Now that is thonghtlessness. Yonr P. O. addrees is needed as much as your name. We bave thousands of namee arranged only according to locality. Our mailing clerk does not know where everybody lives.

PATENTS & INVENTIONS.

A Weekly List of U. S. Patents Issued to Pacifio Coast Inventors.

FROM OFFICIAL REPORTS FOR THE MINING AND SCIENTIFIO PRESS, DEWEY & CO., PUBLISHERS AND U. S. AND FOREIGN PATENT AGENTS.]

By Spenial Dispatoh, Dated Washington D. C., August 17th, 1875.

FOR WEEK ENDING AUGUST 3n, 1875.*

GAME BOARD.—Hervey Darneal, S F., Cal.

FAUCET.—Isaeo Lobree, Antioch, Cal.

STEAM PLOW.—Theodore C. Stark, Vallejo, Cal.

SHELVINO FOR STOVES.—Henry T. Bestor. S. F., Cal.

CANDLESTICK.—John B. Gribble, Grass Valley, Cal.

ROTARY PRESSURE BLOWER.—Wales L. Palmer and Israel W. Knox, S. F., Cal.

BASIN FAUCET.—William C. Bussey, S. F., Cal.

AMALGAMATOR.—Elwin J. Fraser, S. F., Cal.

AUTOMATIC ROTARY CARBURETER.—Thomas A. Stombs, S. F., Cal

———*The patents are not ready for delivery by the Patent Office until some 14 days after the date of issne.

NOTE.—Copies of U. S. and Foreign Patents furniebed by DEWEY & Co., in the shortest time possible (by telegraph or otberwise) at the lowest rates. All patent business for Pacifio coast inventore transacted with perfect secnrity and in the shortest nossible time.

RATES of POSTAGE—Domestic Postage.

SATURDAY, April 3d, 1876.

ON ALL LETTERS throughout the United States, 3 cts. for each half ounce or fraction thereof.

DROP OR LOCAL LETTERS, 2 cte. per half ounce where there ie a free carrier'e delivery; other offices, 1 cent.

POSTAL CARDS, 1 cent., in the United Statee.

VALUABLE LETTERS may be registered by payment of a registration fee of 5 cts. in addition to Postage. Money can be sent with absolute eafety by mail, by procuring a Money Order. The fees are: On orders not exceeding $10, 5 cts.; $10 to $20, 10 cts; $20 to $30, 15 cts.; $30 to $40, 20 cts.; $40 to $50, 25 cte.

PRINTED BOOKS, in one package, to one address, 1 cts. for each 2 ounces or fraction thereof, not over 4 lbs.

ON TRANSIENT NEWSPAPERS, or other Printed Matter (Books excepted), and on Circulars, Pamphlets, Book Manuscripts and Proof Sheets, Maps, Sheet Music, Chromos, Engravings and Photographs, 1 cent for each 1 ounce or fraction thereof, not over 4 lbs.

SEEDS, Cuttings, Bulbs, Etc., 1 cent for 1 ounce and fraction of 1 ounce, not over 4 lbs.

SAMPLES OF MERCHANDISE (Liquide excepted), Ores, Etc., Flexible Patterns, Paper, Envelopes and Blanks, 1 cts. for each 1 ounce, not over 4 pounde.

ALL TRANSIENT MATTER, except duly certified letters of Soldiers and Sailors, must be prepaid by stamps.

☞On matter not above specified, same rate as *Letters*.

Foreign Postage

LETTERS TO GREAT BRITAIN & IRELAND.—For each half ounce, or fraction, 6 cts., if prepaid; if not prepaid 6 cts extra will he collected in Great Britain, and 6 ctsin U. S.

TO THE GERMAN STATES.—For every half ounce, or fraction thereof, via N. German Union direct, 6 cts.; closed mail, via England, 7 cts., prepayment optional.

TO FRANCE (payment compulsory), 10 cts. for each half ounce or fraction thereof, direct mail; 4 cts. (open mail) by England. Fully prepaid, via Eng., one-third ounce, 10 cts.; one-third to one-half ounce, 16 cts.; one-half to two thirds ounce, 20 cts.; two-tbirds to oneounce, 26 cts.

POSTAGE TO CANADA.—On letters, three cents per half ounce or fraction thereof. Must be prepaid. Otherwise letters sent to Dead Letter Office.

Transient printed matter same as the United States.

Patterns and samples of merchandise in packages not exceeding the weigbt of eight ounces may he sent at the rate of ten cents for each sample.

Hints about Advertising.

If you have goods to sell farmere, how much better will it pay you to advertise in a farming paper, closely read by 16,000 intelligent farmers, than in miscellaneous daily or weekly jonrnals with 30,000 readers, comprising only 2,000 farmers. A mining journal in California with 16,000 readers reaches more intelligent minere than any other 10 papers in the Union.

Purchasers are more likely to look for information in the advertising columns of a paper devoted to their special interests, than elsewhere, when ready to buy. Some will not read advertieements upon any other occasion, but seek the best paper when wanted.

If yon happen to be the only advertiser in your line of business in a paper, all the better. But if several firms advertise the same, your own judgment will question whether you can best afford to go unrepreaented.

Weekly journals are read most leisurely and carefully, and at a time when the subscriber is most favorably inclined to examine advertisements. The newspaper most specially representing your particular branch of industry is usually best entitled to your patronage, and the most profitable medium you can employ.

An advertisement in an honest and handsome sheet is favorable to the reputation of the advertiser. The readers of the PRESS are a superior and industrious class, who are able to purchase and who seek to patronize the best and fairest dealing tradesmen.

Advertising in cheap priced mediume (of limited circulation) is like buying goods at retail when yon could as well take them at wholesale.

Information imparted to a list of superior and intelligent, and active, and industrious readers (naturally looked np to by otbers for information), is seed sown in good soil for the advertiser.

Fame and fortune are gained, nine times in ten, by liberal and judicious advertising.

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We have just issued a pamphlet containing the general mineral land laws of the United States, with instructions of the Commissioner of the Land Office The contents of this pamphlet comprise all of the Government laws with relation to mineral lands of interest to the mining community, as follows: Mining Statute of May 10th, 1872, with Instructions hy the Commissioner of the Land Office; Mining Statute of July 26th, 1866; Mining Statute of July 9th, 1870 Forms required under Mining Act of May 10th, 1872, as follows: Notice of Location; Request for Survey; Application for Patent; Proof of Posting Notice and Diagram of the Claim; Proof that Plat and Notice remained Posted on Claim during Time of Publication; Register' Certificate of Posting Notice for Sixty Days; Agreement of Publisher; Proof of Publication; Affidavit of $500 Improvements; Statement and Charge of Fees; Proof of Ownership and Possession in Case of Loss or absence of Mining Records; Affidavit of Citizenship; Certificate that no Suit is Pending; Power of Attorney; Protest and Adverse Claim; Non-Mineral Affidavit; Proof that no Known Veins Exist in a Placer Claim, etc. There is also given the U. S. Coal Land Law and Regulations thereunder. The work comprises thirty pages, and will be sold, post-free, for 50 cents. It should be in the hands of every one having any mining interests. DEWEY & CO.,

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Mining and Other Companies.

Gold Mountain Mining Company—Location of principal place of business, San Francisco, Cal. Location of works, Lower Rancheria, Amador County, Cal.

NOTICE.—There are delinquent upon the following described stock, on account of assesament levied on the 1st day of July, 1875, the several amounts set opposite the names of the respective shareholders, as follows:

Names.	No. Certificate.	No. Shares.	Amount.
W A Knapp, Trustee	19	100	$ 25 00
W A Knapp, Trustee	78	100	25 00
Thos Sennett	9	2500	625 00
D M Hosmer	49	400	100 00

And in accordance with law, and an order of the Board of Directors, made on the 1st day of July, 1875, so many sharee of each parcel of said stock as may be necessary, will be sold at public auction, at the office of the Secretary, No. 116 Loidesdorff street, on Monday, the 23d day of August, 1875, at the hour of one o'clock P. M. of said day, to pay said delinquent assessment thereon, together with costs of advertisfng and expenses of sale. W. A. KNAPP, Secretary.

Office, No. 116 Loidesdorff street, San Francisco, Cal.

Gover Mining and Milling Company—Principal place of business, San Francisco, Cal. Location of works, Drytown, Amador county, Cal.

Notice is hereby given, that at a meeting of the Board of Directors, held on the 4th day of August, 1875, an assessment of 20 cents per share was levied upon the capital stock of the corporation, payable immediately, in United States gold and silver coin, to the Secretary, at the office of the company, No. 402 Front street, room 8, San Francisco, Cal.

Any stock upon which this assessment shall remain unpaid on the 10th day of September, 1875, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Thursday, the 30th day of September, 1875, to pay the delinquent assessment, together with costs of advertising and expenses of sale.

W. O. WILSON, Secretary.

Office, No. 402 Front street, room 8, San Francisco, Cal.

Hope Quicksilver Mining Company—Location of principal place of business, San Francisco, Californis. Location of works, Cinnabar Mining District, Sonoma County, State of California.

Notice is hereby given, that at a regular meeting of the Board of Directors, held on the 2d day of August, 1875, an assessment (No. 2) of Five cents per share was levied upon the capital stock of the corporation, payable immediately, in United States gold coin, to the Secretary, at the office of the company, Room 2, No. 405 California street, San Francisco, Cal.

Any stock upon which this assessment shall remain unpaid on the 9th day of September, 1875, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Thursday, the 30th day of September, 1875, to pay the delinquent assessment, together with costs of advertising and expenses of sale.

JACOB HARDY, Secretary.

Office, Room 2, No 405 California street, San Francisco, California.

Manhattan Marble Company of California. Location of principal place of business, San Francisco, California. Location of works, Oakland, Alameda county, State of California.

Notice is hereby given, that at a meeting of the Directors, held on the 6th day of August, 1875, an assessment (No. 8) of five dollars per share was levied upon the capital stock of the corporation, payable immediately, in United States gold coin, to the Secretary of the company, at his office, Nos. 13 and 15 Fremont street, San Francisco, California.

Any stock upon which this assessment shall remain unpaid on the 15th day of September, 875, shall be deemed delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Monday, the 4th day of October, 1875, at 12 o'clock M., to pay the delinquent assessment, together with costs of advertising and expenses of sale.

L. L. ALEXANDER, Secretary.

Office, Nos. 13 and 15 Fremont street, San Francisco, California.

Orleans Mining Company—Location of principal place of business, San Francisco, Cal. Location of works, Grass Valley Mining District, Grass Valley, Nevada County, Cal.

Notice is hereby given, that at a meeting of the Board of Trustees of said company, held on the 23d day of July, 1875, an assessment, No. 6, of one dollar per share was levied upon the capital stock of said company, payable on the 23d day of July, 1875, in gold coin of the United States of America, to the Secretary, at the office of the company, room 8, No. 315 California street, in the city of San Francisco.

Any stock upon which said assessment shall remain unpaid on the 28th day of August, 1875, will be advertised on that day as delinquent, and unless payment shall be made before, will be sold on the 13th day of September, 1875, to pay the delinquent assessment, together with costs of advertising and expenses of sale.

GEO. P. THURSTON, Secretary.

Office, room 8, No. 315 California street, San Francisco, Cal.

Silver Sprout Mining Company—Location of principal place of business, San Francisco, State of California.

NOTICE.—There are delinquent upon the following described stock, on account of assessment levied on the third (3d) day of July, 1875, the several amounts set opposite the names of the respective shareholders, as follows:

Names.	No. Certificate.	No. Shares.	Amount.
A Wingard	146	1200	$ 50 00
T B Wingard, Trustee	138	29	1 45
S Davis, Trustee	32	5000	250 00
Hermann Toelken, Trustee	49	100	5 00
Henry Boyle, Trustee	57	2000	100 00
Henry Boyle, Trustee	112	224	11 20
Henry Boyle, Trustee	113	356	17 80
M Ellsworth	62	50	2 50
J W Thurman	149	1500	75 00

And in accordance with law, and an order of the Board of Directors, made on the 3d day of July, 1875, so many shares of each parcel of said stock as may be necessary, will be sold at public auction, at the salesroom of Maurice Dore & Co., No. 326 Pine street, San Francisco on the 1st day of September, 1875, at the hour of 12 o'clock M., of said day, to pay said delinquent assessment thereon, together with costs of advertising and expenses of sale.

T. B. WINGARD, Secretary.

Office, Room 13, No. 318 California street, San Francisco, Cal.

Silver Wave Mining Company—Location of principal place of business, San Francisco, California. Location of works, White Pine Mining District, Nevada.

Notice is hereby given, that at a meeting of the Board of Directors, held on the 31st day of July, A. D., 1875, an assessment, No. 12, of twenty-five cents (25 cts) per share was levied upon the capital stock of the corporation, payable immediately, in United States gold coin, to the Secretary, at the office of the company, No. 418 California street, San Francisco, California.

Any stock upon which this assessment shall remain unpaid on the 10th day of September, 1875, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Friday, the 8th day of October, 1875, to pay the delinquent assessment, together with costs of advertising and expenses of sale. By order of the Board of Directors.

J. W. CLARK Secretary.

Office, room 2, No. 418 California street, San Francisco, California.

Tolman and Miller Mill and Mining Company.—Location of works, West Point, Calaveras county, California.

NOTICE.—There is delinquent upon the following described stock, on account of assessment (No. 2) levied on the fourteenth day of July, 1875, the several amounts set opposite the names of the respective shareholders, as follows:

Names.	No. Certificate.	No. Shares.	Amount.
D A Miller	19	100	30 00
D A Miller	20	100	30 00
Jas L Trask, Trustee	35	50	15 00
S H Heacock	38	500	150 00
S H Heacock	39	500	150 00
S H Heacock	40	500	150 00
Marcia A Sharp	46	100	30 00
Marcia A Sharp	47	100	30 00
Marcia A Sharp	48	100	30 00
Marcia A Sharp	49	100	30 00
Marcia A Sharp	50	100	30 00
E H Heacock	57	100	30 00
E H Heacock	58	100	30 00
E H Heacock	59	100	30 00
E H Heacock	60	100	30 00
E H Heacock	61	100	30 00
Chas Kollett	71	100	30 00
C Desmond	101	10000	3000 00
C Desmond	103	500	150 00
D A McDonald	107	500	150 00
J H McDonald	108	500	150 00
J W Hamilton	109	500	150 00
J W Farren	110	500	150 00
Geo Cishough	111	500	150 00
E F Preston	112	500	150 00
J W Harvold	113	500	150 00
Dennie Jordan	114	500	150 00
A Cameron	115	500	150 00
J M Roach	116	500	150 00
F I Curry	117	500	150 00
John O'Brien	118	500	150 00
Joshua Hendy	119	500	150 00
J H McDonald	120	333	99 90
C Desmond	122	334	120 00
Edmund Morris	123	1000	300 00
Edmund Morris	124	1000	300 00
Edmund Morris	125	1000	300 00
W T Chalmer	126	1000	300 00
W T Chalmer	127	1000	300 00
W T Chalmer	128	1000	300 00
John W Eagan	129	833	249 90
John O'Donnell	130	500	150 00
D A McDonald	131	500	150 00
D A McDonald	132	500	150 00
D A McDonald	133	500	150 00
D A McDonald	134	500	150 00
A Craig	5	100	30 00

And in accordance with law, and an order of the Board of Directors, made on the 14th day of July, 1875, so many shares of each parcel of such stock as may be necessary, will be sold at public auction, at the office of the company, room 1, No. 402 Montgomery street, San Francisco, Cal., on Monday, the 6th day of September, 1875, at the hour of one o'clock P. M., of said day, to pay said delinquent assessment thereon, together with costs of advertising and expenses of sale.

O. H. BOGART, Secretary.

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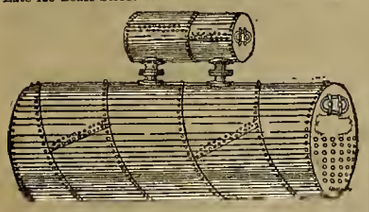

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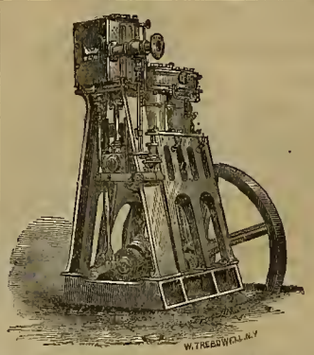

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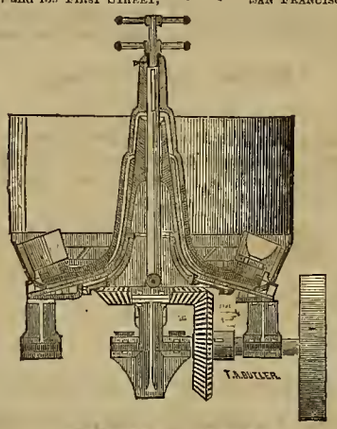

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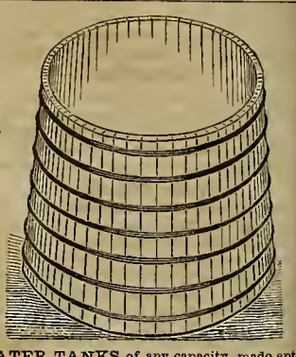

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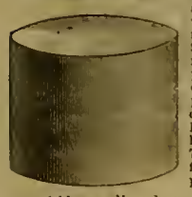

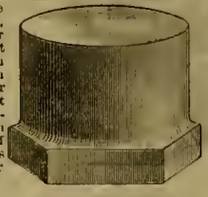

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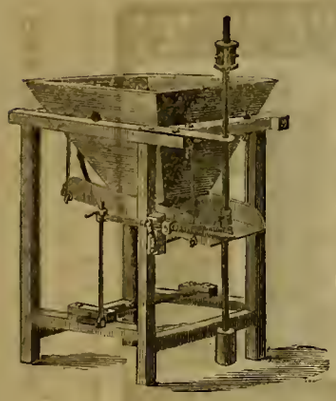

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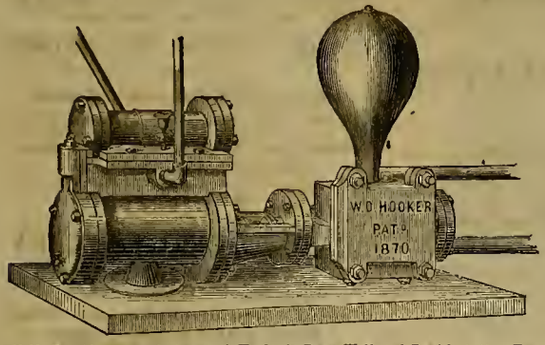

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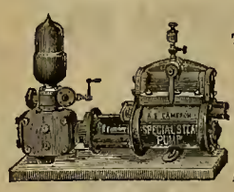

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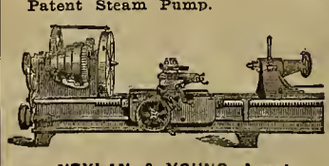

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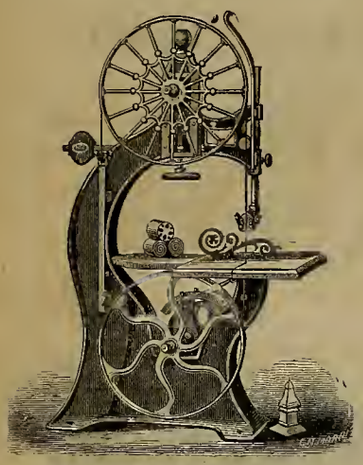

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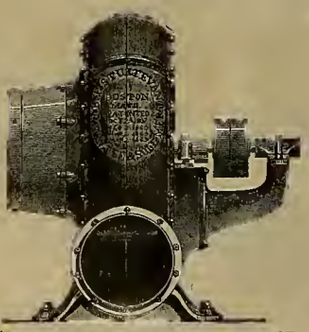

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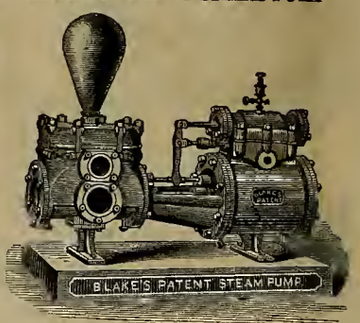

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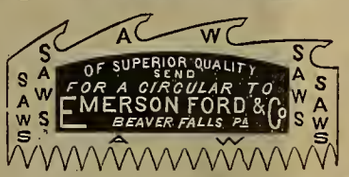

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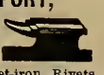

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BY DEWEY & CO., Patent Solicitors.

SAN FRANCISCO, SATURDAY, AUGUST 28, 1875.

VOLUME XXX Number 9.

Percentage of Gold.

[Written for the PRESS by CHAS. C. RUEGER.]

In an article with the above heading, the MINING AND SCIENTIFIC PRESS, of August 7th, 1875, cites two methods for sampling ore in mills, for the purpose of valuation of the ore crushed and the yield. Both of them have long been in use, and have stood the test of practice, being also recommended by our best authority on the concentration of ores—Peter Vau Rittinger. Neither of the methods, however, can be depended upon as giving a very close average, where the distribution of value in the ore is very irregular. With all good judgment and care on the part of the sampler, the specimens chosen in the one case will not represent the average value of the shovelful, and the pitcherful of pulp will be richer or poorer than the average, according as the ore being fed into the battery at the moment happens to be. In both methods it is assumed that the errors to either side counterbalance each other; which assumption, however, is not always borne out in practice, as those who have taken the trouble to closely test the matter will know.

The following method, which the writer adopted after using both others, is submitted as having given better results, with less trouble. It is hardly necessary to state, that it is only applicable in the wet crushing of ore in a battery, through the finer grades of screens. The modifications necessary to adopt it to the various processes in use, will readily suggest themselves to the experienced millman.

The arrangement used for the purpose is shown in the following sketch:

The pulp on leaving the battery, is run into a wide sluice, *a*, set level transversely and having about ⅛-¾ inch fall to the foot. The current is distributed evenly over the whole width of the sluice, which is easily done by backing up the current somewhat with a gate, *c*, introduced near the head of the sluice, and giving a suitable passage for the pulp beneath its straight under edge.* Towards the lower end of the sluice, three or four feet from the gate, or wherever the current is found to be distributed most evenly, a hole, *d*, is bored through the bottom, midway between the sides. Into this hole a half-inch nipple, *e*, is tightly screwed from underneath. A block of wood, of the shape shown, is fastened in the sluice, below the hole, the end of the slot in the block corresponding with the hole. The screw used for this purpose, should be drawn tight enough to well fit the block to the bottom and yet allow it to be turned. The slotted end of the block being turned towards the current, admits a part of it, which passing down through the hole in the bottom of the sluice, is carried away by means of a hose attached to the nipple, *e*, to a settling tank. In this way, a fractional part of the pulp is continually obtained without trouble, and independent of the care and judgment of anyone. By turning the other end of the block to the current the hole is covered, and the sampling interrupted at pleasure.

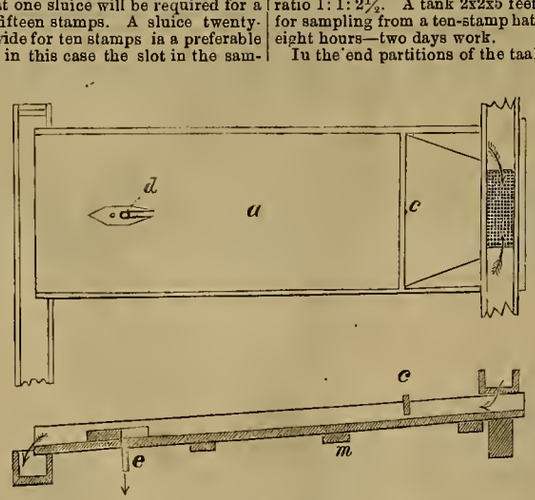
The sands becoming thoroughly mixed in passing away from the stamps, their value will average about the same in the whole width of the sluice, provided the current is evenly distributed and the lodgement of sand in parts of the sluice above the sampling block prevented. It is, therefore, sufficient to intercept only a small part of the pulp current. This can be proven by taking samples from two or more holes, side by side in the sluice, and assaying each separately. Along the sides of the sluice a slight concentrating action takes place, on account of increased friction and counter currents; the sampling holes, therefore, must be kept outside the influence of these.

The bottom of the sluice should be made of one plank, about an inch and a half thick, smooth and straight, and kept so transversely by strong crosspieces, *m*. The sluice must be set level transversely, and admit a slight adjustment with a wedge when in use, in case the even distribution of the current should require it. The width should be from ten to twelve inches for the pulp from five stamps; from this it follows, that one sluice will be required for a maximum of fifteen stamps. A sluice twenty-four inches wide for ten stamps is a preferable arrangement; in this case the slot in the sampling block should have about one-fourth of an inch opening toward the current. The weight of the sample obtained in this case would be about one per cent. of the ore crushed. In sampling smaller quantities of rock, and where greater accuracy is desired, the width of the slot in the sampling block may be increased to three-eighths or one-half inch. Too large a sample is inconvenient to dry and mix.

The sample settling tanks should be deep, and long enough to allow the water to become quite clear before passing out. A capacity of twenty cubic feet for every twenty-five tons of rock to be sampled is sufficient. The width, depth and length are well taken when in the ratio 1:1:2½. A tank 2x2x5 feet answers well for sampling from a ten-stamp battery for forty-eight hours—two days work.

CRYSTAL FALLS, VALLEY OF THE YELLOWSTONE.

In the end partitions of the tanks, a one-half inch hole is made one or one and a half inches below the top edge, for the discharge of the water. The hose carrying the sample pulp is made to discharge into one end of a tank until the sand cone appears at the surface—the water passing out of the hole at the opposite end in the meantime; the hose is then shifted to the other end and the current reversed. When both ends are thus filled with the sample, the pulp is discharged into a similar tank, etc.



Apparatus for Sampling Ores.

The water in the finished tank having settled clear, is drawn off through holes made for the purpose down the centre of a long side of the tank; any slum escaping with the water from the lower holes, must be caught in a suitable vessel, settled, and returned to the sample. The latter having drained off sufficiently, is shoveled out, spread thin on a drying floor, the lumps being broken up with an iron rake When sufficiently dry to shovel over without packing, it is thoroughly mixed, and the sample then reduced; these operations are repeated, until a perfectly dry, and nearly uniform sample of about twenty-five or thirty pounds is obtained. This should all be put through a sieve of about thirty meshes to the linear inch, again thoroughly mixed, and a reduced assay sample of two or three pounds taken from it.

The precaution should be used, to run the pulp on to the sluice through a screen, fine enough to retain all impurities, chips, etc., which might lodge in the slot of the sampling block and so interrupt its action.

The above method of sampling was originated in the course of an investigation of the working results in a California gold quartz mill. The conclusions arrived at thereby, are a fair illustration to your remarks concerning the erroneous opinions had by some millmen, in regard to the results of their work.

In this instance the idea prevailed, that at least ninety per cent. were being saved, since nothing worth while was found in the sand leaving the tail race. Experiments with two lots of rock, of twenty-five tons each, proved a saving of twenty-six per cent. of the gold value in one instance, and of only nineteen and a half per cent. in the other. The work in both trials was the same; the character of the rock, however, was somewhat different. The ore assayed $30 or $36 gold per ton, contained almost exclusively in the sulphurets. The process of extraction therefor was concentration, in sluices. Hendy's concentrators, percussion tables, and carpet sluices, and chlorination of the product. With better arrangements, it is very probable that double the saving could be effected at the same cost.

In a future article, I will give, by way of comparison, an account of the results obtained by concentration on a much less valuable ore than the above, in one of the best of modern washing works.

* Where the fall that can be given is not so considerable, that the current of pulp will be rapid, or where the sands are coarse and heavy, a less simple, but more perfect distributer should be used. For an illustration of such a one I refer to Kustels work on concentration of ores. I refer to the "Happenbrelt" of the Germans.

Montana Scenery.

Among the many beautiful cascades described in Hayden's reports of the Yellowstone country, there are none more picturesque than the Crystal falls, 129 feet high, situated on Cascade creek, a tributary of the Yellowstone river. Dr. Peale, in his report to Professor Hayden, of a trip to the valley of the Yellowstone, says:

Cascade creek flows into the Yellowstone river on the west side between the falls. A short distance above its mouth we find a beautiful fall, or rather cascade, for it is made up of three distinct falls, the aggregate hight of which is 129 feet. The stream, after passing through a deep, gloomy gorge, makes a leap of about twenty-one feet and then falls again in three streams a distance of over fifty feet into a beautiful, rounded basin, in which the water is perfectly clear and quiet. From this basin the final leap is taken and the water flows on to the Yellowstone river.

STOCKTON MACHINE WORKS.—The Globe foundry we recently found doing a thrifty business in the way of local manufacturing and jobbing. Having been long established, this foundry is well suited to do just the kind of work required in a more satisfactory manner than it could be done elsewhere, or by other workmen. John Caine, the proprietor, is now the general agent and manufacturer of the celebrated Root's patent blower on this coast. This blower is being introduced faster than ever before, for mining ventilation especially.

THE fund subscribed in this State by the French residents, for the relief of the sufferers by the floods in Southern France, now aggregates $13,387.

CORRESPONDENCE.

Tasmania.

[From our Australian Correspondent.]

MESSRS. EDITORS:—The last and least of the Australaeian colonies to which I have to refer is Tasmania, a beantiful island situated almost due south of Melhourne, the favorite resort of health and pleasure seekers from the neigbboring colonies. Originally a penal establishment of Great Britain, it still retains a large percentage of the convict element, although principally in the shape of descendants from this savory export of Great Britain. It must uot he forgotten, however, that there is a wide dif ference hetween crimiuals and their children, the latter having no right to suffer for the sins of the former. It should also he horne in mind that at the time when these trensports were supplied hy the old country, people were eent out of their country for their country's good, on very small provocetion, and to speak fairly I think that with the exception of the lower strata, eociety is just about the seme as in other British communities. At all events the place is a beautiful one, whatever opinion you may form of its iuhahitants. Its capitel is Hobart Town, situated on a beantiful site on the banks of the Derwent, a fine wide river, with the land reaching the river's edge in pleasant slopes.

Thie is rather an ancient city—that is for Australia—and it has quite an old-fashioned look ahout it, altbough a comfortable one, withal. The streets are tolerably wide and straight, and the houses nearly all of stone or brick. Here it is that you get in all its freshness a most magnificent fish called the Hobart Town trumpeter; it frequently attains a considerable size, and is equally delicious whether eaten fresh or cured. This heing the capital city, is of course the seat of government, and consequently the Governor's residence, which, although smaller than those of the other colonies, is beautifully situated and tastefully built. Adjecent to the city is the, to us, celebrated Mt. Wellington, the de light of tourists, who seem never tired of scrambling to its top, where there is rather a rough piece of ground consisting of large pieces of rock heaped promiscuously together end playfully termed the plougbed field. From this hight the scenery ie magnificent, and the promise is fulfilled when on the level of ordinary mortals you traverse the districts from thence overlooked. From this city there is a splendid road quite through the island, to what may he termed its northern capital, Launceston, a distance of about 120 miles. This is traversed by coaches, eud the ride through on a tolerably fine day is most eujoyable. Launceston is situated on a low triangular piece of land formed by the confluence of two rivers, the North and South Esk, which after their junction are called by the name of the "Tamar," and hence it is frequently said tbat this city is situated on the Tamar. Ite businese portion is, in my opinion, a miserable situetion; but immediately behind it the land rises in beautiful slopes, and here, where most of the private homes are, the prospect is pleasing and in some parts quite romantic. As a business place, Launceeton is far in advance of Hobart Town, its proximity to Melbourne greatly conducing to this end. After traveling about forty miles down the Tamar you reach the open sea, here called Bass straits, and after twelve hours' steaming you enter Port Philip heads, which I dare eay you are aware is the entrance to Hobson's bay, on the northern extremity of which Melhourne is built From hence Tasmania draws most of its foreign supplies, although a good deal is sent from Sydney as well. Thie island is rich in soil and in mineral's, nevertheless it is a dull, dead-and-alive sort of a place, its people being deficient in that energy which is needful for the development of almost any country, however rich. A railway is now heing built to connect the two principal cities, but its present utility is greatly doubted, whilst no one dreams of its paying for a quaiter of a century or so. Fruit grows here to great perfection, and consequently large quantitiee of jam are made; but in consequence of the want of inter-colonial free trade, there is scarcely any market for it. Railings and shingles are exported in considerable quantities. E. W.

Melbourne, Australia, June 29th, 1875.

MERCHANT MARINE OF THE WORLD.—A paper was recently read before the London Statistical Society giving the number and tonnage of the merchant steamers and sailing vessels of all nations in 1870 and in 1874. The number of sailing vessels in 1870, was 59,918, tonnage 16,042,198; in 1874 the number was 52,289, tonnage 14,523,630. The number of steamers in 1870, was 4,132, tonnage 2,793,432; in 1874 the number was 5,365, tonnage 5,226 888. From which it will be seen tbat the number of sailing veseels throughout the world has decreased, and that there is a very large increaee in steamers, the latter being ninety per cent and the former about ten per cent. At this ratio of increase there would be in 1880 more steam than sail tonnage afloat. The total tounage of the great nations indicate their relative rank as follows: First, Great Britain; second, the United States; third, Sweden and Norway; fourth, Italy; fifth, Germany; sixth, France.

The Black Hills—What Professor Jenney Found There.

The following is a copy of a letter received at the Indian Bureau, at Washington, from Professor Jenney, in charge of the Goverment Geological Expedition to the Black Hills:

CAMP ON SPRING CREEK, BLACK HILLS, DAKOTA, July 31st.—To Hon E. P. Smith, Sir: In my telegraphic dispatch dated July 17th, I briefly informed you of my explorations in that section of the Black Hills north and northeast of Harney's peak. In order to more rapidly explore the Hills, I divided my party; Mr. Newton, geologist, going eouth from French creek, with an astronomer and a photographer to map aud explore the southern portion of the country as far es Cheyenne river; and I, with the assistance of my miners, have prospected the Hills to tbe north, a region hitherto unexplored and unknown.

I Found Gold in Placer Deposits

On hoth Spring and Rapid creeks, from their head-waters to a point where they emerge from the Hills; and more extended prospecting and exploration ehow that in localities in the valleys of these streams, the gravels, especially tbo e of older formation and elevated above the present level of the streams, contain gold in quantities sufficient to yield a fair remuneration for labor economically and skillfully applied, assisted by the proper tools and mechanical appliances, at least a moderate amount of capital, or its equivalent, and such a system of working as the experience of twenty-five years has taught the miners of the Pacific slope to employ.

Fortunately There is an Abundance of Water

In hoth these streams, and in most pleces a rapid current. Spring creek will yield from 300 to 1,000 minere' inches of water, according to season, and Rapid creek at least twice the amount. While the placer deposite as far as discovered are by no means rich or very extensive, compared with those of California, still there is euough precious metal to develop the country, and etock raising and agriculture will do the rest. Among the foothills along the eastern slope of the Black Hills are large gravel deposits, in some places thirty feet thick, often cemented by time into a hard conglomerate, and capping high hills of massive sandstoue Decomposition of this conglomerate has in places yielded the gold which it contained, and which has been washed by heavy rains down the dry gulches, end been caught and concentrated. In the dry gulches in the lower sandstone be is, secondary deposits afford the only crevicing yet found in the Hills, and they may be worked during the spring, while there is water flowing out of the hills in nearly every stream on the toplands, but in summer scarcely a single stream carries its water in an unbroken current to the Cheyenne. They all, except perhaps Rapid creek, siuk in their heds on reaching the foothills. Should these conglomerates be found to contain gold in paying quantities, it will require the employment of capital to work them successfully.

Several Enormous Ledges

Of a mixture of slete, ferruginous quartz, and qnartzite, cross the valleys of Spring and Rapid creeks, extending for miles in a northwestern direction. The oxide of iron contained in ledges has resulted from decomposition of iron pyrites, and specimens of quartz ehow occasionally visible particles of gold, and give, on crushing and panning, a trace of tbe color of the much sought for metal. It is remarkable that so few valuable minerals have been found on the Hills, though the couutry is overrun by miners, and everything in the shape of rock, in any way peculiar in appearance, is brought to me for identification. But I have not yet seen any mineral containing lead, copper, or silver; only iron pyrites, iron ores resulting from its decomposition, mispbickel, graphite, black tourmaline, rose quartz, garnets and stamolide, as mineralogical curiosities. In testing deposits on Spring creek I worked out a particularly rich spot, where an old channel had been cut across by the present bed of the creek, and in ten hours' work with a small sluice,

Obtained Five-Sixths of an Ounce of Gold,

Or about $15.50. Soldiers had previously panned out of the same place not less than two ounces of coarse gold; and on measuring I found the total yield at the rate of four dollare per cubic yard, or about three cents to the pan, as an average for the whole thickuess of the depoeit. It was truly said of this region that there was gold in the very roots of of the grase; but it is not the gold of gravel bars or quartz ledges, not the gold of the miner or geologist, hut the future solid worth of the Black Hills that is to sought in the luxuriant growth of fine grasses that everywhere spread over the beautiful country.

Of the Climate of the Black Hills,

The severity of the winters, the danger of crops heing injured by frosts, and the agricultural products best suited to the soil, I can only judge by examining the flora of the region. Along the eastern slope, where the elevation is from 3,500 to 4,500 feet above the sea, the valleys are filled with a fair growth of bnrr oak, elm, horuheam, hox elder, white hirch, aspen, and hazel. The conspicuous plante are: tiger lily, poison ivy, and Virginia creeper, with grape vines, wild flax, hops and oats; while raspberries, black and red currants, gooseberries, plums, strawberries, and service berries are in places quite abundant. From which I assume that the climate is not severer than that of Maine and New Hampshire, where many of the same plants grow and ripen; and that while the season is not long or hot enough for corn, yet wheat, oats, barley, flax, hope and potatoes would grow there luxuriantly.

The Rain is Quite Remarkable;

Scarcely a day passes without a shower, though perhaps lasting but a few minntes. Heavy rains of long duration only occaeionally occur, but thunder storms are very prevalent, and nnmerous places may he seen all over the Hills showing the marks of lightning. The elevation above the sea makes the climate cool and healthy, while heavy dews and frequent ehowers of rain keep the country carpeted with a luxuriant growth of grass, always green.

WALTER P. JENNEY,
Geological Expedition, Black Hills.

Early Mention of Petroleum.

A full century ago the existence of oil springs in Western Pennsylvania was a published and well established tact. In the *Massachusetts Magazine*, published in 1789, we find the following in reletion to them: "In the northern part of Pennsylvania there is a creek called Oil creek, which empties into the Allegheny river. It issues from a spring, on the top of which floats an oil, similar to that called Barbadoes tar, and from which one may gather several gallous a day. The troops sent to guard the western posts halted at the same spring, collected some of the oil, and hathed their joints with it. This gave them great relief from the rheumatism with which they were afflicted. The water, of which the troops drank freely, operated as a gentle purge.

"There is still earlier evidence of the existence of the oil springs tban this. It ie found in an old book, published in 1772, entitled "Travels in North America," by Peter Kalm. On a map in this volume the exact location of the oil springs are given."

We take this from an exchange; hut it is still far behind. As early as 1629, almost a century and a half before Kalm's hook appeared, a Franciscan missionary, Joseph de la Roche d'Allion, who crossed the Niagara river into what is now New York State, wrote a letter, in which he mentions the oil springs, and gives the Indian name of tbe place, which he explained to mean "There is plenty there." His letter was printed in Sagard's "Histoire dn Canada," in 1632, and subsequently in Le Clerq.—*Nat Oil Journal.*

The Lightning Mail Train.

Arrangements have been perfected hy the Postoffice Department for a lightning mail train from New York to Chicago. The first train will start from New York city at four o'clock on tbe morning of October 1st, and that every morning thereafter, at the same hour, a similar train will take its departure. It will be necessary to start at that hour in order to make connections. No passengers or freight will he taken. The only cars will be mail cars. The run to Niagara Falls will he made without stoppage, at the average speed of forty and a half miles per hour. To the cars will he fitted patent appliances, called "catchere," which will deposit and pick up mail hage at every station without stopping. These catchere are now in use on over 60,000 miles of mail route in the United Statee, and have given the greatest setiefaction, hardly ever failiug to seize the snspended mail bag, no matter how high the rate of speed.

The northern route hae been eelected for the initiatory train in preference to the southern for many reasons. The mail business from New York and New England to the North and West is more than equal to that of the entire country elsewhere. Wisconsin receives and dispatches more lettere than Missouri, and the Northern part of Ohio has more correspondence tban the entire remainder of tbe State. In other words, the northern route is the one of vastly greatest importance to the manufacturing and mercantile communitiee. By means of this arrangement, the Pacific coaet will be placed from twelve to twenty hours nearer the Atlantic seahoerd.

EEL SKIN LACING FOR BELTS.—L. O. Crocker, East Braintree, Mess., writes: "I notice in your May number an article on lacing machine belts. I have heen using for eight years eel skin lacing. I use it for belts from ¼ inch up to 4½ inch. I know that the lacing will last much longer than any I ever used. Perhaps this will he new to some. It is worth trying." —*Leffel's Mechanical News.*

THE loss of steam from condensation in a well protected steam pipe may he taken approximately as 1 lb. of steam per indicated horse power per hour for each 100 feet of steam pipe. In such a case, a stuffing-hox expaneion joint shonld he provided in the steam pipe, allowing an expansion of 2¼ in. for each 100 ft. in length.

AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE.—The twenty-fourth annual meet of the American Association for the Advancement of Science opened at Detroit, on Wednesday morniug, August 11th.

A PULLEY 18 feet diameter, 43 inches face, weighing over 12 tons, is no trifling pocket piece. It was made at Fitchburg, Mass., for Akron, Ohio, as part of a 250-horse power engine for a flouring mill.

The Lake Superior Silver Mine Again.

In a late issne of the MINING AND SCIENTIFIC PRESS we gave an extract from the Marquette (Michigan) *Mining Journal* relative to the teet of ores from the Iron river mines. In the *Journal* of August 14th we find a further reference to this euhject. We extract therefrom as follows:

After another season of anxious suspense we are enabled to announce another teet of the Iron river silver veins, the result of which wee even better than wae anticipated hy the most sanguine owners of property in that region. The test was of four and a half tons of ore from the Scranton mine, wbich had to be hauled a distance of nearly five miles over an abominable road, which is mentioned hy way of an explanation of the fact that more rock was not used. The ore or rock was taken at random, and without selection, from a pile of over fifty tone mined nearly two years ago, and from whioh the richest specimens had heen culled by the many persons who have visited the mine, ae was the case with Ontonagon. It is believed, moreover, and not without reason, that the rock loses much of its wealth of silver hy long exposure to the weatber, from the washing and crumhling away of the soft slate rock in wbich most of the native silver is found. The test, however, was a fair one, the quicksilver used heing first purified by straining through buckskin —the members of the Scranton company being determined to arrive es nearly as possible at a true result, and the test heing made more for the information of stockholders, and to determine the question of future operatioue, than for any other purpose. We regard it as conclusive proof of the great value of the vein, and feel confident that a test of the ore transferred immediately from the bottom of the shaft, at a depth of 300 feet from the outcrop, would show a very much larger yield.

The yield of four and a half tons was 163 ounces of silver, 950 fine, eqnal to $45.27 per ton, coin value, or $50.70 per ton, currency. The Scranton mine is situated nearly two miles west of the Ontonagon, from the ores of which the first test was made, showing a yield of something over $33. The Superior will next he tested, and its ore having heen mined with greater care than either of the others, we are prepared to hear of a result even more gratifying than that of the Scranton.

The effort to develop this newly discovered silverado is hut a repetition of the history of all new mining districts. People are slow to believe in anything meritorious nnless seen with their own eyes, and in this case the unbelievers are all tonnd among those who have never visited and examined the region in question. The same discoveries aud teste in one of the Rocky Mountain States or Territories would create such a furore as that which followed the discovery of the big honanza on the Comstock. But here it is something new, aud creetes scarcely a ripple of excitement except among those directly interested, and who see "millions in it." However, we can afford to wait. With the tests before us there is no reason to doubt the very great value of the Iron river veins, and that eooner or later capitelists will be attracted by the promise of rich returns which further developments will certainly hold out to them—if indeed they are not setisfied with the evidencee already presented.

The following report of the euperintendent of the worke, giving the result of the first teet, was mislaid and could not be found, or it would have heen published at the time.

ONTONAGON SILVER WORKS,
IRON RIVER, July 22, 1875.

TERRENCE MOORE, ESQ., Pres't Ontonagon Silver Co.: *Dear Sir:*—I respectfully submit the following brief report of the trial run just finished at the company,s mill. The mill was put in motiou on the 5th inst., hut owing to the difficulties incident to the etarting of new machinery, the run was not completed till the 20th. The rock treated was a lot of twenty-two tons taken ae it came from the mine. The result was 523 ounces of fine bullion, nearly 24 ounces per tou. Not having proper assay fixtures I could not determine its fineuess and coin value, but I estimated it at 950 fine, and its currency valne at $734. The mill is now in good condition, the only drawhack to its efficiency being its small capacity. A twenty-stamp mill conld reduce the ore at less than half the cost per ton that this five-stamp mill can treat it for. Reepectfully yours,

F. W. CROSBY.

The coet of miuing will not necessarily exceed $2.50 per ton, and this being the caee it is easy for any one to errive at a conclusion as to whether silver bearing rock which can he made to yield from $30 to $50 per tón will pay to work. Taking the average of the two teets which have been made—$40 per ton—and it will he seen that the net earnings of a twenty stamp mill would be over $1,400 per day, or over half a million a year. Mr. Crosby's estimate further ehows that the veins would pay handeomely if the average yield of silver wae not over $15 per ton.

A HOMOGENEOUS metal, combining the properties of iron and steel, by a composition which is not divnlged, is now being made in large quantities in England, mostly for best steam tubing and flangee, by the Darlaston steel and iron company. The price doee not exceed that of the best Yorkehire iron. Samplee have been euccessfully tested in presence of Admiralty officials.

Scientific Progress.

Preservation of Plaster Casts by Paraffine.—In relation to this new and useful process Mr. John Bell, of London, says in the *Journal of the Society of Arts:* The thorough saturation of plaster in melted paraffine will, I have reason to believe, preserve it from the weather in this country. An example so treated by me lay for some years on a marble block, in my garden here, in the open air, and remained uninjured. On the occasion, a good many years since, of a fancy fair for the benefit of the Female School of Art, connected with South Kensington, I contributed several specimens of small art works thus treated. This application of paraffine to plaster works of art was subsequently to this tried on a larger scale at South Kensington, without however any consultation with me, but from the want of proper treatment, it resulted in failure. The examples I have, and am ready to show, are apt to get rather too yellow, like yellow ivory, but my friend, Mr. G. F. Wilson, F. R. S., who obtained the paraffine for me in the first instance, tells me he thinks that if were quite pure, it would retain its color. The mode of saturation is no secret, as it is similar to that employed in the saturation of plaster casts in stearine. The paraffine hardens the plaster so much that the finger nail will scarcely scratch it. It increases its weight considerably, and gives it an appearance approaching transparency, like ivory, and preserves it in repeated washings.

A Beautiful Experiment in Instantaneous Crystallization.—Poligot.—Dissolve 150 parts by weight hyposulphite of soda in 15 parts boiling water, and gently pour it into a tall test glass so as to half fill it, keeping the solution warm by placing the glass in hot water. Dissolve 100 parts by weight sodic acetate in 15 parts hot water, and carefully pour it into the same glass, the latter will form an overlying layer on the surface of the former, and will not mix with it. When cool, there will be two supersaturated solutions. If a crystal of sodic hyposulphite be attached to a thread and carefully passed into the glass, it will traverse the acetate solution without disturbing it, but, on reaching the hyposulphite solution, will cause the latter to crystallize instantaneously in large rhomboidal prisms with oblique terminal faces. When the lower solution is completely crystallized, a crystal of sodic acetate similarly lowered into the upper solution will cause it to crystallize in oblique rhomboidal prisms. The appearance of the two different kinds of crystals will not fail to astonish those not acquainted with this class of experiments.—*La Nature.*

The "Life" of Submarine Cables.—The *English Money Market Review* says that a fact of some importance as tending to, if it does not entirely, dispel the prevailing impression that the "life" of a submarine cable is of a limited nature, was lately mentioned by Mr. John Pender, M. P., at a meeting of the Eastern telegraph company. He stated that the various sections of the Eastern system, with the exception of a short end of a short line at Lisbon which was undergoing repair, were in perfect working order. But of far greater importance, as affecting the future of submarine cable enterprise, was his announcement that the Suez and Aden section, which was laid in comparatively warm water, had improved in insulation by no less than thirty eight per cent. and the other cables of the Eastern company from forty-five to seventy-seven per cent. in insulation power, which is, of course, the chief element in estimating their capacity for the transmission of messages. Mr. Pender further stated that the cables longest laid have improved the most.

Terrestrial Magnetism.—If the earth is really a magnet, the magnetism of soft iron ought to be decomposed by it, in the same manner as is done by a bar magnet, and such is the fact. If a bar of soft iron is held in the direction which the magnetic needle assumes when freely suspended, its lower end immediately becomes a north pole, and its upper end a south pole, as is shown by bringing a small magnetic needle near each end of the bar. On inverting the bar, it will be found that its poles have immediately changed, the lower end being again a north pole, and the upper one a south pole. If the bar is held horizontally, pointing east and west, no such effect takes place. When a bar of iron is rendered magnetic by the influence of terrestrial magnetism, a stroke of a hammer will sometimes fix the magnetism, and the poles will not be reversed when the bar is inverted. But if several blows with the hammer be struck when in the inverted position, its magnetism may be destroyed or its poles be reversed.

The unequal solubility of different surfaces of the same crystal seems to have been demonstrated by M. Lecoq de Boisbaudren, who has communicated a paper upon the subject to the *Comptes Rendus.* He also has proved by his experiments that when a crystal is fractured it may be repaired by submersion in a supersaturated solution in the same salt without any increase upon its intact surfaces. Both of these are important and interesting facts bearing upon the theory of crystallization. If a liquid, therefore, be only saturated as regards its intact surfaces, it must inevitably be supersaturated with regard to its broken surfaces. This is the conclusion of M. de Boisbaudran.

The Nitrification of Arable Earth.—Recent experiments of MM. Boussingault and Schloesing are of considerable importance with reference to the theories of fertilization of soils and the utilization of manures, since they bring to light a number of interesting facts, which are summarized in the following conclusions: 1. Arable earth does not become nitrified at the expense of the nitrogen gas in the atmosphere. Agriculture has nothing to expect, from that source, which will tend to the profit of the crops. 2. The theory of a nitrification resulting from the combination of nitrogen gas and oxygen, in the presence of matters rich in hydrogen and carbon, according to the experiments above noted, is no longer sustainable. 3. The source of nitrogen of nitrates formed in the soil should be considered, in the absence of positive proof to the contrary, as reposing only in the nitrified organic matters combined with the mineral elements of the soil. 4. Nitrates in decomposing in the soil, under the influence of a reducing atmosphere, yield but a small fraction of their nitrogen, under the form of ammonia retained by the earth by virtue of its absorbing power. The balance of the nitrogen of the nitric acid returns to a gaseous state, and thus becomes lost to the crops.—*Scientific American.*

Deviation of the Compass.—A curious point in connection with the deviation of the compass on iron ships has attracted much attention on the part of scientific men. It is now believed that some of the sudden and hitherto unaccountable changes in the deviation of the compasses of such ships—which are often unsuspected until alleged as the only conceivable cause of the vessel's running ashore—are the effects of an unequal and varying distribution of heat over the iron hull. Sudden slight changes of compass deviation, not exceeding five degrees, have been noticed on board iron ships on our American coast, and these are now attributed to changes in the hull, occasioned by the vessel's passing from warm to cold water, and the reverse. The warm temperature of the Gulf Stream, taken in connection with the cold counter-currents, may account for many of the suspected compass errors on iron ships, and the devising of a remedy for this would be an excellent subject for study on the part of some enterprising inventor.

The Discovery of Photosulphide of Carbon.—It is generally well known that, chemically, oxygen and sulphur greatly resemble each other. The sulphide of carbon, however, analogous in properties and composition to carbonic acid, has hitherto been considered the sole sulphuretted compound of carbon, there being nothing recognized corresponding to carbonic oxide to the sulphur series. M. Sidot has recently made the important discovery of photosulphide of carbon, which compound he obtains by subjecting bisulphide of carbon to sunlight, when the liquid undergoes a profound decomposition. Half of the sulphur separates to be again dissolved in the bisulphide not yet altered, and at the same time a black powder is precipitated, which is the photosulphide sought for. This, washed and purified, is destitute of taste or odor, and is absolutely insoluble in neutral solvents. Acids act upon it, giving rise to more or less complex products. The author proposes to undertake a series of extended investigations into the properties of the new body.—*Scientific American.*

Edgerton's Oxy-Hydro-Carbon Light.—At the June meeting of the Institute, this invention was exhibited and described. It consists of a small copper vessel, placed immediately over the flame of a jet, arranged as in the ordinary oxy-hydrogen light, and so connected with a reservoir that the hydro-carbon oil can be fed into it as required. The heat of the flame converts the oil into vapor of high tension, which is carried to a chamber of about one-half cubic inch capacity at the base of the jet, where it mingles with the oxygen and is burned in the ordinary jet, and the flame projected against a piece of lime, as in the oxy-hydrogen light. In order to start the light it is necessary to first heat the generator with a spirit lamp, until vapor is produced, when the oxygen is turned on and the spirit lamp withdrawn. The inventor claims that the light thus produced is more brilliant and cheaper as well as more convenient, where it is difficult to obtain ordinary illuminating gas.—*Journal Franklin Institute*

Tempered Boracic Acid.—Tempered glass submitted to the polariscope exhibits centers, having a kind of activity under the light, but which disappear when the glass is annealed. According to M. de Luynes, boracic acid, cast and submitted to hardening, acts like glass, with the difference, however, that the peculiar property above noted is not dispelled on annealing. When submitted to moist air, a small lens of the acid undergoes curious internal modifications, resulting in two cones, disposed apex to apex, being formed within, which offer the most varying accidents of shape. M. de Luynes suggests that an analagous swelling may take place in other vitreous substances, and points out that certain geological phenomena may be traced to such cause.

A water-proof oil has been invented in Pittsburg, of which it is represented that it does not get rancid, cannot freeze, will not gum or fry out, is penetrating, dries quickly on the surface, yet makes and keeps the leather soft and pliable. It is also said to repel rats, mice and all manner of vermin.

Mechanical Progress.

Something New in Cannon Manufacture.

Military circles throughout Europe have of late become much interested in a new process lately adopted for the manufacture of cannon by General Euchatius, Director of the Imperial Arsenal at Vienna. The name "steel bronze" has been given to the process, as though it was accomplished by the use of a new metal, which is not the case, for there is no steel about it. The metal employed is nothing more than ordinary bronze or gun metal, in general use. Its superior resisting qualities are due simply to the manner in which it is manipulated after being cast. It is well known that bronze guns, under the strain of repeated firing, enlarge without any corresponding alteration of the exterior, and this soon becomes worthless. General Euchatius' plan to overcome this trouble is as follows: The gun is cast in the usual manner, hollow, and with a bore somewhat less in diameter than it is intended the finished gun shall have. A series of thirteen punches are then forced through the bore, each a little larger than the preceding one, whereby the bore is gradually enlarged, under a powerful pressure, while the metal is at the same time subjected to great friction, causing it to become extremely hard, and of a nature well suited for the subsequent rifling.

Twenty guns, thus prepared, have been tested in Austria during the past two years. The results obtained have been such that the Austrian government is now constructing two hundred batteries, or twelve hundred guns, at the rate of six batteries a week. A single gun so prepared has withstood 3,000 rounds without any perceptible deterioration; and others, even after being subjected to the severest tests—shells burst in their bores—appeared to lose nothing in point of accuracy of fire. In estimating the relative cost of these guns with those of other metals, the value of the bronze for remelting, after the gun has become worn out, must be taken into consideration. This done, the first cost of the Euchatius cannon is placed at less than half that of a Krupp steel piece, and very much below that of a Whitworth compressed steel gun, which, at a rough estimate, is about twenty per cent. more expensive than Krupp's

The Danks Puddling Furnace.

The Danks furnace which appears to work so well in this country, under the immediate supervision of the inventor, has been reported a failure in England. It was introduced there some two years ago by the North of England Industrial Iron and Coal company, one of the largest iron companies in England, and soon afterward reported a failure so far as its relation to profitable results are concerned. It was immediately superceded by the Crampton system—an English invention, under which heat is obtained from coal dust. It is undoubtedly true that the furnace, as originally constructed, is not a success; but practical iron masters have been at work upon it, both in this country and in England, and have introduced important improvements, which, in this country at least, have rendered the Danks furnace a success. If Mr. Danks had been able to give his personal attention at the works in England as here, it is probable that no failure would have been reported.

The furnace was introduced into several other English establishments all of which appear to be in sympathy with the North of England company in their estimation of its value. It is probable that national pride has not been altogether without its influence in determining the issue—Danks being an American and his rival, Crampton, an Englishman. It is confidently predicted by many experienced iron masters that Danks will eventually master all difficulties in the way of mechanical puddling, and so perfect his machine that it will show such a manifest superiority over Crampton's as to make it for the interest of all to give it the preference. It is thought that either pulverized or gas fuel will have to be adopted by Danks—in fact that the latter should be exclusively used by both Danks and Crampton. Recent experiments tend to show that the blow-pipe principle is preferable to any other, as by this agency a most fierce heat can readily be attained from carburetted hydrogen. The Danks furnace is pronounced a most decided success in this country, both in the economy of its use and in the quality of the iron which it produces.

New Process for Smelting Iron.—Some important experiments, says the *Ironmonger*, have been recently conducted at the Elsecar, English, iron works of Messrs. D. H. & Geo. Dawes, the object being the trial of a new process for the smelting of iron. The experiments have, so far, been most satisfactory, and when they are completed we hope to give a detailed account of them. In the meantime, suffice it to say that the principle now being tried will, if finally successful, cause, perhaps, the greatest revolution which has ever been made in the iron trade.

Economic Use of Coal.—One and two-thirds pounds of coal per horse power, per hour, is the consumption of fuel shown by the steamship *Plover*, a new boat built at Sunderland, England. She has compound engines indicating 562-horse power.

Steel Making Among the Hindoos.

Dr. A. Hunter, a contributor to the *Art Journal* says: The fuel employed by the steel making Hindoos is hard, dense, charcoal, made of the wood of the babool, or some species of the acacia. When the steel is melted the heat is kept up steadily for an hour or more, and the furnace months are closed with clay to exclude cold air, and to allow the metal to cool slowly. Next day the crucibles, when cold, are broken, and the lumps of steel removed and sorted into the different sizes for knives or small tools, daggers, spear heads or saw blades. The lumps of steel are called oollies, and they find a ready sale in most of the markets of India, at one shilling per pound. Till very lately there was a considerable export trade of Indian wootz steel to Upper India, Persia and Damascus. One of the peculiarities of this steel is its malleability and ductility, combined with great toughness; it requires to be worked, however, in a peculiar way, as it is easily spoilt if the heat be too great. The general rule is not to urge it beyond a dull cherry red, and not to keep it too long in the fire, as it becomes brittle and liable to crack if made white hot. Very heavy hammers are used in proportion to the size of the work, and the quicker the hammering the better are the tools or weapons. If the heat has been too great the steel is spoiled, and it cannot again be restored to its pristine malleability. The reason for this is, that a portion of the carbon has been burned away, and the metal has been reduced to a hard brittle iron, which opens into cracks and will not weld. To remedy this defect it is to beat out with soft malleable iron in bars, embedded in fresh charcoal, and covered with pieces of hoofs and horns, or old leather, and thus partially converted again into a soft steel.

The Iron Horse for Street Cars.—A correspondent of the *Scientific American* writes to that journal as follows: Most of your correspondents, when writing on the application of steam to street cars, seem to take it for granted that the power used must be either horse or locomotive, with no alternative. If by locomotive they mean cylinders connected to the car wheels, or to the wheels of a separate vehicle or machine, I must dissent, and agree with you that the horse is to draw these cars awhile longer; for there are some very important things about drawing a street car that locomotives cannot do practically. For instance, a large truck broke down on a track, and the several cars passing each minute were promptly drawn off the track and around the obstruction on the ordinary Belgian pavement, preventing a serious blockade; and this is not uncommon. However effective locomotives may be on a clear track with good rails, they are worth little off it, and on most street railways they would be off too often.

We think the case demands, not a locomotive, but literally an iron horse, that can, like any horse, be readily attached to and detached from the front of any car, with which it can be drawn off from or on to the track at pleasure, and need not be stopped by ice or mud.

The Strength of Wood and the Efficiency of the Axe.—In a recent volume of the annals of the Forest academy, at Mariabrun, near Vienne, Professor W. F. Exner gives a novel and highly instructive analysis of the elasticity and strength of wood, its resistance to splitting, and the theory of the use of the wedge, the axe, etc. The importance of these matters he shows to be very great, because great industries depend upon the facility with which wood can be split, and upon the applicability of certain kinds of wood. Having deduced a few simple formulæ to express the strength of woods and the power of the wedge, he develops a formula for the force with which an axe is handled, and shows what curve should be given to the face or cheek of the axe, in order to secure, under certain conditions, the least waste of power. By means of the formulæ he is able to demonstrate that the splitting efficiencies of the best axes made in America, Prague and Vienna, are to each other as 4·9, 9·2 and 13·3 respectively; and, applying his formulæ to the elaborate experiments of Nordlingen, he is able to deduce the absolute ease with which various woods can be split. It will thus be seen that the American axe possesses nearly three times the efficiency of the Vienna axe.

Iron Making in Japan.—Messrs. Head, Wrightson & Co., of the Teesdale iron works, Stockton-on-Tees, have just entered into a contract with the Japanese government to supply the whole of the necessary plant for two blast furnaces which are to be erected at the Heygori mines, in the north of Japan, where it is said that a rich ore containing 50 per cent. of metallic iron exists. These will be the first blast furnaces constructed in that part of the country. The professional adviser of the government is Mr. David Forbes, F. R. S., of London, a secretary of the Iron and Steel Institute. The furnaces will be 57 feet high, 10 feet in the bosh, for charcoal, and will be fitted with Whitwell's patent hot-blast stoves, Wrightson's patent charging apparatus, and all the most modern appliances in this department of engineering.

To Preserve Metallic Sodium.—According to Bottger, if sodium be placed in alcohol until its surface becomes brilliant, and then in naphthalic ether chemically pure, and finally in a concentrated solution of naphthaline in naphthelio ether, the metal may be preserved unalterable with its lustre unimpaired for a long time.

Sales at S. F. Stock Exchange.

FRIDAY, A. M., Aug. 20.

90 Alpha.....26
400 Alta.....4¾@4¾
175 Baltimore Con.....5@4¾
860 Best & Belcher.....55@56¾
200 ...do.....b 5..56
330 Belcher.....27@26
10 Bullion.....55
200 Buckeye.....7
15 Chollar.....118@111
160 Confidence.....27½
50 Con Virginia.....32¾@32
195 Caledonia.....29¾@29
200 Challenge.....17¾@17
200 Point.....34@33¾
200 Dayton.....6¾
130 Empire Mill.....8@7¾
10 Exchequer.....21½
620 Gould & Curry.....23¾@23¾
270 Hale & Norcross.....8@8
10 ...do.....b 5..8⅜
130 ...do.....b 30..69
1660 Imperial.....12¾@12½
290 Justice.....4¾
220 Julia.....34@33
10 Kentuck.....16¾
50 Knickerbocker.....3½
375 Lady Bryan.....2¾@2¾
905 Mexican.....25¾@25¾
25 ...do.....b 30..2¾
205 New York.....4@4¾
720 Ophir.....67@68½
135 Overman.....12½@12¾
165 Piccadilly.....3
190 Phil Sher.....1¾@1¾
850 Rock Island.....4@4¾
75 Savage.....14½@14¾
235 Sierra Nevada..18¾@18¾
85 Hill.....12
100 Succor.....1¾@1¾
10 Seg Belcher.....95
100 Ty er.....1
350 Union.....10@10¾
30 Utah.....14@14¾
1010 Woodville.....23¼@22½
105 Yellow Jacket..91@92½

AFTERNOON SESSION.

120 Alps.....25@37½
1355 Andes.....4@4¾
80 Am Flag.....2
160 Amazon.....1
75 Belmont.....3
215 Best & Bel.....55@55⅝
150 Cosmopolitan.....40@
50 C omer.....3
10 Chollar.....101
1010 California.....63¾@66
100 ...do.....b 5..66
100 C Point.....33½
5 Con Virginia.....32@
225 Eureka Con.....37@38
100 El Dorado South.....7¾
100 Empire I.....8c
1120 Gila.....1¾
240 Golden Chariot.....1¾
1230 Hussey.....3½@3¾
240 H & Nor.....44@45
30 Jefferson.....4
80 Jackson.....1⅞@1⅝
265 K K Con.....4¾@5
330 Leopard.....15¾@15½
550 Leviathan.....1¾
425 Leo.....1¾@1¾
490 Meadow Valley .5½@5¾
425 Mansfield.....50@55c
1050 Mides.....5
150 Niagara.....7
20 N Belle.....29½
115 O G Hill.....1¾@2
175 Overman.....70@71
455 Ophir.....67@67¾
100 ...do.....b 5..67¾
350 Occidental.....3
175 Poorman.....3½
970 Prospect.....6@5⅝
170 Pauper.....2c
140 Raymond & Ely.....4¾@4¾
100 ...do.....b 30..44
50 South Chariot.....70c
100 S Moun ain.....1
20 S Justice.....9
400 S California.....3
635 Wells-Fargo.....35@25c

SATURDAY, A. M., Aug. 21.

155 Alpha.....26
575 Andes.....6
260 Best & Bel.....55@55⅝
500 Baltimore Con.....43¾@45
260 Belcher.....21@26
100 Bullion.....54
525 C Poorman.....33@33½
100 ...do.....b 30..34
865 California .....85@65½
100 ...do.....b 5..65½
100 ...do.....b 30..65
50 Caledonia.....29½@29
390 Confidence.....26@28½
150 Con Virginia.....32⅜@31⅝
391 Cholar.....100@100
479 Challenge.....70@67½
25 Daney.....1
25 Dayton.....6¾
205 Eureka.....35@33
100 Globe.....62½c
640 Gould Curry.....22¾@23
225 Hale & Nor.....62@63
895 Imperial.....12¾@12¾
50 ...do.....s 30..12¾
220 Julia.....34@34¼
415 Sil hill.....12¾@12½
70 Kentuck.....16¾@16¾
200 Kossuth.....2
1150 Lady Bryan.....2@2¼
265 Lady Wash.....2½
90 Leopard.....15¾@15¾
680 Mides.....4¾@4¾
275 Meadow Valley..5¾@5¾
125 New York.....3⅞
595 Ophir.....67@67¾
115 Overman.....71
450 Occidental.....4¼@4⅝
100 O G Hill.....b 5..2
500 Plotou.....40c
100 Phil Sher.....1⅞
200 Pauper.....2c
475 Rock Island.....4¼@4¾
50 ...do.....b 30..4⅝
120 Ray & Ely.....4¾@4⅝
220 Savage.....1 6
155 Sierra Nevada..18¾@18¾
70 Seg Belcher.....90@91
540 Succor.....1@1¾
215 Sil hill.....11¾
320 Sentuck.....1@1¼
480 Union Con.....10¢
215 Utah.....14@14½
550 Woodville.....2⅛@2⅜
20 Yellow Jacket.....91@93

MONDAY, A. M., Aug. 22.

200 Alpha.....25@24½
25 Am Flat.....3¼
1165 Best & Bel.....55@55⅛
50 ...do.....55¼
135 Belcher.....26@25
150 Bullion.....52@51
190 Bal Con.....4¾@5
200 Buckeye.....10c
110 Caledonia.....76@76
2240 California.....63@63
150 ...do.....b 5..64
100 ...do.....b 30..65
700 ...do .....b 90..66⅜@67
300 Confidence.....24¼@23⅝
135 Con Virginia.....34@31⅝
310 Crown Point.....32@34
30 ...do.....b 5..33
60 Dayton.....6⅝@6
50 Dardanelles.....3
60 Exchequer.....20@20⅝
240 Globe.....62½c
760 Gould & C.....22⅝@22¾
225 Hale & Nor.....56@59
500 Imperial.....12@11¾
310 Justice.....4¼@4⅜
120 Julia.....27@25
75 ...do.....b 30..36¼
100 ...do.....s 90..37½
100 Kentuckbocker.....3½
50 Kentuck.....1
1445 Lady Bryan.....2@2⅛
485 Mexican.....24½@24⅜
50 Miut.....50c
70 New York.....3½

625 Ophir.....66@65½
15 Overman.....65
250 O G Hill.....2
165 Occidental.....4@4½
275 Rh l Sheridan.....1¾@1¾
340 Rock Island.....4@3⅞
225 Savage.....12@11⅝
100 ...do.....b 30..130
200 Sierra Nevada...17¾@18
115 Succor.....1¼@1½
90 Seg. Be cher.....83@81
790 B & Bel.....52@52½
100 ...do.....b 30..53
50 Cosmopolitan.....35c
60 Con Vir.....38@307
320 California.....62@63
320 Eureka Con.....31@29
50 ...do.....b 30..29½
130 Eureka.....b 3..7
1935 Gila.....4¾@4⅝
575 Golden Chariot..1¾@1¾
620 G & Curry.....23@19
145 H & Nor.....57@53
895 Hussey.....3@2½
60 Illinois Con.....3
250 Imperial.....11@10¾
250 Jackson.....1¾@1⅞
80 Jefferson.....4
160 Ju tice.....34
150 K K Con.....4⅞
665 Leopard.....14½@14¾
245 Leviathan.....1¾
245 Meadow Val.....5½
250 Mansfield.....75@80
100 Miryland.....75c
100 M Star.....2
1600 N Carson.....35@45c
400 Niagara.....69@75c
315 Ophir.....62@61⅝
110 Overman.....61@59
1000 Prospect.....60@55
50 ...do.....b 30..1¾
110 Poorman.....3¾@3½
400 Pacific.....1¾@1⅝
1000 Rock Island.....4¾
145 Meadow Val.....5½
110 Raymond & Ely.....39@33
1 M Star.....2
95 Savage.....102@95
14 0 W Almaden.....2
380 Wells-Fargo.....35@30c
170 Y Jacket.....80

TUESDAY, A. M., Aug. 23.

125 Alpha.....21½@22
100 Alta.....3⅞
100 Belcher.....21
145 Bullion.....43@44
720 Best & Belcher.....50@51
100 ...do.....b 30..52½
185 Bil Con.....43@44
195 Chollar.....86@89
305 Crown Point.....30@31¾
190 Confidence.....24@22
240 Con Virginia..30⅞@32⅝
1920 California.....60@61½
285 Caledonia.....26@28
100 Challenge.....6
285 Day on.....6@5⅞
200 Dardanelles.....4
150 Empire Mill.....6¾
175 Globe.....67@68
615 Occidental.....5¼@5⅝
310 Overman.....72½@74
100 Phil Sher.....1¾
755 Rock Island.....4¾@4⅝
88 Savage.....13⅝@14
340 Sierra Nevada...18¾@19
300 Succor.....1¾@1⅞
250 S Hill.....12¾@12½
10 Seg Belcher.....95
705 Union Con.....10@10¾
100 Utah.....14¾@14⅝
480 Woodville.....27⅞
270 Yellow Jacket..91¼@93

AFTERNOON SESSION.

50 Am Flag.....2
1370 Andes.....4@4½
400 Alps.....50c
300 Cosmopolitan.....40c
90 Europa.....1
1000 Eureka Con.....38@39
50 Empire.....5c
450 Gila.....4@4¼
600 Golden Chariot..1¾@1¾
1600 Gould & Curry.23¾@23¾
100 Hn-sy Con.....3½
100 Illinois C.....4½@4¾
350 Jackson.....1⅝
80 Jefferson.....4¼@4½
100 K K Con.....4¾@5
220 Kossuth.....2½@2¾
100 Leo.....1¾
170 Lady Wash.....2¾
300 Leopard.....16¾
100 Leviathan.....1¾
1630 Mides.....4½@5
480 Meadow Valley.....5¾@6
400 Mansfield .....85@95c
300 Monumental.....60c
50 Mahogany.....2
80 Maryland.....75c
400 M Star.....3½
250 N Carson.....4c
60 Ophir.....68¾@69
2.0 O G Hill.....2@2¼
100 Prussian.....1
100 Panther.....1¾
50 Poorman.....3⅝
300 Pauper.....25c
115 Prospect.....5¾@6
10 Raymond & Ely..41@43½
120 Rye Patch.....1¾@1½
850 South Mountain.....1
250 Wells-Fargo .....20@30c
90 Jefferson.....4@3¾
15 Knickerbocker.....3
240 Kossuth.....2@1¾
625 Leopard.....15@13½
85 Lady Wash.....2@1¾
270 Leo.....30c
15 Mides.....4
135 Meadow Valley. .5¾@5¾
400 Maryland.....40@50c
500 Mint.....50c
200 M Star.....3½
600 Mansfield.....75@70c
220 New York.....3@2¾
700 Pacific.....1¾
220 Prospect.....5½@5
210 Raymond & Ely...35@32½
800 Rock Island .....3@3¾
505 S Hill.....32@33
25 Senator.....1
50 S R Island.....37½
70 South Cal.....3½
1400 Tyler.....15@50c
30 Utah.....11½
75 War Eagle.....1
100 Wells Fargo.....30c
380 Woodville.....1¾@1½

SALES OF LAST WEEK AND THIS COMPARED.

THURSDAY, A. M., Aug. 19.

385 Alpha.....25¾@26
1700 Best & Belcher 54¾@55½
270 Belcher.....24@28½
40 Bullion.....53¾@54
155 Baltimore Con.....5
270 Buckeye .....33¾@34
125 Chollar .....10¼@15
630 C nfidence .....27@28
215 Caledonia .....28½@29
50 Con Gold Hill.....2
1305 Con Virginia.....318@320
1140 California.....65½@65¾
225 Challenge.....17¾@17¾
50 Dardanelles.....2
193 Dayton.....6½@6¾
380 Empire Mill.....7¾@7¾
25 Eclipse.....7
20 Exchequer.....200
80 Globe.....62½@75c
570 Gould & Curry.....22¾@23
495 Hale & Noroross..59¾@63
1510 Imperial.....12@12½
980 Justice .....36½@37
275 Julia.....34@34½
100 Kentuck.....6½@6¾
1285 Knickerbocker..3½@3½
570 Lady Bryan.....2½@2¼
1315 Mexican.....25¾@25¾
280 New York.....4
1190 Ophir.....67@68
615 Occidental.....5¼@5½
310 Overman.....72½@74
100 Phil Sher.....1¾
750 Rock Island.....4¾@4⅝
88 Savage.....13⅝@14
340 Sierra Nevada.....18¾@19
300 Succor.....1¾@1⅞
250 S Hill.....12¾@12½
10 Seg Belcher.....95
705 Union Con.....10@10¾
100 Utah.....14¾@14⅝
480 Woodville.....27⅞
270 Yellow Jacket..91¼@93

AFTERNOON SESSION.

In consequence of the panic, the Board adjourned without transacting any business.

THURSDAY, A. M., Aug. 26.

225 Alpha.....17@18½
1850 Belcher.....18@20
2280 Best & Belcher..41¾@45
170 Bullion.....35½@39
1650 Buckeye.....15c
160 Buckeye.....15c
225 Chollar.....85@87
3100 Crown Point.....22@24½
670 Confidence 17
7325 California.....58½
500 Con Virginia..250@267½
1315 Gould & C.....17@18
940 Hale & Nor.....35@40
1710 Imperial.....8¼
575 Justice.....20@24
75 Julia.....17@18
20 Kentuck.....6¾@6¾
800 Lady Bryan.....1¾@1¾
2-30 Mexican.....8@19
3870 Ophir.....43@55
1090 Overman.....40@43
325 Savage.....81@85
665 Sierra Nevada.....14¾@15
275 Union Con.....7@7¾
740 Yellow Jacket.....62@65

The Mining Share Market.

The bottom has dropped out of the stock market as we write, (Thursday night), but if it is possible for it to go much lower this week, it will probably do so on account of the difficulties of the Bank of California, mentioned in another column. At the end of last week the market showed signe of an advance and most people thought the "Fall rise" had set in, or a preliminary rise any how. But on Monday the market broke and has been trumbling down ever since. Ophir has sold as low as $36; California, $48; Con. Virginia, $240; Chollar, $60; California, $50; Gould and Curry, $17; Overman, $40, and other stocks in proportion. There has been a regular panic and many a small dealer has been cleaned out on a margin business. It is all laid to stringency of the money market, Flood & O'Brien, the new bauk, etc. Whatever the canse, it is certain that the market has been lower than for many a day, and California street seee many loug facee. The fluctuations of the market for the week can be seen by referring to our stock tables.

THE work of dredging the harbor channel at Wilmington, is progressing satisfactorily. Gen. Boschke, the contractor, has now got through the reef, and is working in hard cemented gravel and boulders. When completed, the width of the channel, under Boechke'e coutract, will he 60 teet, the entire length.

A NUMBER of the leadiug fieh dealers of this city have combined and offer a reward of $25 for the couvictiou of any person selling salmon in violation of the act prohibiting the eame, between the first of Angust and the first of November.

A BARK of 700 tons is being built at the Potrero, for the keel of which the 180-ft etick was brought here last week.

MINING SHAREHOLDERS' DIRECTORY.

Compiled every Thursday from Advertisements in the Mining and Scientific Press and other S. F. Journals.]

ASSESSMENTS.—STOCKS ON THE LIST OF THE BOARDS.

Company.	*Location.*	*No.*	*Amt.*	*Levied.*	*Delinq'nt.*	*Sale.*	*Secretary.*	*Place of Business.*
Alpha Cons M Co	Washoe	7	1 00	Aug 12	Sept 17	Oct 7	Wm Willis	419 California st
Alta S M Co	Washoe	2	50	Aug 23	Sept 27	Oct 19	Wm H Watson	302 Montgomery st
Arizona S M Co	Nevada	2	1 00	Aug 20	Sept 24	Oct 15	Wm Willis	419 California st
Batile Cons M Co	Washoe	2	25	Aug 13	Sept 16	Oct 6	Theo O Kibbe	419 California st
Caledonia S M Co	Washoe	13	3 00	July 7	Aug 11	Aug 31	R Wegener	414 California st
Cherry Creek M & M Co	Washoe	4	50	July 15	Aug 19	Sept 14	D F Verdenal	409 California st
Condor M Co	Ely District	4	50	July 9	Aug 16	Sept 7	G T Grimes	240 Montgomery st
Cosmopolitan M Co	Washoe	10	25	Aug 11	Sept 15	Oct 4	M Lamsters	507 Montgomery st
El Dorado South Cons M Co	Nevada	6	1 00	July 6	Aug 11	Aug 31	W Willis	419 California st
Empire M Co	Idaho	10	50	July 7	Aug 12	Sept 1	W Willis	419 California st
Europa M Co	Washoe	4	25	July 23	Aug 27	Sept 14	R B Noyes	419 California st
Globe Cons M Co	Washoe	6	75	July 20	Sept 1	Sept 18	Joseph Maguire	419 California st
Hale & Norcross S M Co	Washoe	41	5 00	Aug 21	Sept 24	Oct 15	Joel F Lightner	438 Cali ornia st
Ida Elmore M Co	Idaho	18	1 00	July 20	Aug 27	Sept 18	C B Higgins	402 Montgomery st
Lady Bryan M Co	Washoe	8	50	July 9	Aug 12	Sept 3	F Swift	419 California st
Lady Washington M Co	Washoe	5	50	Aug 19	Sept 22	Oct 12	H C Kibbe	419 California st
Mahogany G & S M Co	Idaho	16	2 00	July 15	Aug 21	Sept 11	C B Higgins	402 Montgomery st
Manmoth S M Co	Nevada	19	15	Aug 11	Sept 29	Oct 28	D A Jennings	401 California st
Omega Table Mt M Co	Cal	1	5	July 27	Aug 31	Sept 20	David Wilder	Merchants' Ex
Pauper M Co	Idaho	5	30	July 24	Aug 30	Sept 22	W F Bogart	402 Montgomery st
Phil Sheridan G & S M Co	Washoe	3	60	Aug 6	Sept 8	Sept 29	W R Townsend	330 Pine st
Pioche S M Co	Ely District	10	1 00	Aug 13	Sept 24	Oct 12	Chas E Elliott	419 California st
Pioche West Ex M Co		10	2 00	Aug 12	Sept 10	Aug 18	T L Kimball	409 California st
Rocky Bar M Co	Washoe	3	10	Aug 6	Sept 16	Oct 6	J P Cavallier	513 California st
Rye Patch Cons M & M Co	Nevada	4	50	July 30	Sept 6	Sept 30	D F Verdenal	400 California st
Silver Central Cons M Co	Nevada	2	10	Aug 3	Sept 8	Sept 29	Lucien Hermann	330 Pine st
Silver Cord M Co	Idaho	10	1 00	July 20	Aug 28	Sept 20	C B Higgins	402 Montgomery st
South Mountain Cons M Co	Idaho	3	1 00	Aug 9	Sept 14	Oct 4	Wm Willis	419 California st
St Patrick G M Co	Washoe	3	1 00	Aug 6	Sept 7	Sept 27	David Wilder	Merchants' Ex
Succor Mill & M Co	Cal	11	50	Aug 12	Sept 15	Oct 7	D F Verdenal	409 California st
Ward Beecher Cons M & M Co	Nevada	5	50	July 14	Aug 25	Sept 22	D A Jennings	401 California st
Woodville Cons S M Co	Washoe	1	1 00	Aug 21	Sept 22	Oct 11	W M Helman	309 California st
Woodville G & S M Co	Washoe	11	1 00	Aug 21	Sept 23	Oct 11	W M Helman	309 California st

OTHER COMPANIES—NOT ON THE LISTS OF THE BOARDS.

Annie Belcher Q M Co	Cal	2	25	Aug 17	Sept 20	Oct 7	J M Buffington	311 California st
Blue Jacket M Co		2	1 00	July 30	Aug 31	Sept 18	C J Eaton	721½ Market st
Cascade Blue Gravel M Co	Cal	3	10	July 20	Aug 25	Sept 13	J M Buffington	311 California st
Cote S M Co	Washoe	27	5 00	Aug 21	Sept 27	Oct 19	Joel F Lichtner	438 California st
Cons Poe M Co	Washoe	3	25	July 24	Aug 28	Sept 18	Jas H Kimrad	Reno Nevada
Esquille Black Sand G M Co	Oregon	1	10	June 8	Sept 15	Oct 21	F P Reynolds	111½ Leidesdorff st
El Dorado State Co	Cal	1	40	Aug 19	Sept 21	Oct 9	Hugh Elias	416 Montgomery st
El Dorado W & D G M Co	Cal	10	10 0	Aug 5	Sept 6	Sept 21	Hugh Elias	416 Montgomery st
Enterprise Cons M Co	Cal	4	10	July 29	Sept 6	Sept 24	F J Hermann	418 Kearny st
Georgia S M o	Washoe	1	10	Aug 28	Sept 2	Sept 22	R Wegener	414 California st
Hages G & S M Co	Nevada	7	24	Aug 18	Sept 28	Oct 25	Geo H Spinney	320 Ca ifornia st
Howard Hill G M Co		3	35	July 28	Sept 6	Sept 24	F J He mann	418 Kearny st
North Bloomfield G M Co	Cal		1 00	Aug 14	Sept 22	Oct 12	Thos Derby	320 California st
Omega Table Mt M Co	Cal	7	5	July 27	Aug 31	Sept 20	D Wilder	Merchants' Ex
Orleans Hi Co	Cal	6	1 00	July 22	Aug 28	Sept 13	Geo P Thurston	316 California st
Oro Fino M Co	Idaho	1	1 00	Aug 17	Sept 17	Oct 8	Frank Swift	419 California st
Picacho M & M Co	Cal	1	10	Aug 2	Sept 13	Oct 18	Ford H Rogers	330 Pine st
Rattlesnake Q M Co	Cal	3	25	Aug 24	Sept 28	Oct 18	Andrew Baird	310 California st
San Francisco Copper M Co	Nevada	2	10	Aug 4	Sept 6	Sept 30	R De Clairmont	Front & Jackson st
Silver Sprout M Co	Cal	1	5	July 3	Aug 8	Sept 1	T B Wingard	318 California st
Tolman & Miller M & M Co	Cal	2	30	July 14	Aug 16	Sept 6	O H Bogart	402 Montgomery st
Union Gravel M Co	Cal	14	1 00	July 16	Aug 23	Sept 14	T Derby	320 California st
Victoria & Imperial Tun'l & M Co	Utah	5	10	July 8	Aug 12	S pt 2	W H Watson	302 Montgomery st
Weaverville D & H M Co	Cal	7	2 25	Aug 19	Sept 20	Oct 18	Ford H Rogers	330 Pine st
West Point G & S M Co	Cal	1	10	July 23	Aug 24	Sept 13	J O'Connel	400 Montgomery st
Wm. Penn Cons G & S M Co	Washoe		6	Aug 7	Sept 11	Sept 30	John F Pope	424 Montgomery st
Woodside M & M Co	Cal	2	25	July 17	Aug 17	Sept 2	J Ghisanan	335 Montgome y st
Wyoming G M Co	Nevada Co	Cal	7	35	July 13	Aug 17	Sept 4	J M Buffington	311 California st

MEETINGS TO BE HELD.

Name of Co.	Location.	Secretary.	Office in S. F.	Meeting.	Date.
Cuervo M Co		Wendell Easton	419 California st	Special	Sept 1
Gold Run M Co		C C Palmer	41 Market st	Annual	Sept 6
Great Western Cons M Co	Inyo Co Cal	R Wegner	414 California st	Annual	Aug 30
Hartford M Co	Wa hoe	Edward Stone	419 California st	Annual	Sept 2
Hartford M Co	Washoe	Called by Trustees	419 California st	Special	Sept 20
Julia G & S M Co	Washoe	Called by Trustees	419 California st	Special	Sept 7
K K Cons M Co	Eureka Dist	B B Min r	411½ California st	Annual	Sept 3
Linden G M Co		Chas J Collins	331 Montgomery st	Annual	Sept 6
Oakland Q M Co	Cal	W W Prayler	408 California st	Annual	Sept 6
Sanatoga River M Co	Cal	Called by Trustees	113 Leidesdorff st	Special	Sept 20
Succor M & M Co	Washoe	Wm H Watson	302 Montgomery st	Annual	S pt 6
Sutro M Co	Washoe	Called by Trustees	434 California st	Special	Sept 8
Victoria & Imperial T & M Co	Utah	Wm H Watson	302 Montgomery st	Annual	Sept 9
Virtue G M Co	Oregon	R H Brown	402 Montgomery st	Annual	Sept 6

LATEST DIVIDENDS (within three months)—MINING INCORPORATIONS.

Name of Co.	Location.	Secretary.	Office in S. F.	Amount.	Payable.
Black Bear Quartz	Cal	W L Oliver		25	July 19
Con Virginia M Co	Washoe	Chas H Fish	401 California st	10 00	Aug 7
Empire G M Co	Sierra Co Cal	G Collischon		5 00	Aug 17
Empire M Co	Nevada Co Cal	D A Jennings	401 California st	50	Aug 16
Eureka Consolidated M Co	Nev	W W Traylor	419 California st	1 00	Aug 5
Excelsior M & M Co		Frank Swift	419 California st	1 00	April 10
Gila S M Co	Nevada	W Asa Knapp	116 Leidesdorff st	25	Aug 16
Jefferson S M Co		C A Sankey	331 Montgomery st	50	May 15
Leopard M Co		R H Brown		50	July 15
Lyon Mill & Mining Co	Washoe	E F Stone	Bayward's Bldg	50	Aug 18
Manhattan S M Co	Nevada	Chas S Neal	419 California st	1 00	June 15
Northern Belle M & M Co		W Willis	419 California st	1 00	Aug 16
Oneida M Co		L Kaplan	Merchants' Ex	50	Aug 21

METALS.

[WHOLESALE.]

WEDNESDAY M., August 25, 1875.

American Pig Iron, ₱ ton	38 00	@	39 00
Scotch Pig Iron, ₱ ton	40 00	@	41 00
White Pig, ₱ ton	— —	@	38 00
Oregon Pig, ₱ ton	— —	@	33 00
Refined Bar, bad assortment, ₱ lb	— —	@	— 3½
Refined Bar, good assortment, ₱ lb	— —	@	— 4
Boiler, No. 1 to 4	— —	@	— 5½
Plate, No. 5 to 9	— —	@	— 5½
Sheet, No. 10 to 14	— —	@	— 5¾
Sheet, No. 16 to 20	— —	@	— 5¾
Sheet, No. 22 to 24	— —	@	— 6
Sheet, No. 26 to 28	— —	@	— 6½
Horse Shoes, per keg	7 50	@	8 00
Nail Rod	— 10	@	— —
Norway Iron	— 9	@	— —
Rolled Iron	— 6	@	— —
Other Irone for Blaokemithe, Miners, etc.	— —	@	— 4½
COPPER—			
Brazier's	— 35	@	— —
Copper Tin'd	— 37½	@	— —
O'Neil's Pat	— 37½	@	— 40
Sheatbing, ₱ lb	— 24	@	— 40
Sheathing, Yellow	— —	@	— 25
Sheathing, Old Yellow	— —	@	— 12½
Composition Nails	— 24	@	— —
Composition Bolts	— 24	@	— —
STEEL.—English Cast, ₱ lb	— 20	@	— 25
Anderson & Woods' American Cast	— —	@	— 16½
Drill	— —	@	— 16½
Fist Bar	— 18	@	— 22
Plow Steel	— 9	@	— 10
TIN PLATES—			
10x14 I O Charcoal	11 50	@	12 00
10x14 I X Charcoal	13 50	@	14 00
Roofing Plate I O Charcoal	10 50	@	11 00
Banca Tin	— 25	@	— 30
Australian	— 25	@	— 30
ZINC—By the Cask	— —	@	— 11
Zinc, Sheet 7x3 ft, No 7 to 10 ₱ lb	— —	@	— 11
do do 7x3 ft, No 11 to 14	— —	@	— 11½
do do 8x4 ft, No 8 to 10	— —	@	— 11½
do do 8x4 ft, No 11 to 10	— —	@	— 12
NAILS Assorted sizes	— —	@	— 4 10
QUICKSILVER, per ₱	— 65	@	— 70

LUMBER.

CARGO PRICES OF REDWOOD.		PUGET SOUND PINE —Retail Price.	
Rough, ₱ M	$18 00	Rough, ₱ M	22 50
Rough rafnse, ₱ M	14 00	Fencing, ₱ M	22 50
Rough clear, ₱ M	20 00	Flooring and Step, ₱ M	35 00
Rough clear refuse, M	20 00	Flooring, narrow, ₱ M	35 00
Rustic, ₱ M	32 50	Flooring, 2d quality, M	25 00
Rustic, refuse, ₱ M	24 00	Laths, ₱ M	3 50
Surfaced, ₱ M	30 00	Furring, ₱ lineal ft	— —
Surfaced refuse, ₱ M	20 00	REDWOOD—Retail.	
Flooring, ₱ M	28 00	Rough, ₱ M	22 50
Flooring, refuse, ₱ M	20 00	Rough refuse, ₱ M	18 00
Beaded flooring, ₱ M	30 00	Rough Pickets, ₱ M	18 00
Beaded floor, refuse, M	25 00	Rough Pickets, p'd, M	20 00
Half-inch Siding, M	22 50	Siding, ₱ M	25 00
Half-inch siding, ref, M	16 00	Surfaced and Long Beaded	37 50
Half-inch, Surfaced, M	25 00	Flooring	35 00
Half-inch Surf. ref., M	18 00	Do do refuse, ₱ M	28 00
Half-inch Battens, M	22 50	Half-inch surfaced, M	32 50
Pickets, rough, ₱ M	13 00	Rustic, No. 1, ₱ M	40 00
Pickats, rough, p'ntd	16 00	Battens, ₱ lineal foot	½
Pickets, fancy, p'ntd	25 00	Shingles, ₱ M	— —
Shingles, ₱ M	3 00		

LEATHER.

[WHOLESALE.]

WEDNESDAY M., August 25, 1875.

Oity Tannad Leather, ₱ lb			26@29
Santa Orna Leather, ₱ lb			26@28
Country Leather, ₱ lb			24@29
Stockton Leather, ₱ lb			25@29
Jodot, S Kil., per doz			$50 00@ 54 00
Jodot, 11 to 13 Kil., ner doz			68 00@ 79 00
Jodot 14 to 19 Kil., per doz			82 00@94 00
Jodot, second choice, 11 to 16 Kil. ₱ doz			57 00@ 74 00
Cornellian, 12 to 16 Ko			57 00@ 67 00
Cornellian Femalee, 12 to 13			63 00@ 67 00
Cornellian Females. 14 to 16 Kil			71 00@ 76 50
Simon Ullmo Females, 12 to 13, Kil			60 00@ 63 00
Simon Ullmo Females, 14 to 15, Kil			70 00@ 73 00
Simon Ullmo Females, 16 to 17, Kil			73 00@75 00
Simon, 18 Kil, ₱ doz			61 00@ 63 00
Simon, 20 Kil, ₱ doz			65 00@ 67 00
Simon, 24 Kil, ₱ doz			72 00@ 74 00
Robert Calf, 7 and 9 Kil			35 00@ 40 00
French Kips, ₱ doz			1 00@ 1 15
California Kip, ₱ doz			40 00@ 6 00
French Sheep, all oolors, ₱ doz			8 00@ 15 00
Eastern Calf for Backs, ₱ lb			1 00@ 1 25
Sheep Roans for Topping, all colors, ₱ doz			10 00@ 12 00
Sheep Roans for Linings, ₱ doz			5 50@ 10 50
California Rusoatt Sheep Linings			1 75@ 4 50
Best Jodot Calf Boot Legs, ₱ pair			5 00@ 5 25
Good French Calf Boot Legs, ₱ pair			4 00@ 4 75
French Calf Boot Legs, ₱ pair			4 00@ —
Harness Leather, ₱ lb			30@ 37
Fair Bridle Leather, ₱ doz			48 00@ 72 —
Skirting Leather, ₱ lb			33@ 37½
Walt Leather, ₱ doz			30 00@ 50 00
Calf Skins, ₱ foot			17@ ¾
Wax Bide Leathar, ₱ foot			17@ —

Gold, Legal Tenders, Exchange, Etc.

[Corrected Weekly by CHARLES SUTRO & CO.]

SAN FRANCISCO, August 25, 3 P. M.

LEGAL TENDERS in S. F., 11 A. M., 88 to 88⅛.

GOLD in N. Y. 113⅛

GOLD BARS, 890. SILVER BARS, 6½ and 7½ per cent. discount.

EXCHANGE on N.Y., 60-100 per cent.premium for gold; on London bankers, 49; Commercial, 49¼; Paris, five francs per dollar; Mexican dollare, three to five per cent. discount.

LONDON — Console, 93 to 93¼; Bonds, 102½

QUICKSILVER in S. F., by the flask, per lb, 65c.

CAMPO, SAN DIEGO CO., CAL., July 3d, 1874.

MESSRS. DEWEY & CO.—*Gentlemen:* To-day I received the patent and other papers of my animal trap, that you so successfully worked through the patent office for me, for which please accept my best wishes. The chances are that I will have another application for you to make for me before long. I am well satisfied with your manner of doing business, and I think inventors of this coast stand in their own light when they do not put their business into your hands.

I remain youra truly, A. M. GASS.

PURCHASERS pleass say advertised in Scisntific Press.

Mining Summary.

The following is mostly condensed from journals published in the interior, in proximity to the mines mentioned

California.

ALAMEDA

Livermore Coal Mine.—The editor of the Livermore *Enterprise* lately visited this mine. He found the boiler and general machinery being placed in position. The location of the engine is upon a solid foundation and convenient, while the boilers are placed about 100 ft below. The bunker, for the reception of the coal, is of the most complete and substantial character. While going down the shaft the vein of coal was noticed to improve from the top to a depth of 400 ft. At 300 ft a side drift is being run to the east to connect with the air shaft and is in upwards of 90 ft; is put through a fine body of coal, every foot of which indicates a continuation of the strata.

Coal Sample.—Alameda *Independent*, Aug. 20: We have a small specimen of coal handed us by a gentleman who brought it from the Black Hawk mine in the canyon east of Niles. It seems to be a good quality of coal, and shows that the explorers have something substantial to work for. Our informant states that the coal was found at a depth of 250 ft in the tunnel.

AMADOR.

The Phœnix.—*Foothills Ensign*, Aug. 20: The Phœnix mine, at Plymouth, the only mine at work in that section of the county, is only running from 20 to 30 stamps at present, on account of scarcity of water. Considerable alterations and improvements are being made in the way of straightening the shafts preparatory to facilitating the full prosecution of mining operations as soon as the supply of water will permit.

CALAVERAS.

Favorable.—Calaveras *Chronicle*, Aug. 22: The work of hauling rock to Garland's mill, from the San Bruno mine at Mosquito gulch, has been commenced. Rich ore is being taken from the stopes and the coming clean-up is expected to be the largest, for the amount of rock crushed, ever made by the San Bruno. Everything in connection with the mine is looking first-rate.

NEVADA.

The Kentucky.—*Foothill Tidings*, Aug. 21: The drift from the 300-ft level in this mine is now about 50 ft west of the shaft, along the vein, and a decided improvement is perceptible; the ground being of a very favorable character for pay ore. The quartz shows well in sulphurets and the general opinion among the miners is that the pay chute is near at hand.

Considerable work is being done by the Bear river mining company toward the development of their mines. Two forces of men are employed, one on the bank of Rock creek about 100 yards from its mouth, and the other some 2½ miles up the river. It is said that smelting works will be erected at Lincoln where cheap fuel can be secured from the coal mines of that town. So says the Wheatland *Free Press*.

INYO.

Tin Boulders.—*Independent*, Aug. 21: We were last week shown some specimens of what is supposed to be tin ore. It is in the shape of small oval-shaped boulders, varying in weight from an ounce to say five pounds. Mr. W. M. Hart, who exhibited these specimens, informs us that he can trace a range of these tin boulders, a 100 ft or more wide, for a distance of full 60 miles. Death valley being the locality. Should the proper test prove that this is really tin ore, as it seems to be, it is a discovery of vast importance as the quantity is simply inexhaustible. Mr. Hart and Mr. Gerrish of this place, associated with him, are both very sanguine it is the real stuff, at least enough so to be determined to have a thorough test made, which, it appears, cannot be done with the appliances at hand in common assay offices, and will therefore have to be sent to San Francisco.

Nevada.

WASHOE DISTRICT.

California.—The main drift on the 1400-ft level is steadily advancing toward the Ophir line, the face still in ore. Cross-cut No. 2, on the same level, is being driven east, the face in fine ore. Prospecting on the 1500 ft level is rapidly drawing to a close, nearly all having been done that can be, until the mill is ready to commence the extraction of ore. The new boilers for the mill have arrived and are being placed in position. The other machine work for both the crushing and amalgamating mills is advancing rapidly.

Ophir.—The repairs to the shaft and hoisting frame were completed and everything started up in fine running condition last Monday morning, since which time the regular amount of ore, 150 tons per day, has been extracted, the average assay of car samples running from $85 to $120 per ton. The ore is being mostly taken from the 1400 and 1500-ft levels, which are both looking remarkably well. Prospecting on the 1700-ft level has also been resumed, and the east cross-cut No. 4 is being again pushed rapidly ahead.

Justice.—The good ore showing of the south drift at the 800-ft level still continues, and the ore developments of the 400-ft level hold out well.

Cons. Virginia.—Daily yield, 600 tons of ore. The ore stopes were never looking better than at the present time or the quality of the ore better. The returns of bullion for the present month amount to $511,825.18, being in excess over the yield of last month at the same date of $175,813 38. The mills are kept steadily running and the prospects of the mine were never brighter. The ore bodies on both the 1400 and 1500-ft levels are being opened further to the southward, both proving rich as the work advances. Forty feet above the 1400-ft level a fine spur of ore, assaying over $100 to the ton, 20 ft in width and running away from the main ledge in a northwest course, has been struck. The cross-cut near the north line, on the 1550-ft level, is in a distance of 100 ft, the entire length in rich ore.

Centennial.—Active operations, as we have heretofore stated, are already inaugurated for the immediate and practical development of this valuable mining location. First-rate steam hoisting machinery is already purchased, and will be placed in working position at the mine as soon as the proper preparations can be made. The first of next week the sinking of the main working shaft will be commenced, the most eligible point having been selected for the purpose. It is to be a first-class 3-compartment shaft.

Crown Point.—The yield of ore is not so great as heretofore, owing to a scarcity of water in the Carson river, which has for the past week or two been gradually reducing the crushing capacity of the mills. The ore breasts and stopes show no perceptible change. On the 1600-ft level the main south drift is being gradually extended toward the Belcher line. At the same time a winze has been started from the 1500-ft level, which is to connect the main south drift for ventillation purposes. As soon as this connection is completed, the cross-cutting and prospecting of that portion of the mine will be commenced in good earnest.

Imperial Empire.—Work on the lower levels has gone right along and is progressing well at all points. The ore in the face of the south drift on the 2000-ft level still continues of a fine character, the assays running from $50 to $80 per ton. The north drift has been connected with the north winze which is greatly aiding the ventilation and cooling of the level. The ore developments at almost every point are proving more valuable.

Globe Consolidated.—Timbering the shaft above the third station level was finished today. The north drift on the level of the old Globe tunnel is being steadily extended, the face in a mixture of clay, quartz and porphyry, with a slight flow of water.

North Carson.—Face of lower tunnel in more favorable vein matter than last week, and driving forward into the main body. Nick Andrews, late foreman of the Savage mine, and well known for years as one of the best mining men on the Comstock, has been appointed superintendent.

Chollar-Potosi.—Sinking the main incline is going steadily forward without change of consequence during the week. The several prospecting drifts on the 1150, 1250 and 1300-ft levels are all steadily advancing to the southward, with no new features or important changes to record. Daily yield, 80 tons of ore, which is being extracted from the old upper levels.

Bullion.—Sinking the main incline goes steadily ahead, the bottom in good working ground. The enlarging of the incline adds greatly to the amount of work necessary for its reconstruction, and, as a matter of course, makes the progress of the shaft slower than it would otherwise be. The main north drift on the 1700-ft level from the Imperial shaft is pushed vigorously ahead, with steadily increasing ore prospects.

Hale & Norcross.—The formation in the face of the main west drift on the 2200-ft level is softening, and showing evident indications of a near approach to the vein. It is confidently believed that the ledge will be reached in a very short time.

Wells Fargo.—Excellent progress continues to be made in sinking the shaft. It is now a little more than 400 ft in depth, and has run through the hard strata recently encountered into softer and more favorable ground.

Utah.—The hoisting engines are again in the finest possible running condition, the shafts cleared of water and two new sets of timbers added at the bottom, and the sinking resumed in good earnest. The 400-ft level is being also put in good condition for more cross-cutting. Everything about the mine now appears to be in just the best condition possible for rapid and steady developments.

Belcher.—The daily yield of the mine has been considerably decreased during the week, the scarcity of water in the Carson river making it impossible for the mills to crush their usual quota of ore. There is but little change in any of the ore producing sections of the mine.

Yellow Jacket.—The south winze is down 185 ft below the 1700-ft level, the bottom quite dry. The north winze on the same level is down 100 ft, the bottom also dry. The main north drift on the 1740 ft level is in a distance of 475 ft from the turn-table, the face in hard porphyry.

Iowa.—The shaft is down 410 ft. At the depth of 400 ft a station has been opened and a drift started to cut the ledge. This drift is now in a distance of 20 ft, the face in good running ground, and will have about 150 ft to run to cut the ledge.

Dayton.—A thorough trial of the new machinery shows that everything is in as fine a working condition as it is possible for it to be. The hoisting tanks have lowered the water to the second station level, at which point it is the intention to start the large new pump, so that it cannot now be but a very few days more before the water will be drained from the shaft.

Overman.—The water is drained to a point below the 1100-ft station, in the shaft, where it still remains, no great effort being made to drain the bottom of the shaft.

Caledonia.—The erection of the new hoisting and pumping machinery is progressing with all the speed possible. Sinking the new shaft is making splendid progress.

Gould & Curry.—The repairs to the shaft are nearly completed; also the enlarging and leveling of the drift connecting with the Best & Belcher on the 1400-ft level. Everything is fast assuming a favorable shape for the prospecting and development of the ore vein on the lower levels.

North Cons. Virginia.—Sinking the shaft goes steadily ahead without change or intermission. There is no water to interfere. The hoisting machinery works as well as it is possible for it to do.

Seaton.—The steady decrease in the flow of water is greatly reducing the cost of running the machinery, the amount of wood consumed being much less. Drifting on the second station level will soon be commenced.

Florida.—Face of west drift at the 400 ft level in very encouraging vein matter, with but a small flow of water, the strong influx at first encountered having become pretty well drained out. From this circumstance the ground does not swell so badly as heretofore, and is therefore easier managed.

Savage.—All work on the 2000-ft level is suspended for the present. Both the north and south drifts on the 2200-ft level are steadily advancing, without any change of importence.

Leviathan.—The proposed drift in the main ore vein, spoken of in last week's report, is now commenced, being the practical opening of the 250-ft level of the mine.

Phil. Sheridan.—In accordance with the recommendation of Superintendent Jones, mentioned in our last report, new and powerful hoisting machinery has been ordered from San Francisco, and is now on its way over the mountains. Grading for the site of the new hoisting works and machinery is making steady and favorable progress.

Original Gold Hill.—A fine showing of ore is being developed by the north drift, which is evidently running into a body of considerable extent. The south ore body shows better and better as further developed.

Julia.—Sinking the main shaft is going steadily forward, everything working with the utmost perfection. Driving the main south drift on the 1000-ft level is also making rapid progress, with greatly increasing prospects. The mine never looked more favorable for the development of something valuable than at present.

Succor.—The rock in the face of the main west drift on the 550-ft level is somewhat harder than for some time past. The clay seams appear to be giving out.

Sutro.—The rock of the main west tunnel is extremely hard, making the progress necessarily very slow.

West Belcher.—The tunnel is still pushed vigorously ahead, with increasing prospects. The indications for the development of a paying mine are excellent.

Mexican.—Sinking the winze below the 1465-ft level has been resumed. The bottom is still in favorable quartz and ledge matter with occasional spots of ore.

Daney.—The repairs and erection of the new machinery is steadily advancing, and will be completed ready to start up by the first of the coming month.

Woodville Cons.—The chamber for the head of the incline is finished and timbered, ready for resuming the sinking.

Nevada.—The ore in the face of the drift shows considerable improvement over last week, being more concentrated and giving better assays.

Industrial Items.

Work on the railroad from Anaheim to Tustin has commenced. A bridge across the Santa Ana river is to be built, the county furnishing $20,000 of the necessary amount and the railroad the remainder. The bridge will be a wagon and railroad bridge and quite a substantial structure.

The grading and tunneling work on the line between Caliente and Los Angeles is being pushed forward with great vigor. 1,000 men are now employed in the San Fernando tunnel, and when working space can be enlarged the force will be increased to 1,500.

A private dispatch from the East announces that a large contract for kerseye (for soldiers' clothing) has been awarded by the War Department to Douald McLenuan, of the Mission woolen mills.

The North Pacific coast narrow gauge railroad company are pushing their road toward Duncan's mills. The company propose to run a branch to Guerneville.

The grading through the Tehatchipe pass is progressing rapidly, 1,800 workmen being employed on that division.

The depot in Los Angeles of the L. A and I. R. R., is to be located upon San Pedro street in that city.

Building is progressing rapidly at Santa Moiuca.

Fine Display at the Mechanic's Fair.

Some of the departments already make displays which outdo in quality any similar ones at previous Fairs, while the scale on which they are presented far surpasses any former exhibition. The machinery department will, without doubt, be first-class, as all the space was taken some time since. Several exhibitors were prevented from want of space to make a display in this department. Among them was Mr. Ghirardelli, who has a small stand opposite that of the *Fair Daily*, where he has coffee, chocolate, broma, spices, etc. He has recently imported expensive and newly invented machinery for the manufacture of chocolate, which he intended to have in working order at the Fair, and show the public the process by which the article is made. Unfortunately the Managers were unable to give him sufficient space.

The rock drills and mining machinery show off well in this department. Of pumps there are not so many kinds as usual, but what are shown are elegantly finished, and several are new patterns. A large display of wood-working machinery is made, and a great variety. Most of this is finely finished and will attract great attention. The wire and wire rope makers come up to the mark well, and show what our California manufacturers in this line can do. The furniture display will, when completed, be large and elegant. Carriages and wagons are already there in great variety and number, although manufacturers and dealers are not all represented as yet. The agricultural machinery this year is not quite as plenty as last, but we cannot tell yet what it will be. The exhibit of saws, etc., is a fine one and tastefully arranged. The two glass factories, now consolidated under one proprietorship, make a varied display of home manufactured articles, quite creditable to our local industries. In this display are several California inventions put to practical use. The cutlery artizans show some handsome home made goods, of neat design and fine finish. The San Francisco made rope looks strong and serviceable, and the strands look as well laid as the famous New Bedford article, being uniform and smooth. The wooden ware exhibit is great in uppearence and arrangement, and the articles look perfectly able to drive out Eastern competition with little exertion. The stoves, ranges and culinery articles shown by different exhibitors are an attraction for the ladies, and are well worth examining by all. Many of them are made in this State, in a style and finish very creditable to our artizans. The scales and balances of all varieties shown are handsome and useful, and are worthy of close examination. The home made carpets and woolen goods show what our manufacturers in this line can do. Pianos are not quite as plenty this year as usual, and the sewing machine men have not as yet come up to the mark. The silver plated goods and fancy articles help greatly in finishing off the appearance of less pretentious, but more useful appliances. The billiard table manufacturers are getting ready but have not all appeared yet. Spring mattrasses, bed lounges, etc., are plenty and in considerable variety. Small articles of every conceivable character are scattered over the building, which are of interest to many people. A feature of the display this year is the unusual number of articles of home manufacture in place of similar imported exhibits. This is a cause of great congratulation to the citizens of this State, who should do all in their power to encourage such manufactures.

No Reduced Rates by Rail.

We have received several letters from people in the interior, desirous of visiting the Fair, asking if the management had made any arrangements with the railroad companies for reduced rates to the city during the Exhibition. They say it has been advertised for several weeks in the papers that half-priced tickets will be issued to visitors to the State Fair at Sacramento, but no such arrangement has been announced as having been made for the Mechanics' Fair, which is really *the* exhibition of California. We are asked if the half fare business has been suggested. On inquiring of the Board of Managers, we are informed that they endeavored to make some arrangement of the kind with the railroad companies, but were unable to do so. The railroad men said that they carried plenty of passengers to San Francisco at all times, and a temporary reduction of rates would do no good to the Fair. People who could come would do so anyhow, and many of the travelers who thought nothing of the Fair would take advantage of the low rates, of course. This would cause a falling off of railroad receipts, and cause no increase in Fair receipts, so they refused to reduce the rates to San Francisco. To get people to Sacramento is a different thing. They require some strong inducement to go there at all, and it is as much as the big Fair, the little fare and horse races combined can do to get a good crowd together. We are sorry the railroad folks won't encourage the interior people to come to the Fair, but they can get even on the company by calling them "monopolists" and other hard names.

The Western Union telegraph company will change their line from Colfax to Nevada, and place it on the route of the Nevada county narrow gauge railroad company, establishing offices on the line of the route.

The Navigator Islands.

Samea, the latest ecene of the latest filbnstering en the pert of our nen-aggressive Administretien, is a group of islands, better knowen es the Navigaters, and lying hetween latitude thirteen degreee thirty minutee and fourteen degrees tbirty minutes south, and lengitude one bundred and sixty-eight degrees and one hundred and seventy-three degreee west, consieting of feur principal and five leeser ielands; they are knewn as Apelima, Manono, Savaii, Rose, Olesinga, Ofu, Manna, Tutuila and Annu. They were first seen hy Bengainville in 1768, and La Peronse in l'Astrelahe in 1787, though Kruseustein considers them te he the same as the Bauman islands, discovered by Roggeweid in 1721. They were revisited at varieus times by the early navigaters, hut their topographical and hydrographical natures were unknown until the United Statee exploriug expedition, under Wilkes, made tbe famous surveys that eliminated the previeus prolific chances ef danger in tbe greup.

All the islands excepting Rese are of velcanic origin, and there are still extant remaine of extinct velcanees, especially in Apelima, Savaii, Tutuila and in Lake Lanto, on the ridge of Upela, 2,570 feet above the sea level. The area ef the group is about 2,560 square miles, and the pepulatien ie estimated roughly at 20,000 —a marked decreaee from the estimate of 1840, which placed it at 55,000, end from the still later one of Admiral Erskine in 1849, which gave it frem Missienary seurcee at 37,000.

Savaii, Tutuila, Maneno and Upelu are the islande that attract the greatest interest at present, Upolu heing the seat ef the new Gevernment, Savaii, the largest; Manono, frem its possession of the halance ef power, and Tutuila ae the unrepentant and rebellious district which refuees te enter the new confederatien, but sticks with grim determinetion te the flag and laws furnished by Commander Meade in his vieit to the islands in 1872. Saveii is ferty milee in length and twenty in breadth, and furnishee the largest quota to the fighting forces of the federatien, but the comparative unfitness of its harbors, its difficulty of approach, the absence of permanent streams, and its broken and irregular coral barrier degrade it to the second place in importance, and yields the first to Upolu.

The Crete de Coq of Kotzebue, and the emallest islands of the group, lies inside the same reef ae Upolu, and hetween it and Savaii, seven miles distant. It is the Gibraltar of the nation, eelected with rare wisdom hy eome prehistoric Gabel al Tarck of those seas, and so fortified by nature as practically to he impregnable to the resources of Samoan warfare. It is simply the crater of an extinct volcano—a periphery of perpendicular rocks, fringed with a narrow habitable helt, and broken only at the northern point, where its natural entrance is so narrow that hut a single canoe can enter at a time.

The population does not uumber more than a thousand, hut these are skilled sailors, brave in war, very vikings of the austral land, and so feared that it is a tradition of the people that as go Manono and his sailor warriors, so goes Samoa. Tutuila is the windward island, and the prohable port of entry and commercial depot of the future. It is high and of volcanic appearance, and of comparative limited value as a producing country. It is the old Maouno of Bongainville, and for years suffered an undeeerved reputation from the murder of the Comte de Langle, M. de Lumanan and a boat's crew helouging to La Perouse's expedition. Later evidence proves that these murdere were reprisals for the shooting of a native on hoard l'Astrolabe for some imaginary offence. The island is seventeen miles long, and in ite greatest hreadth about five miles, generally precipitieus, diversified by narrow table lands and tortuous valleys.

The district of Pango-Pango possesses the best harhor, and was selected by Mr. Webb as the coal depot for the steamere of the Australian and Intercolonial line. Its importance wae so highly appreciated by Cemmander Richard Meade, of the navy, that he surveyed it in the *Narragansett*, and during his stay laid down the harbor accurately, selected the moet available site for depots and steamers, framed a code of laws for the people, founded a local government wise, judicious and eminently euited to the race and climate, and plauted the seeds of an authority that seeme so satisfactorily to have flouished that it possesses inherent strength enough to defy the flatteries and threats of Steinborger aud his coterie. This harbor, if any, will probahly be the entrepot for the trade of the group with the outside world. and is hy far the hest, not only in this group, hut in Polynesia. Evidently the crater of an extinct volcano, ite ehape approximates most nearly to a chemist's retort, and so perfectly is it landlocked that after access it is a matter of impossibility to discover the entrance. The sides are frowning, precipitous mural cliffs, clothed in ultra-tropical verdure to the summit; then straightening iuto narrow table lands that might he made available, with due labor and energy, for plantatious. Tho shore line is generally narrow, with steep approaches, affording facilitiee for docks and loading and unloading of ehips of any draught, with sufficient room ashore for storehouses and the modest villages that the trade would demand. Tho uatives aro peaceable and well-disposed, and so fas as could be judged as much Christianized as can be hoped for from the average Kanaka, be hie island what it may.

Upolu, the capital, is of volcanic origin, and, unlike Savaii, precipitous, broken, and, except in occasional places, not well adapted to cultivation; it is bigh and split and fissnred, hut yet rich and heantiful, especially in the parts exposed to the trade winds. The eastern part is surreunded hy a ridge running eest and west, with outlying spurs that tend in a northwestern and seutheasteru directien. It possesses a number ef excellent barhers, permanent, full-volumed streams and feeders; is entirely surrounded by a coral breakwater, and, like Tahiti, is on the seuthern side luxuriant and admirably adapted in places to moderate coffee end sugar plantations.

Its principal harbor is secnre, with safe anchorage for twenty ships; plenty of water, though the entrance threugh the reef is narrew, and with certain winds dengereus. The climete is trepicel and healthy, the extreme heat being tempered by the trade winds; but from November to May hurricanes are not uufrequent and always severe.

At preeent Apia, in Upolu, is the principal settlement of the greup, and consists of three towns, separated hy small streams, and rejeicing heth in English and native names.

Malauta, the chief native settlement, is the American town, Apia preper, the English, and Mantafela the Germen.

The bulk of the trade is in the hands of the Germans, the house ef Godefrey hrethers of Hamhurg poseessing an extensive establishmeut at Mentafela, where husiness tact aud good fellowship go hand-in-hend. They export nearly all the cehra er dried coceauut, in which the main traffic consists, have nearly fifty ships, ef all eizes, in the trade, and their enterprise is so extended and their energy so untiring that it will require a serious effort to dispossess them of a tithe of their business with the groups fer hundreds of miles te windward and to leeward. What other trade there is in the grenp ie purely local. What well directed efforts will do it is difficult to predict; but there is iu the land and sea capahilities of prodnction that would repay, not fabulously, but with the same percentage ef profit that ehtains in any other ceuntry ef the same isothermal and isoleted nature.—*Y. H. Herald.*

A Bonanza in Mexico.

The New York *Times* notices the meeting a few days since in that city, of the stockholders the New York and Sauta Eulalia eilver mining company, of Chihuahua, Mexico, and an increase of the capital stock of the same from $3,000,000 to $6,000,000. The *Times* gives the following account of the discovery of the silver mines of Santa Enlalia.

"In 1703 three malefactors of the theu small town of Chihuahua, Mexico, flying from justice, betook themselves to the surrounding mountains, and there for several weeke lived a life of terror, moving ahout from fastness to fastness in constant dread of the fierce Apaches who occupied the Territory on the one hand, and of their pursuing white bretbren on the other. One evening they hnilt a large fire in a ravine to cook their supper, and when the surrounding howlders became heated a molten white metal issued out of them. The next day a friendly Indian arrived in Chihnahua hearing a message from the fugitives to the priestly authorities offering as a condition for their pardon enough silver to build a cathedral, which offer was accepted."

Wonderful stories are told of the wealth of these mines. They were worked by the Spaniarde from the time of their discovery as mentioned above, until 1822, the years of the revolution which drove that people out of the country. During this period Chihuahua grew from a mere ontpoet of the Jesuit missionaries into a city of 56,000 inhabitants, while the mining village of Santa Enlalia and another sprang up in the gorges of the mountain, containing respectively 8,000 and 5,000 souls. From a tax of one real (twelve and a half cents) on every mark (pound) of silver, as it came from the refining furnaces, there was bnilt, between 1738 and 1750, the celebrated Cathedral of Chihuahua, at a cost of over $600,000, and with the surplus was erected another church in the village of Santa Eulalia at a cost of $100,000. While Mexico was in, possession of the crown of Spain, the laws of that kingdom required one-fifth of the product ef all the miues of gold and silver to he paid into the royal treasury. Tbis made it necessary for the mining proprietors to make returns of the products of their mines to the king's officers. These records were kept with Spanish formality in the different mints of the vice-royalty; and the records still preserved, show that nearly $500,000,000 were registe ed in that office, most of which was the production of the mines of Santa Eulalia.

The internal commotions which convulsed Mexico the years succeeding the revolution, paralyzed her mining industries and put a stop to the development. A writer in *Harper's Magazine*, who visited tbe silver mountain in 1867, gave a glowing description of the untold treasures than that lay exposed to any hand of sufficient capital and energy that was disposed to grasp them. The mountain, according to that writer, is one eolid mass of silver ore, averaging from $50 to $150 per ton, with occasional pockets panning out as high as $5,000 per tou, and still rarer finds of pure metal. The ore is imbedded in hard limestone chambers, which are always entirely free from water, and never require timbering. The country being extremely difficult for the transportation of machinery, only the rndest appliancee were ever used. The ore was carried up out of the mines in sacke, on the hacks of workmen, on primitive ladders. It was tben either reduced on the spot or placed on the hacks of assee and transperted seven miles to water. The proprietors of tbe reduction works on the greund built an aqueduct of stone fer the trausportetien of water te the mines, thirteen milee long. This aqueduct still exists unimpaired, and is said te he a marvel of engineering skill aud solidity. The furnaces used were of the simplest kind. Thsy were constructed ef adobe mud, and were utterly incempetent to extract a tithe ef the metal contained in the ore. In 1867, the writer ef the article mentioned, saw ene of these rude furnaces at werk, and narretes tbat the few lazy perseus who remained ef the thriving village of Santa Eulalia, picked up a good living hy breaking open the hills ef rotten slag that remained after a century and a half of primitive reductien and gathering the little lumpe of silver that filled it in all directions. The writer descended inte all the mines in the meuntain, and found them alike in the quality and universality of ore. Two of them also contained a "flux" which the Spaniards found useful in smelting.

In the early part of 1874, Mr. William L. Helfenstein visited Chihuahna and made a personal examination of the Santa Eulalia mines. He at once set on foet a negotiatien fer some of the principal mines, and returned to Chihauhau about the close of last year end concluded the negotiatien. Then, leaving it in charge of George L. McManus, an American gentleman, twenty-five years a resident of Chihauhau, Mr. Helfenstein returned te New Yerk and erganized the New York and Santa Eulalia silver mining company.

Meantime, in November last, Mr. Helfenstein shipped a large quantity of machinery to the mines. In May, Mr. Helfenstein, in company with the vice-president of the compeny, paid a third visit to Chihauhau. The machinery had arrived in good conditien. During the months of February, March, April, and half of May, Superiutendent McManus had taken out of the mines $20,000 hy means of the original appliances, using twe of the old adobe furnaces te smelt the ore. He had alse made extensive aud valuable improvements abont the greunde. At his suggestion 7,000 acres of land, situated at the junction of the two streams that form tbe Chihuahua river, were purchesed for the purpose of erecting upon them reduction works on a scale larger than was practicable in the village of Santa Eulalia.

The reporter who gathered the information for the *Times* is of the opinion tbat Col. Tom Scott, of the Texas Pacific railway, is tho leading spirit in this mining enterprise and that his jaunt to Mexico was in that interest aud further that the Honorable Senators who were only dismayed from accompanying him by fear of the yellow fever—or public opinion—are also interested in this Mexican bonanza. The stockholders, whoever they are, indulge, it is said, in visions of untold wealth from tho development of the Santa Eulalia.

The Invention of the Flat-Footed or Tee Rail.

The last nnmher of the Journal of the Franklin Institute contains letters which seem to prove conclusively that the flat-footed or tee rail was designed by Robt. L. Stevens, of New Jersey, in 1830, and not by Charles B. Vignoles, late President of the institute of Civil Engineers of England, as is commonly believed in Europe. W. M. Evans, a civil engineer, in writing to the President of the Institute, sends, with his letter, two pieces of rail, which he pronounces "specimens of what we may call an historical rail; they are cut from one of the first flat-footed rails ever rolled. This rail was designed in 1830 by Robert L. Stevens, of New Jersey, for the Camden and Amboy railroad, was rolled in 1831, and laid in 1832. Many of these rails I saw laid;" and Mr. Evans refers to the dates mentioned as conclusive evidence that "Mr. Stevens was the designer and originator of the flat-footed rail, a rail now known throughout all Europe as the Vignoles rail." The quality of the iron used was also very superior, as it appears that after the raile referred to had been used for ahout twenty years on the main track they subsequently did service for twenty yeare on a siding. Mr. Evans also claime that Mr. Stevens' designs embraced the first approach to the fish-plate now in general use. Evidence seems to be constantly accumulating that in railway invention now, as well as in the infancy of the system, and before it was established, the United Statee held a front rank.

Artesian Water in Kern County.—The Fresno *Expositor* of June 30th says: "John Heinlein, who resides in the Mussel Slongh settlement, near Kingston, has been for some time past engaged in boring for artesian water on his land in the vicinity mentioned. He has sunk a well 153 feet deep, at a costrising above $1,000. At that depth he struck a flowing well, though the amount of water it yields is very small. W. H. Souther, who live two miles from the southeastern end of Kern lake, has found water at a depth of 250 feet, and which comes up with great force, throwing a stream seven inches in diameter twelve feet above the surface of the ground. The water is clear and cold, and very pure—free from brackish taste or vegetable matter. Several persone are boring for water in Tulare county."

The Bird Question.

In an article entitled "The Bird Queetion," published in the eeventh volnme of the Transactions of the Illinois Horticulturel Society, showing the indispensable agency of birde in holding the insect world in check. It is admitted, nevertheless, tbat if any speeies of birde sbeuld actually hecome so numeroue aud injurieue as to interfere essentially with the cultivation of any impertant crop, it would fall inte the same category with noxious insects, and that it might therefere beceme neceeeary te reduce its numhers.

I have since queetioned very much the propriety of disseminating this doctrine, hecanee, though it may he theoretically true, it remaine to he proved that any such case has really occurred, er that it is likely te do so; and the danger ie that any admission of this kind is so liable te he taken by theughtless persons ae a sanction fer destroying these heantiful and almost universelly useful creatures, under circumstances which ceuld by no means justify the cruel practice.

As stated in the article referred te, there are, fortunetely, only a few species of birds which have heen accused ef being seriously injurioue te the farmer or the horticulturist, and theee feed largely upon insects during all parts of the year except the few weeks in which they regale themselves upen the ripening fruits. The two spices of birds which have been signalized as most injurious to the horticulturist, en account of tbeir habit ef picking into the ripe grapes, and thus damaging more than they devour, are the quaint veiced catbird, and that elegant ornament of our greunde, the Baltimere eriole er gelden robin. Both ef these are active destreyers of inseote, and like the great majority of birds, feed their young exclusively upon thie kind of diet. They have beth frequented my garden the present seasen, and I have heen much intereeted in watching the assiduity with which a pair of cathirds fed their young with varioue kinds of werms or larvæ, tbeir neet having heen built in a syringa hnsh which wee trained against the side of tbe house.

1 have also ohserved the golden rohin in ite eearch after insects, and on one instance saw a female alight upon the perpendicular trunk of an apple tree, clinging to it witb much tenacity, though not with the ease of the woodpecker, she would sometimes even etand with her head downward, then let go her hold and cetch in a new place; and once darted off after a moth, which sbe bad dislodged from ite hiding place; and this is just the situation where she would be most likely to captnre the codling moth ae it emerged from its pupal covering, under tho hark.—*W. L. B., in Prairie Farmer.*

An Oyster's Heart.

Near the hinge of an oyster is a cavity which leads to the stomach. It may he called, with a little license, its mouth; not that it hae teeth, or that it in any way masticates food, or that it indicates the place of the head, for the oyeter belongs to a division of molluska, known as the *acephalates*, or headless ones. But it is functionally a mouth, and is like mouths in two important particulars. It ie the entrance of the food to the alimentary canal, and it has certain lip-like organs with which to control the entering food. If, then, tbe oyster'e mouth is thus situated near the hinge, that part of the creature should be known as its interior, or forward end. The opening end, that which the oystermen calls the "nih," ie therefore really the posterior extremity.

Every ono knowe that in opening an oyster the knife has to he passed through a stout organ, wrougly called hy many the eye; for the oystor is eyeless. Some call it tbe heart. Tbis also is incorrect. It is the great adductor muecle, with which tbe animal draws together its valves. But the oyster has a true heart. It is situated near to and forward of the adductor muscles, that is, hetween it and the mouth. If the fingor of a glove were cut off and inflated with air, heing closed up at the end, and then a thread were tied round so ae to constrict it at the middle, we ehonld have some resembling the shape pretty nearly of the oyeter'e heart. This small organ, is divided hy the constriction into two lesser organs, an auricle and a ventricle; a receiving and a distributing reservoir of the pale, opalescent hlood—its true life current, which animates every part of this complex little heing.

It an oyster he opened with suffieient tact and care, the heart can he eeen at work, beating much as our hearts beat—a true rythmical pulsatiou. Indeed, with a watch in hand, the beats can be counted, as when a physician makes a diagnoeis of one's pulse. As death nears, so slow the throbs of the oyster'e heart. —*Educational Monthly.*

A Pretty Idea.—A hanging-garden of sponge is one of the lateet novelties in gardening. Take a white sponge, of large size, and sow it full of rice, oats or wheat. Tben place it for a week or ten days in a sballow dish, and as the sponge will absorh tho moisture, the seede will begin to sprout before many days. When this has fairly taken place, tho sponge may he snepended by means of cords from a hook in the top of the window, where a little sun will enter. It will thus hecome like a mass of green, and can be kept wet by the mere immereion of it in a bowl of water.

Useful Information.

Artificial Down and Cloth from Feathers.—In Paris "artificial down" has come to be more highly valued than the natural down, because it is much lighter. It is made from feathers of any kind by cutting the barbs of the feathers from each side of the quill, putting them in a stout cloth sack, and rubbing them between the hands, as a washerwoman does linen. Five minutes' rubbing will have mixed the mass into a felt-like substance, rendering it homogeneous. This is *edredon artificiel*, and sells in Paris for something over $8 in gold a pound, and this price is constantly increasing. A process has also been invented for making cloth of feathers. To make a square metre (a metre is 39.3 inches) of cloth lighter and warmer than wool, from 700 to 750 grammes (a gramme is 15.4 grains) of this down are required. But this *drap de plume* takes color admirably, and wears wonderfully, because, instead of breaking and cutting in the places most exposed to wear it mats itself more and more into a felt-like substance. The estimate has been made that in France alone enough feathers are allowed to go to waste each year to make from 7,000,000 to 8,000,000 square metres of cloth. In other words, as much is lost in France in feathers as is paid for cotton.

Brightening Iron.—A Bavarian serial contains a method of brightening iron recommended by Boden. The articles to be brightened are, when taken from the forge or the rolls, in the case of such articles as plates, wire, etc., placed in dilute sulphuric acid (1 to 20), cleansing the articles, which are then washed clean with water and dried with sawdust. They are then dipped for a second or so in nitrous acid, washed carefully, dried in sawdost, and rubbed clean. It is said that iron goods thus treated acquire a bright surface, having a white glance, without undergoing any of the usual polishing operations. This is a process that those interested can easily test for themselves, but care should be taken with the nitrous acid, not to inhale any of its fumes. Boden states that the action of the sulphuric acid is increased by the addition of a little carbolic acid, but is difficult to see what effect this can have, and it may very well be dispensed with.

Insect Intelligence.—L. G. Fellner states that the large red ants of Arizona Territory adorn their dwellings with stones, shells, etc. "I have often distnrbed their piles in order to find garnets, etc. The ant on guard would then regularly call out an army of minature warriors, whose attacks I had to avoid. As I stirred one with a stick, the guard ran inside; but instead of returning with a number of angry nnts, he brought out a large clear garnet and rolled it down towards me; I kept stirring until he had bronght five, when I thought the sagacione animal had been taxed sufficiently."

Silvering Natural Leaves and Flowers.—A very ingenions application of electro-metallurgy has recently been bronght before the notice of the Society of Arts in London. It consists in the application of a coat of silver, by means of electro-deposition, on natnral leaves and flewers. By this means very delicate ornaments are produced, since the precise form and texture of the natural leaf is preserved under the thin silver film. The special process by which these results are attained is the invention of a Mr. Denton.

Treating Chromos.—Chromos should never be exposed to the direct rays of the sun. Fly-specks, dust and other obscuratione upon the surface of chromos may be removed by careful rubbing with a chamois-skin or a soft piece of linen cloth slightly dampened. Whenever the original varnish coating is dulled, bruised or rubbed, revarnish it with mastic varnish, such as is used by artists for varnishing paintings.

To Oil a Belt.—The best mode of oiling a belt is to take it from the pulleys and immerse it in a warm solution of tallow and oil; after allowing it to remain a few moments the belt should be immersed in water heated to 100o Fah., and instantly removed. This will drive the oil and tallow all in, and at the same time properly temper the leather.

Babbitt Metal was invented by Isaac Babbitt, of Boston, and is used because it makes a good bearing without any fitting. Its composition, by weight, is: Tin 50 parts, antimony 5 parts, copper 1 part. There are numerous other recipes for Babbitt metal of different grades, but this forms a good composition for general nse.

Marine Aquariums.—A writer in a Belgien journal says that he has successfully kept a marine aquarium for nearly ten years without renewing the sea water in it; all that he does being to add fresh water as the salt water evaporates, the same degree of saltness being invariably maintained.

It is a somewhat singolar fact that in the stomachs of nearly all large eels taken in the Delaware, numbers of mussels are found. How the fish succeeds in removing them from the shell is a mystery.

To Remove Kerosene Oil from Carpets.—Scrub the oil spot thoroughly with hot water in which either ammonia or ox gall has been put. Repeat the process if necessary.

Testing Portland Cement.—Three tests are used: 1. Resistance to the tensile force. 2 Specific gravity. 3. Water test. The first is by making a specimen briquette in a mold with a transverse section of 2.25 square inches, the specimen being held vertically in clips, which is placed under the short arm of a steel yard balance, and broken. Mr. Bazalgette used a test of 500 lbs. on an area of 2.25 square inches after 7 days immersion in water. The second method is by finding the weight in ponnds of the struck bushel. The water test is useful when the others cannot be applied. It consists of ganging a small quantity of the dry powder with water, and immediately immersing it in water. If the sharper edges crack or break away after a short time, the cement is too hot or fresh, or is inferior in quality. The weight of good Portland cement ranges from 100 lbs. to 130 lbs. per bushel, equal to from 80 lbs. to 130 lbs. per cubic foot. The lighter kinds set more rapidly than the heavier, but are weaker. Mr. Bazalgette specified a specific gravity of 110 lbs. to the bushel.

Benefits of Competition.—The California borax has come into active competition with that from other sources, and whilst at the beginning of 1874 the price of refined borax in the English market was 100*l*. per ton, it can at the present time be bought for 56*l*. The pottery districts, where large quntities of borax are consumed, are perhaps the chief gainers on this side of the Atlantic by the discovery adverted to.—*British Trade Journal.*

Water in Gas Meters.—Dr. Redner calculates that for every cubic metre of gas recorded as having passed through a wet gas meter, 23 litres of aqueous vapor or two-thirds per cent. by volume of the gas so recorded is aqueous vapor taken up by the passage of the gas through the water.

The following is one way to cut a bottle in two: Turn the bottle as evenly as possibly over a low gaslight flame for about ten minutes. Then dip steadily in water; and the sodden cooling will cause a regular crack to encircle the side at the heated place, allowing the portions to be easily separated.

A thick solution of merine glue in wood naphtha is a good cement for fixing glass letters. The glass must be chemically clean and must be previously scrubbed with soda, then with whitening and water, followed by thorough rubbing.

That singularly limpid oil drawn from the jaw-bones of black fish, which is used by watchmakers the world over to oil the works of watches, almost all comes from Provincetown, Mass., though the total consumption is only 200 gallons yearly.

Good Health.

Dust as a Cause of Catarrhal Affection

This is beginning to be recognized by the members of the medical faculty. Some years ago the present editor of the *Artizan* contributed to some journal, the name of which he cannot now recall, the result of his experience with acute attacks of inflammation of the nasopharyngeal membrane, affirming his opinion that city dust caused this inflammation in many instances. His attention was attracted to this subject from the great relief he experienced through short voyages at sea, and the recurrence of the attacks upon his return to the city at a time when the streets were exceptionally dusty.

Dr. W. H. Bennett, of New York, has contributed to the September number of the *Medical Record* a very able essay upon abnormal conditions of the superior air passages and some of the causes of chronic inflammation of these parts, in which he ranks dust as one of the most efficient causes. He thinks he has proved satisfactorily that chronic catarrh may be produced by the action of dust, through experiments upon animals forced to breathe air which contained no more dust than is frequently seen in air in certain parts of the business portions of New York. Dust issuing from the registers of houses heated by hot air furnaces, and dust of streets—which is a combination of nearly all substances, filthy and otherwise, known to mankind—he regards as more effective in producing these complaints than clean earth dust and dust occurring in various manufactories. It seems certain that chronic catarrh is more provalent in cities than in country districts. Dr. Bennett estimates that at least four or five out of every twelve in the city of New York, irrespective of their calling or profession, suffer from chronic inflammation of some part of the respiratory membrane situated above the trachea. Naso-pharyngeal catarrh, he states, is extremely prevalent among the conductors of the city horse cars, and this disease is always aggravated when the streets are dry, and the consequent amount of dust dragged after the cars is excessive.—*American Artizan*

The Duration of Life.—According to an eminent German authority, the average duration of life among the upper classes of ancient Rome was thirty years. In the present century among the same class of people it amounts to fifty years. The same authority says that in Geneva at the present time, as many people live to seventy years of age as three hundred years ago lived to the age of forty-three.

Disease From Soap.

The Pittsburg *Leader* has a notice, gathered from French medical papers and confirmed by physicians of New York, regarding diseases propagated by the free use of soap. The prevalence of diphtheria among washerwomen first drew attention to the matter; and chemical investigation traced the disease to the soap. It is well known that domestic soap fat is foul stuff. It is long gathering; putrescence usually sets in before it gets into the boilers of the factory. Fat that comes from dead animals goes to the soap boiler. Often the animal was diseased and always it is tainted with mortuary matter.

Continual rubbing in hot water, causes absorption of the poison through the pores of the skin, and it attacks the most susceptible organs. Lung fever and kidney diseases are traced to this morbid source in such a way as to leave no doubt. Many diseases of children are caused by impure soap.

The Commission in Paris reports this poison most apparent in toilet soaps, and those most scented are the worst. Probably the rosin so much used in common laundry soaps has a counter effect. For it is found that borax freely used counteracts the baneful effects of the poison.

The report states that soap gains greatly in detergent power by the addition of borax, and on this account it is common to advertise soaps as enriched in that way. But of twenty samples analyzed scarcely a trace of borax was detected.

It recommends a law requiring that a certain minimum proportion, not under ten per cent. of the alkaline ingredient, shall be obligatory in all soaps. And, further, that the proportion be stamped on all soaps, under fine and forfeiture for deception.

Borax is plentiful on this coast, and so much reduced in price that it may now be used freely.

Vaccination and Re-Vaccination.—Dr. John Aikman, in the Glasgow *Medical Journal*, for April last, gives the results of a careful study of two hundred cases of re-vaccination. The epidemics in London and Glasgow during 1871, to an absolute certainty, showed that no case of small pox has occurred in a person successfully re-vaccinated with primary lymph. Primary vaccination, though most effective in *modifying* the disease, is not to so great an extent a preventative as once believed. This modifying influence of vaccination is strikingly shown by the author's observations. Of two hundred and seventy children admitted to the small pox hospital for varioloid, three per cent. died, while of two hundred and thirty-one unvaccinated children admitted to the same ward for small pox, forty-eight per cent. died. By the study of the two hundred and seventy cases, it further appears that the physiological changes attending the second dentition have some effect in destroying the preventive effect of previous vaccination. Of two hundred cases, one hundred and seventy-five were successfully re-vaccinated. Thus it appears that a large proportion of the community considered vaccinated *are liable to a further protective measure.* Re-vaccination is necessary more frequently during then after the period of youth. Conclusion, vaccinate early, and repeat the operation as long as it will take. Re-vaccinate at eight, sixteen and twenty-four years, and (says the author) your patients will never have small pox, or severe varioloid disease.

Internal Use of Sea Water.—The experiments of Dr. Lisle, as recorded in a late number of the *Bulletin General de Therapeutique*, have led him to the conclusion that, besides being an useful purgative, sea water acts as an alterative in all such cases as are benefited by saline mineral waters like those of Nanheim, Soden, Homburg, etc. He finds that its continued use increases the appetite, facilitates digestion, quickens nutritive changes, and augments the proportion of red corpuscles in the blood. Accordingly he recommends it (1) during convalescence from acute diseases; (2) in the apyretic forms of dyspepsia; (3) in neurosis associated with impoverishment of the blood; (4) in the scrofulous and tuberculous diathesis; (5) in diabetes. Sea water may be agreeably administered in bread, in the form of a syrup, or in that of an elixir. Bread made with sea water can only be procured at the seaside; it is very palatable, and contains nearly five grammes of the mineral constituents of the water in each pound. The syrup is prepared by mixing 250 grammes of sea water with a sufficiency of sugar and distilled water to make 500 grammes. Each tablespoonful of the syrup contains about twenty-five centigrammes (3¾ grains) of the saline residue of sea water; from two to five tableepoonfuls may be taken daily. The formula for the elixir is: sea water, 200 grammes; rum, 200 grammes; sugar and distilled water up to 500 grammes. The dose at first is a tablespoonful three times a day.—*Boston Jour. Chemistry.*

Whooping Cough.—Wilde says that he can cure every case of hooping-cough within eight days by the following treatment: The patient is not to leave the room, and at every accese of coughing is to hold before his mouth a small piece of cloth, folded several times, and with a teaspoonful of solution; ether, sixty parts; chloroform, thirty parts; turpentine, ten parts,—*Atlanta Med. Jour.*

Domestic Economy.

Kitchen Furniture.

Never have dark furniture for a kitchen. It shows the dust much more than light and requires double the care. Never have extra shelves or mantels painted dark if you can help it. If it is your misfortune to have dark painted furniture, wipe it once in a few days with a damp cloth, and have it varnished often. Have your sink in a convenient place, but never under a window if you can avoid it, as much work is caused by greasy dish-water spattering upon the windows as it necessarily must. Back of your sink nail up a piece of varnished paper, and then you can with a wet cloth remove all spots that would soon spoil wall-paper. If you are so fortunate as to have a sink room, have it papered and then well varnished; in this case every spot can be easily wiped off. The sink should be lined with zinc, nailed only around the edges, as nails upon the bottom rust and wear through, allowing water to run under the sink, thereby causing the boards to rot.

Good zinc can be kept nice and bright by scouring every week or two with sand, and rubbing all over once or twice a day with soft soap, scalding and wiping dry.

At one side have a place to put the water pail on, which always keep covered day and night; an uncovered water pail is a slack thing. Nailed upon the back of the sink, have a little box perforated through the bottom, to keep hard soap in, and if you have no better place, castile soap and a piece of pumice stone to remove stains from your hands. Your soft soap keep under the sink, which we take for granted is boarded up, with a door where you put your pets and kettles, board to scour knives upon, sand, etc., and this place should be kept as your sitting room. Just over the sink have a narrow shelf with holes through, to set your common tumblers upon when washed and rinsed, that they may drain and dry, thus saving the time and labor of wiping them with a dry cloth.

At the other end of the sink, put up a narrow strip to set your kettle crickets on; of these you should have two, one to set your kettles on when washing and cleaning them, and and which should be kept under the sink, in some odd nook—the other should be smaller, and only be used to set the kettles upon, when filled, and therefore must be kept handy and clean so if you should be sick with a headache, pain in your side, or any little trifling thing, and should ask your kind husband to fill the tea kettle, he would take the cricket down to set it on, instead of setting it on the sink—thus causing you more labor than it saves. He would be sure to do this were the cricket under the sink, or so black and nasty he could not touch it without soiling his hands.

And last but not least, have a light rack made of strips of wood an inch wide, an eighth of an inch thick and a foot long nailed over one another, making a rack a foot square, with both sides alike, to put in your sink to turn dishes upon while washing, thus keeping them from touching the sink liable to be greasy and dirty, and draining them so that they will wipe easily.

You may think, dear reader, that it takes considerable to furnish a sink to suit our taste; but every one of these things are around our sinks, and no one would we dispense with, neither will you, after having seen how convenient they are.—*Manufacturer and Builder.*

Reform in Cooking.

The British people have evidently taken hold of the cookery reform in their usual solid way. The recent annual meeting of the National Training School of Cookery was held at Stafford house, the residence of the Duke of Sutherland, and was well attended by "the nobility and gentry." The Princess Louise was present, and the Duke of Westminster took the chair. The secretary's report showed that the school had been in operation since March, 1874; 765 pupils have passed through it, of whom 108 have presented themselves for examination and have obtained "learners' certificates." Three have obtained full diplomas as teachers and remunerative employment.

The lady superintendent of the school, Lady Baker, has announced her resignation, being about to leave England. A beginning has been made in teaching cookery in elementary schools, and Sir H. Cole announced that the Committee of Council of Education have ordained that every girls' school wherein the pupils pass an examination in "food and its preparation" and in "clothing and materials" will receive an addition to its annual grant.

In training colleges also throughout the country the practical teaching of cookery will now, to the extent of two-thirds, be paid for by the State. One speaker said that he had lectured in Cambridgeshire, where a farmer complained that he would make the men unwilling to work by showing them how to live on four pence a day. With this example in England, training schools for cookery will doubtless soon become numerous and fashionable in this country.

Graham Cup Cake.—Unbelted wheat meal, two cupfuls; buttermilk, one cup; molasses, half-cup; butter, quarter of a cup; eggs, two; soda, half a teaspoonful. Bake half an hour.

MINING AND SCIENTIFIC PRESS.

W. B. EWER.....SENIOR EDITOR.

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San Francisco:

Saturday Morning, Aug. 28, 1875

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Monthly List of New Scientific Books.

[Published the first issue in every month.]

AUTHOR.	TITLE.	PRICE.
Andre, G. G.,	Practical Treatise on Coal Mining	$2 00
Birch, S.,	Egypt: Ancient History from the Monuments	1 00
Darwin, Chas.,	Insectivorous Plants, 2 vols	4 00
Darwin, Chas.,	Descent of Man, (new edition) 1 vol.	3 00
	Architecture, A Manual for Churches, Parsonages and Schoolhouses	5 00
Prestwich, J.,	The Past and Future of Geology	1 00
Richards,	Steam Engine Indicator	3 50
Croll, Sir Jas.,	Climate and Tissue	— —
Warren, Edward S.,	Stereotomy and Stonecutting	2 50
Fresenius	Qualatative Chemical Analysis, translated into the new system	4 50
	VAN NOSTRANDA SOIENCE SERIES:	
	Elementary Treatise on Strength of Beams Under Transverse Loads, by Prof. W. Allen	50
	Water and Water Supply, by Prof. W. H. Corfield	50
	Sewerage and Sewage, by Prof. W. H. Corfield	50

The above list is compiled and the books are for sale by A. L. Bancroft & Co., Scientific Booksellers, 721 Market street, San Francisco.

THE LATE ENGLISH FAILURES.—The London *Mining and Monetary Gazette*, in alluding to the recent failures in England, says: "We have repeatedly said that to a great extent our mercantile houses do not rest on a solid individual foundation, but on the material support they give each other." These suspensions, adds the *Gazette*, have not been brought about by the pressure of dear money, but by virtue of their own inherent weakness and insolvency, with money plentiful and the bank rate at the low figure of three and a half per cent. The undermining causes of the monetary troubles date back several years, and are to be found, especially, in the gradual decrease of the profits in the East India trade, and later in the diminished demand abroad, both in Europe and on this continent, for general products of English manufacturing industry.

The Financial Situation in San Francisco.

Business circles were thrown into a ferment of excitement this (Thursday) afternoon by the report that the Bank of California had suspended payment. On inquiry, it was found that a run was started on the bank about two o'clock, and that at twenty-five minutes to three a check was presented for $5,485, when Mr. Ralston informed the messenger that the bank would cash no more checks to-day. From that time until three o'clock, however, thousands of dollars were received; indeed, the force of clerks was doubled so as to facilitate the receiving of coin. While those who wished to draw entered from California street, express wagons loaded with coin were discharging their treasure at the Sansome street entrance. The coin, however, was not placed at the paying teller's counter, but stored in the large vaults of the bank. Mr. Ralston is reported to have assured the customers of the bank that payment will be resumed as usual to-morrow morning. The faith of its friends in the stability of the bank is unbroken, and we trust that sound reason and wise councils may prevail which will result in the restoring of public confidence to the community. Any person who gives expression to feelings of an opposite character cannot be looked upon but as an enemy to the best interests of the State.

A run was also made on the National Gold Bank and Trust Company, but they paid all demands up to the hour of closing, 4 P. M., and, it is believed, have suffered no serious consequences.

A special meeting of the San Francisco Stock and Exchange Board was held this afternoon, and it was decided to hold no more sessions until public sentiment was in a more composed condition.

Of course at this writing it is impossible to tell what the outcome will be, but we hope for the best.

Later—Since the above was in type it is authoritively reported that the Bank of California will not resume. Mr. Ralston also is reported as saying that depositors will be paid in full. We have neither space, time or inclination to write further now in regard to this financial disaster and its causes.

The Colorado School of Mines.

When Colorado perfects the conditions necessary to elevate her from the minor position of a Territory to a full fledged member of the Federal Union, which will occur during the coming year, she will be christened, "The Centennial State."

That she will add very materially to the wealth and prosperity of her sister States, no one acquainted with her wonderful resources can doubt. With mineral possibilities almost passing the bounds of imagination, she has a climate and soil which seem peculiarly adapted to some branches of agriculture; the stock raiser here finds a most congenial home.

That Colorado is not wanting in enterprise and a will on the part of her people to develop their latent wealth, was called to our mind more particularly at this time by the perusal of a circular of the Territorial School of Mines, at Golden. Practice is combined with theory, and instruction in the field is given to classes, who every term visit and examine in detail the different mills, mines and reduction works that are found within a radius of thirty miles from the school, thus teaching from direct inspection and practical results the several methods used to mine, reduce and manipulate the coal, and variety of ores of gold, silver, copper, lead, iron, uranium, etc., that are mined in Colorado Territory. A completed laboratory with all necessary apparatus, a cabinet of minerals and a collection of fossils are accessible to the students.

A PROSPEROUS CITY.—San Francisco is today the most prosperous city in the world. There is no other to be found where real estate is more active, where more building is in progress, in proportion to the population, or where there is less destitution among the working classes. Our population is increasing at a most unparalled ratio, while the prospect for the future grows brighter and brighter every year. In no other city on this continent, outside of New York, has there ever been such an industrial display as that now to be seen at the Mechanics' Pavilion, in San Francisco. Agricultural industry, manufactures and mines, are the solid basis on which her prosperity rests. She occupies a most commanding geographical point, where the great world lines of travel and traffic necessarily concentrate and diverge, without the possibility of any great rival growing up within a thousand miles' distance. San Francisco is evidently destined to become the great city of the future, and the commercial capital of the most prosperous State in the American Union.

ROOT BOILER.—The attention of steam users is called to the "Root Safety Boiler" (see advertisement on page 141.) The merits claimed for it being safety from destructive explosion, economy in fuel, making dry steam, and the reasonable price as compared with other boilers.

Short Lectures on Patents.

No. 12—By J. L. BOONE, of Dewey & Co's. MINING AND SCIENTIFIC PRESS Patent Agency.

Assignments.

One of the most complicated and at the same time one of the most important questions connected with the subject of patents, is that which relates to the sale, and transfer of patents and interests therein. Few patentees understand the legal forms and requirements connected with this subject, and they are therefore compelled to seek the aid of a lawyer or patent agent in order to consummate a sale. Lawyers as a general rule, unless they are familiar with patent law and the special rules relating to the transfer of patents, are apt to apply the ordinary rules relating to deeds and bills of sale to the transfer of patents, and thus many a sale is rendered imperfect and the purchaser is placed in a position which is liable to defeat his purchase, without recourse. It is, therefore, necessary that not only every patentee, but also intending purchasers should understand at least the principal rules and requirements relating to assignments, so that they may guard their own interests and see that their rights are properly secured.

Any instrument of writing which expresses the intention of the patentee or owner to dispose of his patent or an interest therein to another party, and which specifies a consideration is a legal assignment if it be signed by the party owning or holding the patent or the interest therein which is disposed of, and this instrument need not necessarily be either witnessed or acknowledged. Although such an assignment if properly recorded, would hold the interest disposed of, it is always desirable that certain forms should be used in order to make the sale distinct and intelligible, and there are oftentimes outside conditions which require to be expressed, and these conditions vary according to the nature and surroundings of each case; for instance it is desirable when a person purchases all the right, title and interest of the patentee, to insert a clause in the assignment binding the patentee to sign and acknowledge the necessary documents to obtain a re-issue of the patent in case such re-issue should become necessary or advisable. It is often that such provisions can be inserted in an assignment, so as to avoid much trouble which is likely to arise after the purchaser deems himself perfectly secure. No one but a person who is familiar with the various phases which a patent or an invention can assume can properly throw these safeguards about a purchase, and is therefore important that a person skilled in such matters he employed to prepare the transfer.

When a party disposes of his interest in a patent, his rights in the premises cease entirely. He has no right to manufacture the patented article even for his own use.

When a party has received an assignment of a patent, or of any undivided interest in a patent, he must place the same on record in the United States Patent Office within ninety days from the date of assignment. If he fails thus to record the assignment within ninety days, and the person from whom he purchased should sell the interest to another party who did record within the specified time, the second assignment which was properly recorded, would hold in spite of the prior date of the unrecorded assignment; but if no subsequent assignment is placed on record, even if the first assignment should not be recorded within the ninety days, the holder of the first assignment can then record it and thus defeat any subsequent purchaser who does not record until afterwards. The reason of this requirement is obvious. The Patent Office is supposed to keep a record of the title of every patent, so that any person desiring to purchase a patent can readily find out who the rightful owner is. This record will therefore always give the name of the actual proprietor outside of the ninety days, and a party who purchases in good faith from this record should not be defeated by a purchaser who failed to give notice of his purchase by recording his assignment inside of the ninety days.

The very natural question now arises, what recourse would the proprietor of the unrecorded assignment have against the person who sold the patent or interest in the patent to a second party? I do not know that this question has ever been definitely settled, but it would seem on principle that an action for fraud would lie against the person who sold the same thing twice.

The owner of a patent can sell his right as a whole or he can sell it in subdivisions. He can dispose of one, two or a dozen States or territories to one person and the remainder to another, or he can sell each State to a different person, or he can sell an undivided interest in the patent. He is thus left to dispose of his patent in whatever way he can make it most profitable.

When a patentee assigns *absolutely* a certain territory, he grants to the assignee the same right that he had within that territory, which is the exclusive right to make, use and sell the thing patented; outside of that territory the patentee retains all the rights he had before the sale. The assignee can therefore make, use and sell to others to be used the patented machines within the purchased territory. He is not bound to ask his customers any questions as to where they come from or whither they are going. The purchaser is presumed to know the extent of the sellers right, and if he takes the machine outside of the territory aforesaid, and proceeds to use it, he will be liable to the patentee for damages, because the patentee's right outside of the sold territory remains unimpaired.

It would seem that the law ought to make a distinction between a machine or patented article which is intended for production, and one which is intended solely for consumption. The former is usually intended to accomplish a certain duty in a fixed position, and therefore may be considered permanent in its character, while the latter is transient and generally accompanies the person of the owner. In the absence of any judicial decisions bearing upon these points it is difficult to state any fixed rule, yet we are safe in concluding that the law would not require a traveler to remove a pair of spurs which he had purchased from the owner of a patent right in one State, when he came to the boundary line, which separated the territory of one owner from that of another owner in the patent.

When the owner of a patent sells an undivided interest in his patent to another party, the assignee has a right to manufacture and sell the thing patented wherever he pleases, and in the absence of any copartnership agreement he can make, use and sell as many of the patented articles as he pleased without any responsibility whatever to the other owner.

Stocks on the Board.

Among a certain class of operators the stock on the board is the only one of value whether there is merit in it or not, while stocks off the board are of no value. There is no reason in this estimate of mining interest, and yet all know it is so.

It has only one solution, and that is a base gambling estimate of business. Such being the fact, the result is the boards are being loaded down with trashy stocks to the detriment of those which have merit in them, and the many are fleeced out of thousands to the great detriment of the mining interest. But who shall judge? says one; we will answer, the board. The paying of a few hundred dollars, should not entitle a stock to be listed, and dealt in, to the great discredit of brokers and great detriment if not total loss of capital invested by their customers. Something more is wanted, and that something is a report made in the interest of the board and placed on file for the inspection of the public, and made by an honorable and skillful expert who has reputation to lose.

This being done, then merely holes in the ground would have their value, while mines of merit would rank as such, and possess a value in accordance. The venture of capital in mining is well enough, but that venture should not be in large figures on small shows, and too often no shows at all. The venturous capitalist, too often being drawn in by "manipulation" only. We know this is a hard matter to regulate, but that sooner or later it must be met, we are quite certain.

That there is too much good capital being thrown away, all must admit, and capital which, if judiciously invested, would do a world of good to our coast. There wants to be more legitimacy infused, into our at present speculative city miners, and less of this reckless gambling spirit. Independent of the good to be accomplished in a monetary sense, there would be a good derived in a moral sense, for it is an undeniable fact that we are growing into one of the greatest stock gambling communities, of its size, on the globe. Poor men and rich men gamble; merchants, bankers, manufacturers and mechanics all gamble; women of the parlor and women of the kitchen gamble, men and women, girls and boys, of all conditions, shades and pursuits, hold stocks, and are in for making a pile or lose it all, all on a "big gamble." But, says one, it scatters coin, and nothing is lost to the community. It does scatter coin we know, but it gathers too often from the one who can little afford it, into the coffers of the rich and unscrupulous, who do the manipulating.

Our present stock gambling mania is the grandest scheme yet devised to make the rich richer, and the poor poorer, and much of it may be termed legitimate robbery.

We do not wish to be considered as opposed to mining ventures or stock operations, but we do desire to see more discretion observed in making investments, more money made and less lost for the general operator.

For our California legitimate mining interest, the boards, as things are at present, is a great curse, for the reason that Comstock wild cat on the board, is more available by manipulation than honest mining and genuine merit in our own State. Advice to those who invest, it is clearly shown, by every "big market" and "great decline" is thrown away, and for a better condition of affairs to insure less loss, we must appeal to the boards themselves.

Stock companies are multiplying to such an extent that the boards can afford to reject companies not possessed of meritorious properties and to set values outside of inside manipulations, and by so doing, have a higher estimate given to the name of broker and be of great value to the legitimate mining interest of the whole coast.

Gypsum.

In answer to anqniries from a correspondent iu San Luis Obispo conuty, wa say: California gypsum hos not yet amounted to much in the market. Not that tha country is destitnte of gypsnm of a satisfactory character; for we have good reason to believe that this State has enough, at least for its own use, for fertilizing and all other purposes; but tha strata of good gypsum, as fonud, are in soma instances too thin to work with any profit; and in others too far from shipping points to allow of transportotioa. In this, as in quartz or other ledge mining, it costs ss much to uncover a ledge six inches thick as one measuing twelve feet; and a ledga of gypsum, to work with profit, should messure by feet, not by iuches. Then, as to locality, it will not admit of much hauliog. A prima article of gypsum, in its crude state, is worth but $6 per ton delivered at tho whorfs of San Francisco. It will therefore he seen at ouce that tha strictest ecouomy in handling aud hanliug is indispeusable.

Bnt the greatest drawback to the development of California gypsum is in the worthless character of much that is found here. Mony discoveries of gypsnm strato are being mada in different parts of the State, and parties have in some instances been deludod with the belief that certain strikes of this charscter would develop into something liko booanzas; when, in reolity, they are of no value whatever. We have axamined nnmerous spocimens of this character. They are all gypsum; but the proportions of lime aod sulphur ore so small that it would not poy to work them; and no discreet desler would sell plaster such os this wonld make. A fair percentoge of lime and sulphnr ore essential, whether the plaster is to be used for fertilizing or mechaoical purposes.

Parties, on findiog gypsum strata, should not be carried owoy with the idea that they have strnck a fortune; nor, on the other haud, should they coodemn it until they have hod its merits properly tested. Among the crude speoimens which wa hava seen, the hettor grades were the most uninviting in appeorance, heving a dull, opaque, soft granite sppeerence; while the poorer grades were of a brightar, crystaline appesranco, resembliog the clearer kinds of rock crystals. It is of the first importance, therefore, that people who strike or come iuto possession of gypsum shonld inform themselves ot once in regerd to its compositiou. For the benefit of such parties wa have made some enquiries in relation to this matter; and, on visiting the Golden Gate plaster mills, were assured by the proprietors, Lucas, Gesner & Co, that they would freely give ony information that partiee mey desire on this subject. Having confidence in the members of this firm, both as to the ability or fairness of any advice which they might give in this matter, we would advise our friends to address to them any enquirieswhich they may wish to make. If they ore in doubts as to the composition of any strota of gypsum they shonld send samples to Lucas, Gesner & Co., when they can obtoin this or any other informstion which they may desire on the subject. The address of this firm is Nos. 215 and 217 Main street, San Francisco.

Onr readers need not be told that ploster, or gypsum, is an article iudispensable in many cases, snd is gradually increasing in importauce. In Enropeau and Eastern farming it stsnds at the head of commercial fertilizers, in regard to general adaptotion and reliahility. It needs no demonstration to prove that it is especially adapted to some portions of California. In ranges where bogs prevail they could be mode of vastly more volue hy tho applicotion of plaster to the growiog crops, and we believe the sphere of its usefulness as o fertilizer will be greatly enlarged by experieoce in using it. The article should be "as cheap as dirt"; nothing but handling and transporting it makes it otherwise; and if we con develop available strata of gypsum in our own State, it will prove a source of considerable wealth to the State and a metter of great convenience to farmers.

Patent Applied for. A Hint.—All visitors, on close observation, will notice thot nearly every valuable and recent invention on exhibition in the Pavilion, is marked "patented," or "patent applied for." Mecbanics and inventors shonld take the hint from this fact, and when they contrive or conceive any new and usefnl inveotion, machine, instrument, process or what-not, they should at once apply for a patent thereof, aod thus preserve for themselves, all proper bencfits for their labor, thought and skil. Dewey & Co, at the office of the Mining ann Scientific Press, No. 224 Sansome street, corner of California, possess superior fecilities for securiug patent rights for inventors. Orders for such business may also be left at the stond of the Mechanics' Fair Daily in the Pavilion. We will he happy to give any desired information on this subject to those wishing it. A word to the wise is sufficient.

The Marin *Journal* says that the work on the tunnel through the puerto suello came to en abrupt stop on Saturday night last, owing to indications thet Mr. L. A. Dougherty, the contractor hod left for parts nuknown, leaving no provision for the liquidation of demands for labor, supplies, etc.

Bark Lice.

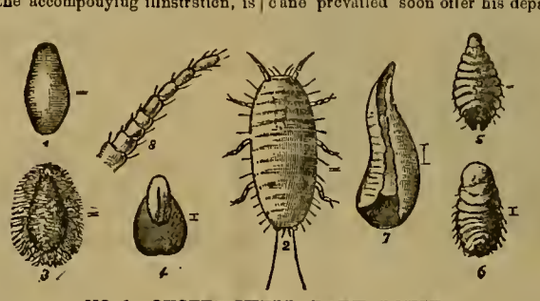
The class of vermin of which we propose to treot to-day is a very disreputsble one. It is not considered o very stroined point of deliecy that prohibits their mention in conuection with humonity, and any intimation of the presence of poultry lice or cattle lice would justly offsnd the careful keepers of fowls aud cattle.

Tho thorough orchardist should manifest the sama sensitiveness in regard to tho mention of bark lice; for their presence is a like indication of nucleanliness in all the situatioos meutioned above. Orchords that are ellowed to run to waste, or that are even kept in gross, receiviug the attentiou thot this crop requires, favor the propagation of these verain; snd the owner of fruit trees who neglects to search tbe crevices of their trunks should not he surprised at as great an excess of populatioa as occurs in these heads:

> "Where horn nor bone does ne'er unsettle
> Their thick plantations."

But if clean cultivotion is given an orchard, and tho trunks are thoroughly washed in spriug with strong soap suds, there will be little or no trouble from bark lice.

The ravages of vermin are not confiued to fruit trees; many of our shade, ornomental ond wild forest trees, even, ara infested with them. In No. 1, of the accompouying illnstrstion, is



NO. 1. OYSTER-SHELL BARK LOUSE.

portroyed on insect which infests tbe apple, pear aud mountaiu esh, ond is occasionally fonnd on the cherry and plum. It is

The Oyster Shell Bark Louse;

The figures hsre giveu beiug highly magnified. Tbe hair lines at tbe sida of each givo the actual length. Explanation of figures: 1, egg; 2, louse when active; 3, louse soon after becoming stotionary; 4, scale in process of formation; 5, louse under scale; 6, seme, somewhat later; 7, a scale viewed from below; 8, antenna of No. 2.

Its presence on trees is manifested by tha many little scales on the twigs ond smsller branches, giving them tha appearonce of Fig. 5. The scales, it will he seen, are elongated, a little curved; they are of a dork gray, almost black color. If when you find one of these scsles on your trees, you lift it and apply a pocket mognifying glass to the eggs there deposited, they will be fouod to be white, oval in outline ond extremely minute, as is seen in Fig. 4.

In early summer these eggs hatch into minute

No. 2. Piece of Apple Tree Bark Covered With Oyster-Shell Bark Lice.

whitish lice as seen in fig. 2, which run about on tbe branches, nsually passing outward to the newer wood. Tbis active period of their lives cottinues for a few days only, not more than a week, when the femsles fssten themselves to some well selected spot on the tree end never again leave it. While in this stotionary condition, the lonse covers herself with a scale from a waxy secretion from her own body, as seen in figs. 3 and 4. During the time this scale is forming she loses her legs and assumes the form of fig. 5; and when the covering is completed she lays three to four dozen eggs and dies.

Thus it will be seen that a remarkably lsrgo portion of its existence is passed in the egg state, and while hid beneath this scaly covering is well protected from its enemies. No. 2 in our illustration represents a piece of applo tree bark covered with these scales.

Harris' Bark Louse,

Commonly called the American bsrk louse, infests about tho same varieties of trees that are visited by the oyster shell species, but is less injurious. Its scales differ from those of the latter, both in shope snd color, being round, flat and thin, ond nesrly white. The eggs are a pnrplish red, as are also the young lice. In their transformations, habits, etc, they very closely resemble the oyster shell species. No. 3 in the accompanying illustratiou shows an apple tree branch with the scales of the Harris' bark louee.

The white willow is infested with an inset which is known as tbe "willow bark louse." Its habits closely resemble those described above, with the exception that it laye a much larger nnmber of eggs and consequently increases in numbers more rapidly. In somo of Esstern States, wbere the willow is extensively grown for hedges and other pnrposes, the damages inflicted by this pest are of qnite a serious character.

All the above varieties of tree-lice attach themselves to the woody parts of the tree; there are, however,

Scale Lice,

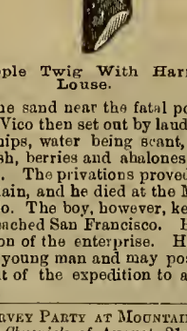
Which take up their aboda npon the leoves of trees which they infest. The pine trea has a parasite of this character, known os the "pine leaf scale." The elm is similarly afflicted with one knowu as the "elm leaf scale."

Among fruit trees, a weak, developed growth is more lioble to attack from bark lice than those of strong, vigorous habits.

Treasure Troving.

Rumors of a Silver Hunling Expedition.

It is rumored that o schooner, formerly employed in the river trade, is fittiug out for a treasure troving expedition to the coast of Mexico. Captoin A——d, well kuown in the South American marine, is soid to be the head of the enterprise, ond will leave in about three weeks for bis destinatioo. Great secrecy is manifested in the affair, but as far ss can ba ascertained a certain officer in the Mexicon service, severol years since, left Loreto with o cargo of silver for Mazatlan; n "cordonazo," or hurricane prevailed soon ofter his departure and it was supposed he went down in the gulf, as nothing wos heord of him or his vessel. But it seems not. He outlived the tempest, and, being driven almost to Cape Palma, ran iuto o cove, where he landed the silver and hid it in hollows along the shore. He then put to sea, bnt his men quarreling, one was killed aud the other thrown overboard by the Captein, who wes thus left with one assistant—a boy named Vico. Being rid of two men he could not trust, ths Captain put bsck, took on board a portion of the silver, and set soil, intending to crawl along the coast to San Franc sco. But as he went ont it fell calm and the launch stranded on a point of rocks, when the swell soon broke her up. The silver, however, was got ashore and



No. 3. Apple Twig With Harris' Berk Louse.

buried in the sand near the fatal point. The Captain snd Vico then set out by laud, enduriug great hardships, water being scant, the heat great, and fish, berries and abalones their only nourishment. The privations proved too much for the Captain, and he died at the Mission of San Fernando. The boy, however, kept on, and ultimately reached San Francisco. His story is the foundotion of the enterprise. He seems to be a reliable young man and may possibly lead the fitters out of the expedition to a bonanza. *Nos veremos.*

Coast Survey Party at Mountain Peak.—The Alpine *Chronicle* of August 21st, says:—W. Einheck, T. J. Lowery snd party, United States coost surveyors, last week visited Stanislaus peak snd made observotions in running the connecting line from the Pecific to tha Atlantic coast, and this week they ore at Round Top monntain, Hopo valley. They report that Stanislaus peak is 11,740 feet above the levol of the sco, aud situated at the head of Stonislaus river, thirteen miles distant from Silver Mountain peak. The party will return to this section next spring, with an increased force, aud Si ver Mountain peak will be the base of operations. The work will be carried on with the most improved instruments—hemisphere transit, theodolite, heliotrepe, etc. The heliotrope will be statiooed on the peak.

The Microscopical Society.

The regular meeting of tha Ssn Fraacisco Microscopical Sociaty was held on Thursday last, with President Wm. Ashburner in the Chair. In addition to tha members, Dr. H. P. Babcock, of Ooklond, aud Mr. R. W. Washburn, of this city, were present os visitors.

Dr. S. J. Corbett was proposed for active membership, and Prof. Thomas Price was elected as such.

Under the head of donations, the Treasurer announced that he had received the sum of $50 from Wm. Norris, Esq., ono of the society's resident members, as a contribution toword the library fnnd. The onnouncement wss thankfully received, and a vota of thanks tendered the gentlemon.

Additions to the library wera announced by the Secretary.

The photo-micrographs presented at a former meeting by Col. Woodward, were laid on the teble, bound in a suitable manner, and received much attention from tha members during tha evening.

Mr. Wm. Ashburner donated a slide mounted by him with sond from the north shore of Great Salt Lake, which he stoted were porticles of corbonate of lime deposited round a nucleus, probobly orgsnic.

Mr. J. P. Moore donated three slides mounted by him, both dry, *in situ* and in bolsam for the polariscope, with the cuticle of *Eleagnus Japonica variagata*, showing stellate hairs of peculiar chorocter.

Mr. C. G. Ewing presented a slide mounted with a species of weevil known as *Sitona lineatus*, and Mr. W. A. Woodward mode a further dooatioa to the eotomological portiou of the cobinet of a number of pear slugs and grope vine beetles, which were referred to Mr. Edwards for investigation ond report.

Mr. Donalian, of Heeldsburg, presentad whot was said to he a variety of *filaria* found in the water, at that place.

Mr. Mellville Attwood presented o nuuiber of slides monnted with sections from several gold-hearing veins of California, accompanied with a very interestiug paper which will he found in enother column.

The Advance Silver Mining Company.

This is the nome of a company recently incorporated in this city to work the Esmersldo ledge, the first and most important location mode in Monitor mining district, Alpine county, Californie. This ledge is about fifty miles south of Virginis City in a formatiou of quartzite and porphyry. The outcroppings are a mixture of quartz, clay and silver ore, assaying an average of about $40 a ton in silver. In the early days of Alpine a tuonel was run a distsnce of about 800 feet, cutting the ledgs 150 feet below the surface, aud showing a well defined vein, twelve fest wide. From the level of this tunnel a shaft has been sunk 150 feet exposing a large body of ore, sufficient of whicb wss worked ot the Monitor mill, on East Corson river, to prove its vslue; the lot worked yielding over $1,500 in silver, above 900 fioe. We learn that the present company have purchesed a Diamond drill of A. J. Ssverance, Esq., and commenced to sink a first-class working shaft from the surface, and propose to erect heistiog works of the most substantial character, with sufficient power to keep the mine frea of water, snd to sink to any required depth. The work will be done in the best msuner and, prosecuted with the utmost dispatch. All who have examiued it, concur in the opinion that this is one of the largest and most voluable mines east of the Sierras, and the present managers are songuine it will soon rank amoog the hig paying mines of the conntry. The company is composed of men of ability, capital aud business enterprise, who will prosecute the work of development with energy and industry.

Make Your Ideas Public.

The casual visitor, in looking over the mony objects of interest at the Fair, may sometimes think of some valuable suggestions in the way of improvement or variety. If each one who is impressed with an idea of this kind will either make nse of it himself, or *herself* (I emphasize the latter, for many voluable inventions have been made by ladies), or tell or write about it in such a way that it will be made known to tl e world, one of the most important uses of tbe Fair will not he lost. Do not refrain from writing for feor that your idea is not worthy of such prominence, or from sensitivencss with reference to baving your views in print or consigned to the weste bsske t. It is an easy matter to present your article to an editor without moking your nsme known to him, by sending it by a friend, without signatare, or with a *nom de plume*.

Your frieud con send by mail, stoting that the responsibility is assumed by her or him, and giving signature and address, as editors have good reasons for refusing articles not vouched for by some one. An idea may be sent direct to an editor without signaturo, with request to him to write the subject up if deemed valuable.

Those who poesess intelligence and inventive faculty, or, in fact, usetnl gifts ot any kind, should consider themselves in duty bound not to hide their light under a bushel, and should be careful lest they egotistically foar to appear egotistic.

If a men or woman knows somethiug usefnl, impart the knowledge to the world,

Machinery.

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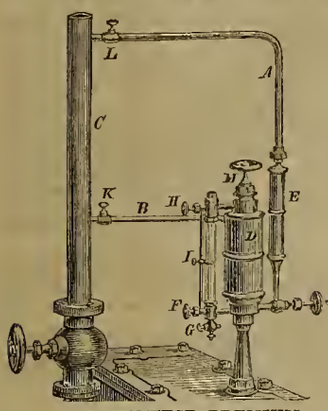

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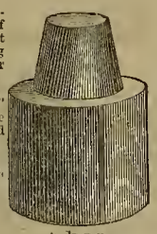

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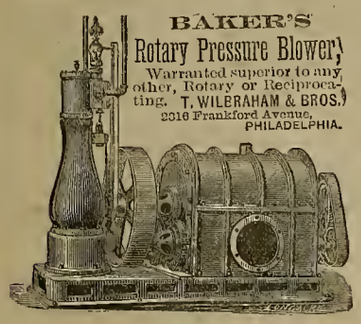

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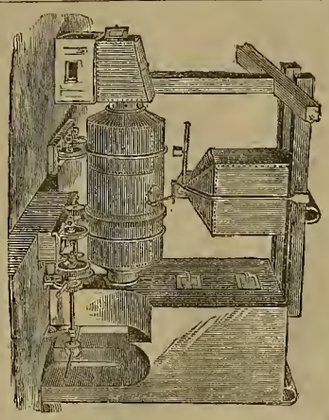

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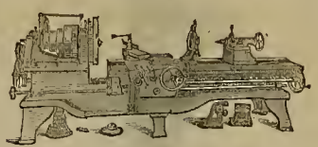

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Superior Design and Workmanship, Extra Heavy (1400 lb.) DOWN, ANGULAR & CROSS-FEED, TO PLANE 12 FEET.

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MACHINE WORK BY CONTRACT.

Estimates given for Special Work of every description. Are fully equipped with first-class Machinery and Tools.

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The Ingersoll Rock Drill.

This Drill is used extensively in the Eastern States and all Foreign Countries.

IT CAN BE RUN WITH

LESS POWER, LABOR AND REPAIRS,

—AND—

DO MORE WORK

THAN ANY OTHER DRILL IN THE MARKET. THE

Automatic Feed

Is an important feature, as it saves labor. We ask for a trial against any competitor. For information regarding the same, send for circular to

JUDSON & SHEPARD, Agents,

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"THE DANBURY" DRILL CHUCK.

The Favorite Everywhere.

Send stamp for circular.

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P. S.—These Chucks are now on hand and for sale at manufacturer's prices by

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IMPROVED ADJUSTABLE CRANK PIN.

Strikes Blow Heavy or Light, Fast or Slow.

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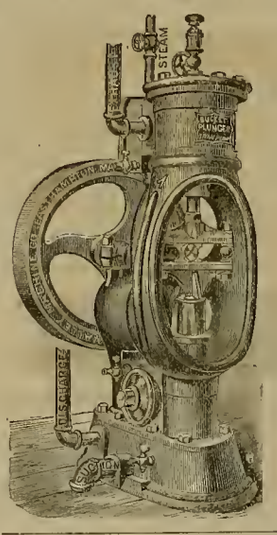

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ALWAYS RELIABLE.

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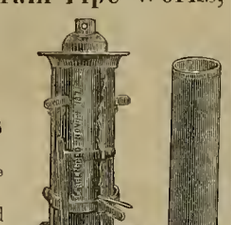

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In any part of the State, and

Work Warranted

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OREGON PILE CURE.

To those suffering from Piles—External, Internal and Itching Piles: You can be cured, as hundreds of others have been. Send for Circular and see undoubted testimony. Will send sample bottle for $1, or 6 bottles for $5.

Call upon your Druggist, or address

DR. RUSSELL,
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Metallurgy and Ores.

JOHN TAYLOR & CO.,

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Having been engaged in furnishing these supplies since the first discovery of mines on the Pacific Coast.

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Nevada Metallurgical Works,

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Ores worked by any process.
Ores sampled.
Assaying in all its branches.
Analysis of Ores, Minerals, Waters, etc.
Plans furnished for the most suitable process for working Ores.
Special attention paid to the Mining and Metallurgy of Quicksilver.

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OIL CAKES AND MEAL.

Highest price paid for Flax Seed and Castor Beans delivered at our works.

Office, 3 and 5 Front street.

Works, King street, bet. Second and Third. fe15-eow

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QUICKSILVER FURNACE.

THIS FURNACE REDUCES CINNABAR, (ROCK OR FINE EARTH,) AND

WORKS CLOSER TO AN ASSAY

And at **LESS COST** per ton than any other furnace. It will work continuously Twelve to Twenty-four months without stopping.

NO MAN HAS EVER BEEN SALIVATED

Or otherwise affected by the mercury about the furnace, either in operating it or making repairs. For ful particulars, plans, etc., apply at

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The Ida Clayton Quicksilver Mining Company, Sonoma County.
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1845. The Harrison Portable Mill Machinery. 1875.

FAST GRINDING. SMALL POWER.

Thirty Years' Experience in this Specialty, covered by Twenty Patents.

French Burr Stone Mills, run by hand, horse, wind, water or steam power. **Flouring Mills** and **Bolters**, combined or separate; **Vertical** and **Horizontal Corn Mills**, **Feed Mills** and **Universal Pulverizers**—will grind all Grains and Mineral and Vegetable substances.

Send stamp for Illustrated Catalogue containing cut of each design and price list.

EDWARD HARRISON, Manufacturer,
No. 135 Howard Ave., New Haven, Conn.

GIANT POWDER.

Patented May 26, 1868.

THE ONLY SAFE BLASTING POWDER IN USE.

GIANT POWDER, NO. 1,

For hard and wet Rock, Iron, Copper, etc., and Submarine Blasting.

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For medium and seamy Rock, Lime, Marble, Sulphur, Coal, Pipe Clay and Gravel Bank Blasting, Wood, etc.

Its EXCLUSIVE use saves from 30 to 60 per cent. in expenses, besides doing the work in half the time required for black powder.

☞ The only Blasting Powder used in Europe and the Eastern States.

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General Agents, No. 210 Front Street.

v22-3m16p

Improved Cast and Forged Steel Shoes and Dies for Quartz Mills.

[PATENTED MAY 26TH, 1874.]

Price Reduced to 16 Cents Per Pound.

SAN FRANCISCO, November 10th, 1874.

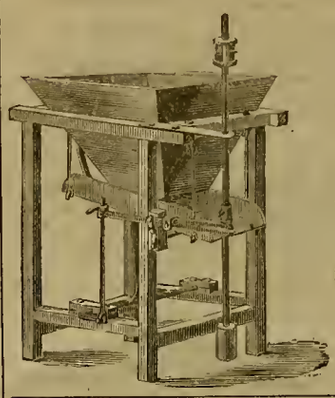
To Supts. of Quartz Mills and Mining Men generally:

We take pleasure in stating that owing to the rapid increase in our orders, our Pittsburg Manufacturers have been compelled to add largely to their works—a new gas furnace and heavier trip hammer—and are thus enabled to reduce the cost of steel and at the same time produce SHOES AND DIES superior to any yet manufactured. We have consequently reduced the price to 16 cents per pound and solicit a trial order, guaranteeing that you will find them at least 10 per cent. cheaper than the best iron. There are no STEEL SHOES AND DIES made excepting under our patent and sold at this office, or by our authorized agents, though certain Eastern manufacturers advertise STEEL SHOES AND DIES which are only cast iron hardened by the addition of a composition. They will not out-wear two sets of common iron, though called steel. They are very brittle and are not capable of being tempered, flying from under the hammer like cast iron. Our STEEL SHOES AND DIES are in use in many of the largest mills on the Pacific Coast, and all who have tried them pronounce them cheaper and far superior to iron in every respect, even at the old price of 20 cents per pound. Their advantages over iron are cheapness on first cost, increased crushing capacity, time saved in changing and in setting tappets, increased value of amalgam by absence of iron dust and chippings, and a saving of 75 per cent. in freight. It takes 60 days to fill orders from the manufactory East. Price 16 cents per pound shipped at San Francisco. Terms liberal.

Address all orders, with dimensions, to W. A. Townsend, Secretary.

1v29-3m CAST STEEL SHOE & DIE CO., Room 4, Academy Building, S F

Tulloch's Automatic Ore Feeders.



Will Feed Wet or Dry Ore Equally Well.

Will Increase the Quantity from One to Two Tons Per Day.

Are Durable, Compact and Cheap.

For Full Description, Send for Circulars.

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The Simplest, Cheapest, Most Effective and Durable Power Drill is the New

"CALIFORNIA" ROCK DRILL,

MANUFACTURED BY

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AIR COMPRESSORS,

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Address, L. W. COE,

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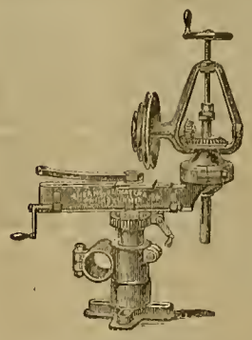

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DRILLING MACHINES.

PORTABLE DRILLS. Driven by power in any direction, self-feed and convenient adjustment.

RADIAL DRILLS. Self-feed—large adjustable box table—separate base plate, every convenience.

VERTICAL DRILLS. Self-feeding—of new and improved designs.

MULTIPLE DRILLS. For boiler work, etc., 2 to 20 spindles, fed and returned by power or hand, together or separately.

HORIZONTAL BORING AND DRILLING MACHINES. For large pieces—with boring head, adjustable, vertically and horizontally.

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Persons engaged in the following business can have their Signs Painted at contract prices, for goods or articles in which they trade, viz:

Merchant Tailors,	Gents' Furnish'g G'ds,
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STEAM ENGINES AND BOILERS.

From 3 to 75-horse power. Shafting, Pulleys, Hoist Gears Quartz Mills, Water Tanks, Spanish Arastras, Pumps and Pipes, Hepburn and Belden Pans, and all kinds of Machinery for sale at lowest prices by

THOS. P. H. WHITELAW,
266 Brannan street, S. F

Highest cash prices paid for all kinds of Machinery.

MILL MEN.

Wanted, by a thoroughly practical mill man, a situation as First Engineer, Foreman, or General Manager. Is an engineer and machinist by trade, and has a fair knowledge of assaying, melting, etc. Apply to A. M. KRUTTSCHNITT,
North C and Mill streets, Virginia City, Nevada

Microscopic Examination of Minerals.

Mr. Melville Attwood, of this city, has devoted much time and attention during the past two or three years to the microscopic examination of ores and minerals. Micro-lithology is comparatively a new branch of science, yet one which has already yielded much valuable and practical information, and forms a study which has evidently a promising future.

At the meeting of the Microscopical Society of this city, held on Tuesday evening last, Mr. Attwood made a very valuable donation in the shape of twelve slides mounted by him with sections of the wall rocks and "horses" of principal gold bearing veins of California, accompanied by the following paper on

Micro-Lithology.

The rock sections which I now present to the Society are from specimens taken from the wall rocks of some of the principal gold hearing veins of California.

In order to examine them I found it necessary to prepare and cut the sections myself, in consequence of which they are not so well done, or mounted, as I could wish; yet sufficient to show structure and composition.

Those that would admit of it are cut thin, to enable me to make the full use of transmitted light in their investigation, as I found that the mere inspection of the outer surface, as an opaque object, did not give the information that examination by transmitted light affords.

I believe the microscopic examination of the wall rocks of gold bearing veins is something new, and for that reason I have brought the subject before the Society, hoping by such means to draw attention to it, and perhaps indnce some one more competent than myself to carry out the investigation.

So little is really known of the origin of our metalliferous deposits, that anything tending to throw light on the subject is important, and should be interesting.

Many of the specimens from which the sections are cut are, to the naked eye, a compact and homogeneous mass, and appear to be formed of different constituents; hut after being cut to the requisite thinness, and placed under the microscope, I found them all of the same structure and composition.

I have little doubt but that after a time, by the aid of the microscope, the miners will be able to distinguish the wall rock from intruded masses (commonly termed *horse*) in the metalliferous veins, which, in too many instances have puzzled the most experienced, and thereby led to great waste of time and money.

Section No. I. Is from the hanging wall of the Eureka vein, Grass Valley, at a depth of 480 feet.

No. II. Hanging wall of the Eureka vein at a greater depth.

III. Wall rock of the Sierra Buttes mine.

IV. Wall rock of the Indian Valley mine.

V. Wall rock of the Norumbago vein, Grass Valley.

VI. Wall rock of a large vein near Grass Valley.

VII. Wall rock of a large vein near Nevada City.

VIII. Wall rock of a large vein near Mokelumne Hill.

Many of these are diorites, consisting of felspar and hornblende, with crystals of pyritic matter; the fibrous structure of the hornblende being distinctly visible. I found the pyritic matter in every case which I examined to have gold mechanically combined with it. The eruptive basic rocks, to which this class belongs, all possess the same general structural features, which serve to distinguish them from all others. The mineral parts of such rock are seen to be developed in more or less perfect crystals, at all angles to one another, thereby indicating that the entire mass must have been at one time in a state of liquidity, or solution (aqueous or igneous), sufficient to allow of that freedom of motion absolutely essential to such an arrangement of the particles.

Section No. IX. From the hanging wall of the Hayward mine, Sutter Creek, at a depth of 1,000 feet.

X. Hanging wall of the Oneida vein, Sutter Creek, at a depth of 800 feet.

The structure of these sections very much resemble those from the wall rock of the celebrated St. John del Rey vein, Brazil.

XI. Is a section of the Killas or wall rock of the St John del Rey vein, Brazil.

XII. Section from a "horse" in the Eureka vein, Grass Valley, at a depth of 400 feet.

The result of my examination of the wall rocks, as far as I have gone into the matter, in a great measure confirms the views of Mr. David Forbes, expressed in a communication to the British Association in 1865, "On the Appearance of Gold in the Earth's Crust,", and in a short abstract on the same subject, but of late publication, he says:

"With regard to the time of introduction of gold, or rather auriferous eruptive rocks, into the crust of the earth, a continued study of the subject, and the collection of more data from other parts of the world, not only confirms me in the views expressed in a communication to the British Association in 1865 (a short abstract of which is given in the *Geological Magazine* for January, page 23), but makes me further believe the views therein expounded to be of universal application, and—

§ bearing in mind that any bed of sedimentary origin may contain fragmentary debris of any auriferous eruptive rock or vein substance which was of previous geological age—

I am of the opinion that gold is not in itself characteristic of any sedimentary stratum or formation, and when found in such beds, introduced otherwise than stated in the proviso §, that its presence there is due to subsequent intrusive causes.

"My researches have led me to conclude that, universally, gold has been introduced into the crust of the earth at two very distinct geological epochs, and that in both these cases it has been carried up in direct consequence of, and in conjunction with, the outbursts of distinct and characteristic plutonic rocks."

I hope at a future meeting to have a few sections from the wall rocks of some of the silver bearing veins of Nevada; also, sections of the intruded masses termed "horse."

PATENTS & INVENTIONS.

A Weekly List of U. S. Patents Issued to Pacific Coast Inventors.

FROM OFFICIAL REPORTS FOR THE MINING AND SCIENTIFIC PRESS, DEWEY & CO., PUBLISHERS AND U. S. AND FOREIGN PATENT AGENTS.]

By Special Dispatch, Dated Washington D. C., August 24th, 1875.

FOR WEEK ENDING AUGUST 10TH, 1875.*

GANG PLOW.—David A. Mannel, Napa, Cal.
CARRIAGE.—Richard L. Ogden, S. F., Cal.
MARKING WHEEL.—William H. Bell, S. F., Cal.
BEN BOTTOM.—Clinton V. B. Reeder, San Jose, Cal.
CULTIVATOR.—Ander Schrader, Walla Walla, W. T.

TRADEMARK.

FOR WHISKY.—Lilienthal & Co., S. F., Cal.

British Patents for Pacific Coast Inventors.

Following is a list of inventions patented or protected by Provisional Specifications in England, by inventors in the Pacific States and Territories, from January 1st to June 30th 1875.

CLASP OR BUCKLE.—C. J. Weldon, San Jose, Cal.
SACK SEWING MACHINE.—H. P. Garland, S. F., Cal.
SEWING MACHINE.—E. Moreau, S. F., Cal.
AXLE.—S L. Harrison, S. F., Cal.
SHEEP SHEARING MACHINE.—E. Chaquette, S. F., Cal.
ROLLER SKATE.—G. Pettitt, Oakland Point, Cal.
TRAMWAY, ETC.—A. S. Hallidie, S. F., Cal.
BUTTON HOLE CASING.—V. V. Bahnforth, Oakland, Cal.
TRACTION ENGINE.—W. H. Milliken, Sacramento, Cal.
GAS ENGINE.—D. V. Bruce, et. al., S. F., Cal.

Canadian Patents for Pacific Coast Inventors.

Following is a list of inventions patented in Canada by inventors in the Pacific Coast States and Territories, from January 1st to June 30th, 1875:

CAR AXLES.—H. H. Rhodes, San Jose, Cal.
SEWING MACHINE.—H. P. Garland and A. J. Gove, S. F., Cal.

*The patents are not ready for delivery by the Patent Office until some 14 days after the date of issue.

NOTE.—Copies of U. S. and Foreign Patents furnished by DEWEY & CO., in the shortest time possible (by telegraph or otherwise) at the lowest rates. All patent business for Pacific coast inventors transacted with perfect security and in the shortest possible time.

General News Items.

A BOTTLE containing a note signed by Donaldson has been found, washed ashore near Port Hope, Michigan. It says: "Over Lake Michigan, at 8 P. M. of the evening of starting; about 300 feet high. A gale is coming from the northeast. The balloon is getting out of order, and the gas is escaping fast. Cannot remain up much longer; will surely drop in the lake. It is a fearful storm." No trace of the missing aeronant's body has been discovered.

THE American rifle team met with a magnificent ovation on their return home. They arrived in New York on Saturday evening last, and on Monday the formal reception at the City Hall, a fine military display and a banquet in the evening attested the warmth of public sentiment over their splendid victory.

THE investigation into the terrible condition of the crew of the English ship *Brenen* on her arrival in this port is now going on here. From the testimony of the Captain it would appear that a veritable plague broke out, and the wonder is any of the crew survived.

THE Congress of German Journalists at Bremen, has adopted resolutions, asking Imperial legislation in behalf of the liberal press to publish truthful reports of the public proceedings of law courts, and granting immunity from a disclosure of names of contributors.

THE Secretary of the Treasury has addressed a letter to the Committee on Investigation of the Chicago custom house job, urging them to cause an early completion of that building.

A SPECIAL dispatch from Vienna says the eldest son of the Sultan of Turkey is going to Croatia with a squadron, to prevent the threatened insurrection there.

JACK FROST has been nipping the corn stalks in Wisconsin.

ROBERT BONNER, of New York, has purchased the famous seven year old trotter, "Grafton," from Richard Penniston, of Lexington. He made a trial at Cleveland in 1:15½. The price is not known, but it is said to be $15,000.

THE foot and mouth disease has broken out with great violence in Dorsetshire, England, where 12,000 animals are down with. The distemper is spreading rapidly.

THERE is ample assurance now that the cars will be running from San Francisco to Los Angeles by the 1st of July next.

KING ALFONSO of Spain is to marry the daughter of the Duke of Montpensier.

AN educational convention of colored men is in session in Richmond.

BONNER paid $25,000 for the new trotting wonder, Grafton.

CARDINAL MCCLOSKEY is in Paris.

THE "HOUSEKEEPER" OF OUR HEALTH.

The liver is the great depurating or blood-cleansing organ of the system. Set this great housekeeper at work, and the foul corruptions which gender in the blood and rot out, as it were, the machinery of life, are gradually expelled from the system. For this purpose Dr. Pierce's Golden Medical Discovery, with small daily doses of Dr. Pierce's Pleasant Purgative Pellets, are pre-eminently the articles needed. They cure every kind of humor from the worst scrofula to the common pimple, blotch or eruption. Great eating ulcers kindly heal under their mighty curative influence. Virulent blood poisons that lurk in the system are by them robbed of their terrors, and by their persevering and somewhat protracted use the most tainted system may be completely renovated and built up anew. Enlarged glands, tumors and swellings dwindle away and disappear under the influence of their great resolvents. Sold by all dealers in medicines.

"Claude, a child about three years old, was greatly afflicted with sores on his legs and feet, so that he could not wear his shoes and stockings. Had a great deal of trouble with him. Had tried many remedies ineffectually. At last we tried the Golden Medical Discovery, and in about three weeks he was entirely cured, his sores were all healed, and health much improved. Respectfully yours,

J. W. BOYER.

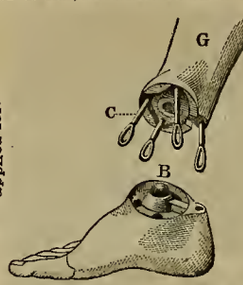
Vermillion, Edgar Co., Ill., Jan. 29th, 1875."
—*Com.*

The Dr. Bly Artificial Limbs

166 Tehama Street,

OOR. OF THIRD, BETWEEN HOWARD & FOLSOM

References to parties wearing these Limbs given when applied for.



The best Artificial Limbs made. Send for descriptive circular.

THE "ANATOMICAL LEG," WITH A UNIVERSAL ankle motion; the above cut is its illustration. This artificial leg approaches so much nearer an imitation of the functions of nature than any other, that it stands without a rival among all the inventions in artificial legs, old or new. (The very latest announced new inventions duly considered.)

Address, MENZO SPRING,
166 Tehama street, San Francisco, Cal.
6v30-1am-bp-3m

14 GMG 0%

STEARIC ACID CANDLES

GEO. M. GRANT & CO.

PHILADELPHIA.

The Candles sold under the above well known 'brand" are made only of Pure Stearic Acid, twice hydraulic pressed, are not cheapened by adulteration with crude material, and upon burning, give a large and brilliant flame, without running. 13v9-2ambp

LEHIGH

Emery Wheels

Are the best. Try them.

Emery Wheels under a new patent. Send for circular to TREADWELL & CO.

$5 to $20 Per Day at home. Terms free. Address G. STINSON & Co., Portland, M.

Banking.

The Merchants' Exchange Bank

OF SAN FRANCISCO.

Capital, Five Million Dollars.

O. W. KELLOGG.....President.
H. F. HASTINGS.....Manager.
R. N. VAN BRUNT.....Cashier.

BANKING HOUSE,
No. 423 California street San Francisco.

KOUNTZE BROTHERS, BANKERS,

12 WALL STREET, NEW YORK,

Allow interest at the rate of Four per cent. upon daily balances of Gold and Currency.
Receive consignments of Gold, Silver and Lead Bullion, and make Cash advances thereon.
Invite Correspondence from Bankers, Mining Companies, Merchants and Smelting Works.

French Savings and Loan Society,

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4v27tf G. MAHE, Director.

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BARTLING & KIMBALL,

BOOKBINDERS,

Paper Rulers and Blank Book Manufacturers.

505 Clay street, (southwest cor. Sansome),

5v12-3m SAN FRANCISCO

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THE PEOPLE'S REMEDY FOR INTERNAL AND EXTERNAL USE.

POND'S EXTRACT CURES Piles, blind and bleeding; Inflammations and Ulcerations; Hemorrhage from any organ—Nose, Gums, Lungs, Bowels, Kidneys, Womb, Etc.; Congestions, Enlargements.

POND'S EXTRACT INVALUABLE for Dysentery and Rheumatism; Inflammation of Eyes and Eyelids; Inflammation of Ovaries; Vaginal Leucorrhea; Varicose Veins; Sore Nipples.

POND'S EXTRACT for sale by all first-class druggists, and recommended by all druggists, physicians, and everybody who has ever used it.

Pamphlet containing history and uses mailed free on application, if not found at your druggist's.

POND'S EXTRACT CO.,
New York and London.

TASTELESS MEDICINES.

A prominent New York physician lately complained to DUNDAS DICK & CO. about their Sandalwood Oil Capsules, stating that sometimes they cured miraculously, but that a patient of his had taken them without effect. On being informed that several imitations were sold, he inquired and found his patient had not been taking DUNDAS DICK & CO'S,

What happened to this physician may have happened to others, and DUNDAS DICK & CO. take this method of protecting physicians, druggists and themselves, and preventing Oil of Sandalwood from coming into disrepute.

Phys cians who once prescribe the Capsules will continue to do so, for they contain the pure Oil in the best and cheapest form.

DUNDAS DICK & CO. use more Oil of Sandalwood than all the Wholesale and Retail Druggists and Perfumers in the United States combined, and this is the sole reason why the pure Oil is sold cheaper in their Capsules than in any other form.

Oil of Sandalwood is fast superseding every other remedy, sixty Capsules only being required to insure a safe and certain cure in six or eight days. From no other medicine can this result be had.

DUNDAS DICK & CO'S SOFT CAPSULES solve the problem, long considered by eminent physicians, of how to avoid the nausea and disgust experienced in swallowing, which are well known to detract from, if not destroy, the good effects of many valuable remedies.

Soft Capsules are put up in tin-foil and neat boxes, thirty in each, and are the only Capsules prescribed by physicians.

TASTELESS MEDICINES.—Castor Oil and many other nauseous medicines can be taken easily and safely in DUNDAS DICK & CO'S soft Capsules. No taste No smell

☞ These were the only Capsules admitted to the last Paris Exposition.

Send for Circular to 35 Wooster street, N. Y.
Sold at all Drug Stores here.

Bronze Turkeys
Gobblers, 30 to 40 pounds. Hens 15 to 20 pounds.

Emden Geese
40 to 50 pounds per pair at maturity.

LEGHORNS, BANTAMS
BRAHMAS, GAMES, BLACK HOUDANS. CAYUGA DUCKS.

EGGS, fresh, pure, packed so as to hatch after arrival on any part of the Coast. For Illustrated Circular and Price-List, address

M. EYRE, Napa, Cal.

[Please state where you saw this advertisment.]

Miscellaneous Notices.

W. T. GARRATT'S
BRASS and BELL FOUNDRY
SAN FRANCISCO.

MANUFACTURER AND IMPORTER OF
Church and Steamboat BELLS and GONGS,
BRASS CASTINGS of all kinds,
WATER GATES, GAS GATES,
FIRE HYDRANTS,
DOCK HYDRANTS,
GARDEN HYDRANTS.

A General Assortment of Engineers' Findings

Hooker's Patent Celebrated
STEAM PUMP
☞The Best and Most Durable in use. Also, a variety of other
PUMPS
For Mining and Farming Purposes.

ROOT'S BLAST BLOWERS.
For Ventilating Mines and for Smelting Works.
HYDRAULIC PIPES AND NOZZLES,
For Mining Purposes.
Garratt's Improved Journal Metal.
IMPORTER OF
IRON PIPE AND MALLEABLE IRON FITTINGS.
ALL KINDS OF
SHIP WORK AND COMPOSITION NAILS,
16-tf AT LOWEST RATES.

DAVID WOERNER,

COOPER,
No. 104 and 112 Spear St., San Francisco.
Wine Casks, Tanks, Tubs, Pipes, Beer Barrels, etc., Manufactured at Short Notice and LOW RATES.
LUMBER for CASKS, etc., TANKS, etc. Steamed and Dried if required.
eow-bp.

SANBORN & BYRNES,

STAIR BUILDERS.
Mechanics' Mills, Mission Street,
Bet. First and Fremont, San Francisco. Orders from the country promptly attended to. All kinds of Stair Material furnished to order. Wood and Ivory Turners. Billiard Balls and Ten Pins, Fancy Newels and Balusters. 25v8-3m-bp

JOHN THOMSON. JOHN B. PARKER.
THOMSON & PARKER,
(Formerly with David Stoddart,)
112 Beale Street, San Francisco, Cal.,
ENGINEERS and MACHINISTS,
MANUFACTURERS OF
STEAM PUMPS, STEAM ENGINES,
And all kinds of Machinery.
REPAIRING PROMPTLY ATTENDED TO.

Diamond Drill Co.
The undersigned, owners of LESCHOT'S PATENT for DIAMOND POINTED DRILLS, now brought to the highest state of perfection, are prepared to fill orders for the IMPROVED PROSPECTING and TUNNELING DRILLS, with or without power, at short notice, and at reduced prices. Abundant testimony furnished of the great economy and successful working of numerous machines in operation in the quartz and gravel mines on this coast. Circulars forwarded, and full information given upon application.
A. J. SEVERANCE & CO.
Office, No. 315 California street, Rooms 1 and 2.
21v26-tf

GAS AND STEAM PIPE
IN LOTS TO SUIT.
TREADWELL & CO., San Francisco.

1874. A GRAND SILVER MEDAL. 1874.

(From 1 to 10-Horse Power)
PARKE & LACY, Sole Agents,
310 California Street,
SAN FRANCISCO.

The highest and only prize of its class given to any Vertical Engine was awarded to the
HASKINS ENGINES AND BOILERS,
BY THE
MASS. CHARITABLE MECHANICS' ASSOCIATION,
at their Fair in Boston, in competition with the
Baxter, New York Safety Steam Power and the Sharpley Engines.

ROOT'S "SAFETY" BOILER
MANUFACTURED BY THE
Abendroth & Root M'f'g Co.,
BROOKLYN, N. Y.
THE ROOT WROUGHT-IRON SECTIONAL SAFETY BOILER has been improved and perfected by Eight years experience, and the sale of
Over Twelve Hundred Boilers,
for all manner of use. Is perfectly safe from Destructive Explosion, all parts easily accessible for cleaning, **Utmost Durability, Highest Economy in Fuel, Reasonable Price.** Working portion composed of **Wrought-iron Boiler Tubes, tested to a pressure of 500 pounds per square inch.** Steam from cold water in from *ten* to *twenty* minutes.

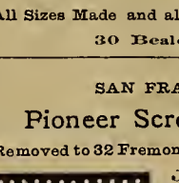
We refer to the following parties, among others, who are using the Root Safety Boilers:

H. F. Williams.....San Francisco, Cal.
Humphrey & Mock.....Millerton, Cal.
Parke & Bowie.....Virginia City, Nevada.
Oboilar-Potosi Mining Co.....Virginia City, Nevada.
Union Mill & Mining Co.....Gold Hill, Nevada.
Belcher Silver Mining Co.....Gold Hill, Nevada.
Imperial Mining Co. (170 h-p)....Gold Hill, Nevada.
J. B. Montgomery.....Portland, Oregon.

Send for Circular and Price List.
J. CURLE, Gen'l. Agent for Pacific Coast,
No. 513 Montgomery St., San Francisco.

FRANCIS SMITH & CO.,
MANUFACTURERS OF
Hydraulic Pipe,
AND
ARTESIAN WELL PIPE.
Having the Latest Improved Machinery, we can make it an object to
Mining & Water Companies
OR
WATER WORKS,
To Contract with us for
SHEET-IRON PIPE.
All Sizes Made and all Work Guaranteed
30 Beale Street,

SAN FRANCISCO
Pioneer Screen Works,
Removed to 32 Fremont Street, near Market.



J. W. QUICK,
Manufacturer of perforated sheet metals of every description, at reduced rates. Mill owners using Battery Screens extensively, can contract for large supplies at favorable rates. This is the only establishment on the Coast devoted exclusively to the manufacture of Screens

A STURTEVANT BLOWER
For Sale Cheap.

No. 2—In good order, with or without belting, shaft, pulleys and galvanized air pipe. Enquire at the BREWERY, corners of Fourteenth and Folsom streets, San Francisco.

IMPORTANT SALE.
The following properties, situated at
SPANISH BAR,
Clear Creek Co., Col. Territory,
And now owned by the
United States General Smelting and Mining Company,
(Limited,)
—WILL BE OFFERED—
For Sale at Public Auction
On the 28th day of August next, unless previously disposed of by private contract:
BRICK BUILT MILL,
Main building 140x80, two wings, each 75x50, containing Reverberatory Furnace (capacity 10 to 12 tons per diem) and double hearthed Calciner, two Dodge Crushers, Ball Pulverizer, Sample Grinding Machine, two Force Pumps, Circular Saw, and all other necessary implements for smelting. Laboratory and assay tools, house and office furniture. Machinery run by water power. Large, well built
BOARDING HOUSE,
(Furnished,) and two small detached dwelling houses
Extensive Water-Power Flumes, Etc.
Mill Site, Containing about 10 Acres.
Valuable Pyrites Mine,
Adjoining mill property, claim owned to the extent of 1,900 feet. Ore, copper and iron pyrites carrying gold and silver, a most valuable flux in smelting.
Situation of property on main road, midway between the silver ore district of Georgetown and present terminus of the Colorado Central Railroad, at Floyd Hill. Several gold and silver mines in the immediate vicinity. Supply of water unlimited. Good wood in abundance within three miles. Works most conveniently situated in every respect. Further particulars to be had by application to
HENRY WILLIAMS, Manager,
Spanish Bar, Colorado Territory.

BLACK DIAMOND FILE WORKS.

TRADE MARK
G. & H. BARNETT,
Manufacturers of Files of every Description
Nos. 39, 41 and 43 Richmond street,
Philadelphia, Pa.
Sold by all the principal hardware stores on th Pacific Coast. 18v25.1y

Mining and Other Companies.

Gover Mining and Milling Company—
Principal place of business, San Francisco, Cal. Location of works, Drytown, Amador county, Cal.
Notice is hereby given, that at a meeting of the Board of Directors, held on the 4th day of August, 1875, an assessment of 20 cents per share was levied upon the capital stock of the corporation, payable immediately, in United States gold and silver coin, to the Secretary, at the office of the company, No. 402 Front street, room 8, San Francisco, Cal.
Any stock upon which this assessment shall remain unpaid on the 10th day of September, 1875, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Thursday, the 30th day of September, 1875, to pay the delinquent assessment, together with costs of advertising and expenses of sale.
W. O. WILSON, Secretary.
Office, No. 402 Front street, room 8, San Francisco, Cal.

Hope Quicksilver Mining Company—Lo-
cation of principal place of business, San Francisco, California. Location of works, Cinnabar Mining District, Sonoma County, State of California.
Notice is hereby given, that at a regular meeting of the Board of Directors, held on the 2d day of August, 1875, an assessment (No. 2) of Five cents per share was levied upon the capital stock of the corporation, payable immediately, in United States gold coin, to the Secretary, at the office of the company, Room 2, No. 408 California street, San Francisco, Cal.
Any stock upon which this assessment shall remain unpaid on the 9th day of September, 1875, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Thurday, the 30th day of September, 1875, to pay the delinquent assessment, together with costs of advertising and expenses of sale.
JACOB HARDY, Secretary.
Office, Room 2, No. [illegible] California street, San Francisco, California.

Manhattan Marble Company of Californ-
ia. Location of principal place of business, San Francisco, California. Location of works, Oakland, Alameda county, State of California.
Notice is hereby given, that at a meeting of the Directors, held on the 6th day of August, 1875, an assessment (No. 8) of five dollars per share was levied upon the capital stock of the corporation, payable immediately, in United States gold coin, to the Secretary of the company, at his office, Nos. 13 and 15 Fremont street, San Francisco, California.
Any stock upon which this assessment shall remain unpaid on the 15th day of September, 1875, shall be deemed delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Monday, the 4th day of October, 1875, at 12 o'clock M., to pay the delinquent assessment, together with costs of advertising and expenses of sale.
L. L. ALEXANDER, Secretary.
Office, Nos. 13 and 15 Fremont street, San Francisco, California.

Mount Auburn Gold Quartz Mining Com-
pany. Location of principal place of business, San Francisco, Cal.
Notice is hereby given, that at a meeting of the directors, held on the 25th day of August, 1875, an assessment (No. 1) of twenty-five cents per share was levied upon the capital stock of the corporation, payable immediately, in United States gold coin, to the Secretary, at the office of the company, No. 402 Montgomery street, room 9, second floor.
Any stock upon which this assessment shall remain unpaid on the 27th day of September, 1875, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Thursday, the 28th of October, 1875, to pay the delinquent assessment, together with costs of advertising and expenses of sale.
C. A. JAMES, Secretary.
Office, 402 Montgomery street, room 9, San Francisco, California.

Orleans Mining Company—Location of
principal place of business, San Francisco, Cal. Location of works, Grass Valley Mining District, Grass Valley, Nevada County, Cal.
Notice is hereby given, that at a meeting of the Board of Trustees of said company, held on the 23d day of July, 1875, an assessment, No. 6, of one dollar per share was levied upon the capital stock of said company, payable on the 23d day of July, 1875, in gold coin of the United States of America, to the Secretary, at the office of the company, room 8, No. 315 California street, in the city of San Francisco
Any stock upon which said assessment shall remain unpaid on the 24th day of August, 1875, will be advertised on that day as delinquent, and unless payment shall be made before, will be sold on the 13th day of September, 1875, to pay the delinquent assessment, together with costs of advertising and expenses of sale.
GEO. P. THURSTON, Secretary.
Office, room 8, No. 315 California street, San Francisco, Cal.

Silver Sprout Mining Company—Loca-
tion of principal place of business, San Francisco, State of California.
NOTICE.—There are delinquent upon the following described stock, on account of assessment levied on the third (3d) day of July, 1875, the several amounts set opposite the names of the respective shareholders, as follows:

Names.	No. Certificate.	No. Shares.	Amount.
A Wingard	146	1200	$ 60 00
T B Wingard, Trustee	138	29	1 45
S Davis, Trustee	32	5000	250 00
Hermann Toelken, Trustee	49	100	5 00
Henry Boyle, Trustee	57	2000	100 00
Henry Boyle, Trustee	112	224	11 20
Henry Boyle, Trustee	113	356	17 80
M Ellsworth	62	50	2 50
J W Thurman	149	1500	75 00

And in accordance with law, and an order of the Board of Directors, made on the 3d day of July, 1875, so many shares of each parcel of said stock as may be necessary, will be sold at public auction, at the sales-room of Maurice Dore & Co., No. 326 Pine street, San Francisco, on the 1st day of September, 1875, at the hour of 12 o'clock M., of said day, to pay said delinquent assessment thereon, together with costs of advertising and expenses of sale.
T. B. WINGARD, Secretary.
Office, Room 13, No. 318 California street, San Francisco, Cal.

Silver Wave Mining Company—Location
of principal place of business, San Francisco, California. Location of works, White Pine Mining District, Nevada.
Notice is hereby given, that at a meeting of the Board of Directors, held on the 21st day of July, A. D., 1875, an assessment, No. 12, of twenty-five cents (25 cts) per share was levied upon the capital stock of the corporation, payable immediately, in United States gold coin, to the Secretary, at the office of the company, No. 418 California street, San Francisco, California.
Any stock upon which this assessment shall remain unpaid on the 10th day of September, 1875, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Friday, the 8th day of October, 1875, to pay the delinquent assessment, together with costs of advertising and expenses of sale. By order of the Board of Directors.
J. W. CLARK Secretary.
Office, room 2, No. 418 California street, San Francisco, California.

Tolman and Miller Mill and Mining Com-
pany.—Location of works, West Point, Calaveras county, California.
NOTICE.—There is delinquent upon the following described stock, on account of assessment (No. 2) levied on the fourteenth day of July, 1875, the several amounts set opposite the names of the respective shareholders, as follows:

Names.	No. Certificate.	No. Shares.	Amount.
D A Miller	19	100	30 00
D A Miller	20	100	30 00
Jas L Trask, Trustee	35	50	15 00
S&H Heacock	38	500	150 00
S&H Heacock	39	500	150 00
S H Heacock	40	500	150 00
Marcia A Sharp	46	100	30 00
Marcia A Sharp	47	100	30 00
Marcia A Sharp	48	100	30 00
Marcia A Sharp	49	100	30 00
Marcia A Sharp	50	100	30 00
E H Heacock	57	100	30 00
E H Heacock	58	100	30 00
E H Heacock	59	100	30 00
E H Heacock	60	100	30 00
E H Heacock	61	100	30 00
Ohas Kellett	71	100	30 00
C Desmond	101	10000	3000 00
O Desmond	103	500	150 00
D A McDonald	107	500	150 00
J H McDonald	108	500	150 00
J W Hamilton	109	500	150 00
J W Farren	110	500	150 00
Geo Clshough	111	500	150 00
E F Preston	112	500	150 00
J W Harrold	113	500	150 00
Dennis Jordan	114	500	150 00
A Cameron	115	500	150 00
J M Roach	116	500	150 00
F I Curry	117	500	150 00
John O'Brien	118	500	150 00
Joshua Hendy	119	500	150 00
J H McDonald	120	333	99 90
O Desmond	122	334	120 00
Edmund Morris	123	1000	300 00
Edmund Morris	124	1000	300 00
Edmund Morris	125	1000	300 00
W T Chalmer	126	1000	300 00
W T Chalmer	127	1000	300 00
W T Chalmer	128	1000	300 00
John W Egan	129	833	249 90
John O'Donnell	130	500	150 00
D A McDonald	131	500	150 00
D A McDonald	132	500	150 00
D A McDonald	133	500	150 00
D A McDonald	134	500	150 00
A Craig	5	100	30 00

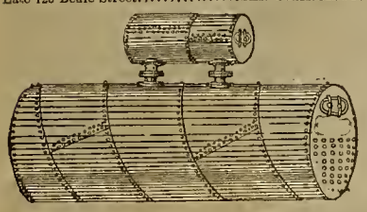
And in accordance with law, and an order of the Board of Directors, made on the 14th day of July, 1875, so many shares of each parcel of such stock as may be necessary, will be sold at public auction, at the office of the company, room 1, No. 402 Montgomery street, San Francisco, Cal., on Monday, the 6th day of September, 1875, at the hour of one o'clock P. M., of said day, to pay said delinquent assessment thereon, together with costs of advertising and expenses of the sale.
O. H. BOGART, Secretary.
Office, Room 1, No. 402 Montgomery street, San Francisco, Cal.

Yosemite Mining Company—Location of
principal place of business, San Francisco, Cal. Location of works, Hamholdt county, Nevada.
Notice is hereby given, that at a meeting of the Board of Directors, held on the 29th day of July, 1875, an assessment of twenty-five cents per share was levied upon the capital stock of the corporation, payable immediately, in United States gold coin, to the Secretary, at his office, No. 210 Battery street, San Francisco.
Any stock upon which this assessment shall remain unpaid on the 29th day of September, 1875, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on the 23d day of October, 1875, to pay the delinquent assessment, together with costs of advertising and expenses of sale. By order of the Directors.
S. O. PUTNAM, Secretary, pro tem.
Office—No. 210 Battery street, San Francisco, Cal.

Iron and Machine Works.

San Francisco Boiler Works,

N. W. Cor. Harrison and Main.
Late 125 Beale Street.....SAN FRANCISCO.



F. I. CURRY.
Late Foreman of the Vulcan Iron Works,) Proprietor

High and Low Pressure Boilers of all Descriptions.

SOLE MANUFACTURERS OF THE CELEBRATED
SPIRAL BOILER.

SHEET IRON WORK of every description done at the Shortest Notice.
All kinds of JOBBING and REPAIRING promptly attended to. 17v25-3m

THE RISDON
Iron and Locomotive Works,

INCORPORATED.....APRIL 30, 1868.
CAPITAL.....$1,000,000.

LOCATION OF WORKS:

Corner of Beale and Howard Streets,
SAN FRANCISCO.

Manufacturers of Steam Engines, Quartz and Flour Mill Machinery, Steam Boilers (Marine, Locomotive and Stationary), Marine Engines (High and Low Pressure). All kinds of light and heavy Castings at lowest prices. Cams and Tappets, with chilled faces, guaranteed 40 per cent. more durable than ordinary iron.

Directors:

Joseph Moore, Jesse Holladay, C. E. McLane,
Wm. Norris, Wm. H. Taylor, J. B. Haggin,
James D. Walker.

WM. H. TAYLOR.....President
JOSEPH MOORE...Vice-President and Superintendent
LEWIS R. MEAD.....Secretary
24v17-qy

FULTON
Foundry and Iron Works.

HINCKLEY & CO.,
MANUFACTURERS OF
STEAM ENGINES,
Quartz, Flour and Saw Mills,
Hayes' Improved Steam Pump, Brodie's Improved Crusher, Mining Pumps, Amalgamators, and all kinds of Machinery.
N. E. corner of Tehama and Fremont streets, above Howe street, San Francisco. 3-qy

UNION IRON WORKS,
Sacramento.

ROOT, NEILSON & CO.,
MANUFACTURERS OF
STEAM ENGINES, BOILERS,
CROSS' PATENT BOILER FEEDER AND SEDIMENT COLLECTOR
Dunbar's Patent Self-Adjusting Steam Piston
PACKING, for new and old Cylinders.
And all kinds of Mining Machinery.
Front Street, between N and O streets,
SACRAMENTO CITY.

SHEET IRON PIPE.
THE
Risdon Iron and Locomotive Works
Corner Howard and Beale Streets,

Are prepared to make SHEET IRON AND ASPHALTUM PIPE, of any size and for any pressure, and contract to lay the same where wanted, guaranteeing a perfect working pipe with the least amount of material.
Standard sizes of railroad Car Wheels, with special patterns for Mining Cars. These small wheels are made of the best Car Wheel Iron, properly chilled, and can be fitted up with the improved axle and box—introduced by this company, and guaranteed to outlast any other wheels made in this State.
☞ All kinds of Machinery made and repaired.
24v22-3m JOSEPH MOORE, Superintendent.

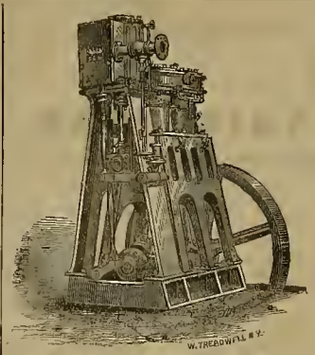
G. W. PRESCOTT. | W. R. ECKART.

Marysville Foundry,

MARYSVILLE, - - - - - - - - - - - - CAL.
PRESCOTT & ECKART,
Manufacturers of Quartz and Amalgamating Machinery, Hoisting Machinery, Saw and Grist Mill Irons, House Fronts Car Wheels, and Castings of every description made to order.
Steam Engines constantly on hand for sale. 9v28-1y

THOMPSON BROTHERS,
EUREKA FOUNDRY,

129 and 131 Beale street, between Mission and Howard, San Francisco.
LIGHT AND HEAVY CASTINGS,
of every description manufactured. 2v15-



PARKE & LACY,

SOLE AGENTS FOR THE

Burleigh Rock Drill Company.

—MANUFACTURERS OF—

PNEUMATIC DRILLING MACHINES,

AIR COMPRESSORS AND OTHER MACHINERY.

Also, Farmers' Dynamic Electric Machine and Hill's Exploders for Blasting, Putnam Machine Company's Tools, Wright's Steam Pumps and Haskin's Engines.

Address
PARKE & LACY.
m-hd 310 CALIFORNIA STREET, S. F.

H. T. SCOTT. IRVING M. SCOTT. GEO. W. PRESCOTT.

UNION IRON WORKS,

Founded, - - - - - - - - - - - - - - - - 1849.

All kinds of Castings of Iron and Brass,
COMPOUND ENGINES,
AIR COMPRESSORS,

Steam Engines and Boilers constantly on hand and for sale. Marine, Locomotive and Stationary Engines, Quartz Crushing and Amalgamating Machinery, Cornish Pumps, Mill Irons, and Castings of every description, made to order.

PRESCOTT, SCOTT & CO.,
Successors to H. J. Booth & Co., San Francisco, Cal.

IRA P. RANKIN. Established 1850. A. P. BRAYTON

Pacific Iron Works,

FIRST STREET, - - - SAN FRANCISCO.
Geo. W. Fogg, Supt.

MACHINERY AND CASTINGS
OF EVERY DESCRIPTION.

Heavy Forging Boilers, Stationary and Marine.

JOBBING AND REPAIRING WORK OF EVERY KIND. SPECIAL ATTENTION GIVEN TO MINING AND HOISTING MACHINERY.

Sole Manufacturers and Agents of
PRALL'S PATENT STEAM PUMP.
GODDARD & CO., Props.

WM. HAWKINS. T. G. CANTRELL

HAWKINS & CANTRELL,
MACHINE WORKS,

210 & 212 Beale St.,
Near Howard, - - - SAN FRANCISCO.
MANUFACTURERS OF
Steam Engines and all kinds of Mill and Mining Machinery.

Also manufacture and keep constantly on hand a supply of our
Improved Portable Hoisting Engines,
From Ten (10) to Forty (40) Horse Power.
N. B.—Jobbing and Repairing done with Dispatch.

PACIFIC
Rolling Mill Company,

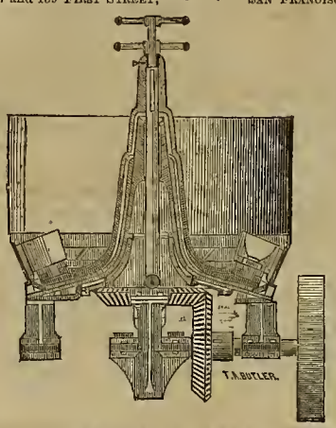
SAN FRANCISCO, CAL.
Established for the Manufacture of
RAILROAD AND OTHER IRON
—AND—
Every Variety of Shafting,
Embracing ALL SIZES of
Steamboat Shafts, Cranks, Piston and Connecting Rods, Car and Locomotive Axles and Frames
—ALSO—
HAMMERED IRON
Of every description and size.
☞ Orders addressed to PACIFIC ROLLING MILL COMPANY, P. O box 2032, San Francisco, Cal., will receive prompt attention
☞ The highest price paid for Scrap Iron

The Phelps' Manufacturing Co.,

(Late S. F. Screw Bolt Works.
MANUFACTURERS OF ALL KINDS OF
Machine Bolts, Bridges Bolts and Ship or Band Bolts.
13, 15 and 17 Drumm Street, San Francisco. 4v24-1y

Occidental Foundry,

137 and 139 FIRST STREET, - - SAN FRANCISCO



STEIGER & KERR,
IRON FOUNDERS.

IRON CASTINGS of all descriptions at short notice. Sole manufacturers of the Hepburn Roller Pan and Callahan Grate Bars, suitable for Burning Screenings.
NOTICE.—Particular attention paid to making Superior Shoes and Dies. 20v26.3m

THOS. PENDERGAST. HENRY S. SMITH.

ÆTNA IRON WORKS.

MANUFACTURERS OF
IRON CASTINGS
and MACHINERY,
OF ALL KINDS.

Fremont Street, bet. Howard and Folsom,
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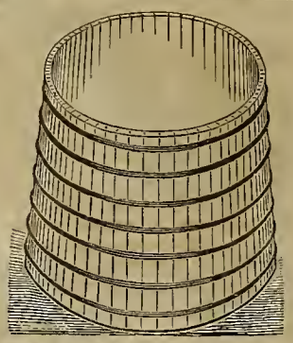

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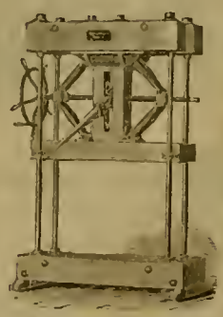

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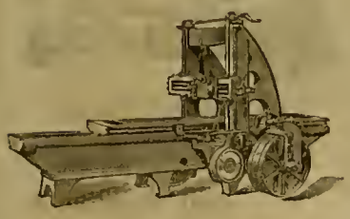

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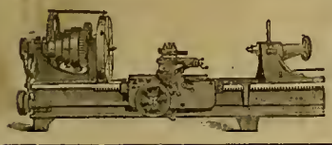

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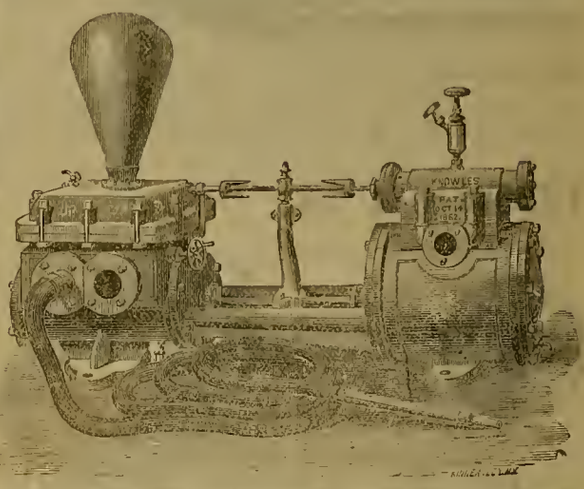

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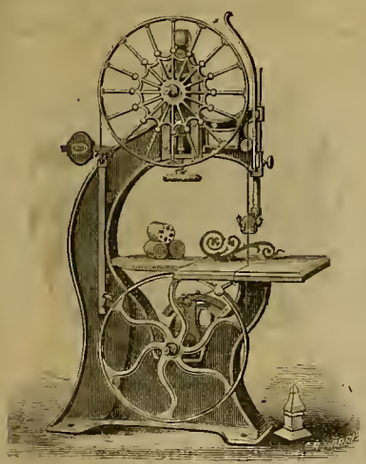

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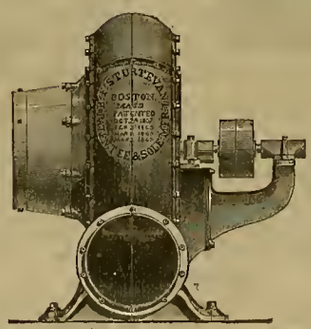

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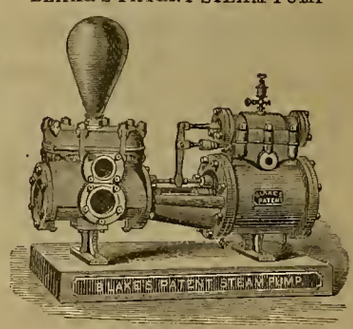

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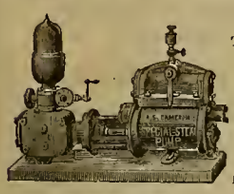

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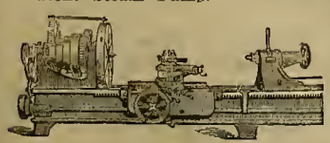

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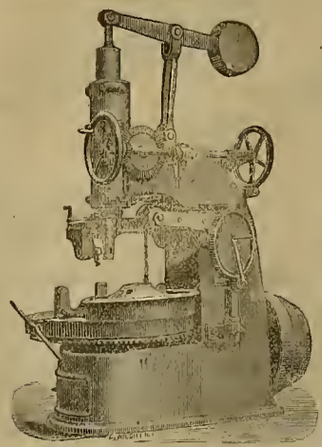

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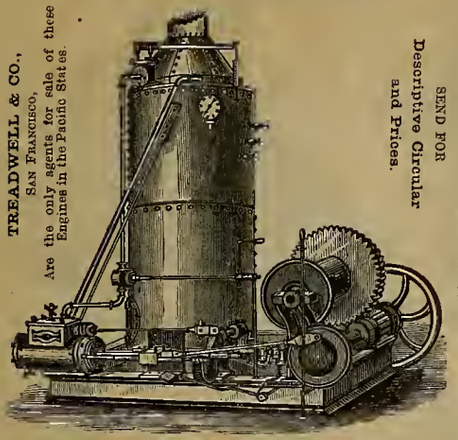

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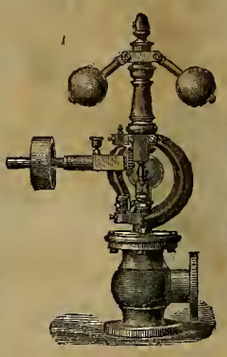

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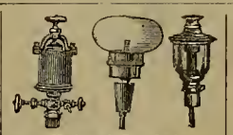

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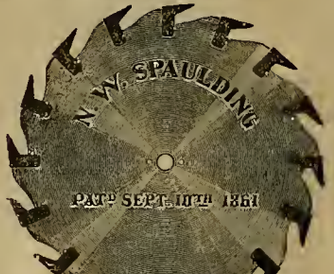

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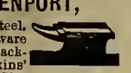

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SAN FRANCISCO, SATURDAY, SEPTEMBER 4, 1875.

VOLUME XXX. Number 10.

Metallurgy of the Copper-Silver Ores of Inyo County—No. 1.

[Written for the PRESS by SAMUEL PURNELL.]

Inyo county, in its central aad southern portions, holds large quantities of silver ores, carrying so large a percentage of copper that they may more properly be called copper ores. As the majority of the mines promise to be permanent in depth, and are rich in silver, it becomes a matter of prime importance that the ores he worked by processes which shall beneficiate them to the best advantage. It is generally conceded by metallurgists that on account of the large percentage of copper, lead, antimony, areenic, irou, etc., which these ores contain, they cannot be economically worked by the ordinary amalgamation process; aad, wherever this process has been tried, it is understood that the result has been a practical failure. It becomes necessary then to inquire for and search after a better plsh, and to find one that will not only be better than any other for ores of good quality, but will allow elso of those abnndant low grade ores, now lying nntonched, to be worked at a fair profit. That snch a result is possible no metallurgiet can donbt. In these articlee an effort will be made te indicate in what direction success is to he expected. The subject will be considered under several heads: 1st, Beneficiation as copper ores; 2d, Beneficiation as silver ores; 3d, Concentration, as auxiliary to each of the former. First, of

Copper Ores.

It will be assnmed that it would not be economical to treet copper ores in Inyo county by fueion; as by reeeon*of the leck of proper fuel, transportation, accees to markets, and ohesp materials generally, it is probable that ingot copper could not be prodaced ehort of thirty cents per pound, while the present value in New York is bnt twenty-two cents. For the same reasons it ie doubtfnl if the copper ores could be profitably run down to matte, with a view to its ehipment and sale. With these viewe of the necessities and conditione for a rational treatment of the silver-bearing copper oree of Inyo, regard will be paid only to their metallnrgy by wet processes.

Nearly all wet copper processee depend on the conversion of the copper into a eoluble eulphate and its eubsequent lixiviation. Among these, the German process of Ziervogel wae long practiced at Mansfield. It depends on the following reactions in a roast furnace, then an ore conteining a mixture of the sulphides of copper, iron, nickel, cobelt, eilver, lead and antimony ie roasted at a moderate heat; the sulphides ere firet converted into soluble sulphatee, and afterwards with increased heet into insoluble oxidee The temperature required for decomposition ie epecific for each metal, commencing with the eulphate of iron, and increasing for the snlphatee of nickel, copper, silver, antimony and leed respectively. It ie therefore theoretically possible by controlling the tempereture to keep some metale in a soluble condition while others are rendered insoluble. These facts have been used heretofore in the metallurgy of copper and silver oree to render the eilver and copper soluble and the bese metals insoluble. In the process of Ziervogel when the copper and eilver are thus converted into sulphates, they are removed from the fnrnace, and the roaeted ore lixiviated with hot water, by which the silver and copper nre diseolved and carried off to the precipitating tanks. The precipitation of the silver in metellic form is accomplished by placing leyers of cement copper and copper bare in a tank and filtering the solution through them. A little sulphuric acid added facilitates the solution and preciaitation of the silver, and preveats the deposition of basic salts of iron. The precipitated silver will be somewhat contamiaated with copper, which can readily be separated by the ordinary refiaing process. The solntion now containing copper is passed to another tank which contains metallic iron, where the copper is preeipiteted in a metallic form. A portion of the cement copper thus obtained is used for the precipitatioa of the next leach of silver. Should the sulphate of iron now remaining in solution have any commercial valne, it may be precipitated as oxide by lime water or carbonate of lime in powder. Under some circumstances it would doubtless be profitable to smelt this oxide to metallic iron in a shsft furnace for precipitation purposes in subsequent operatious; or it mey be valuable as a flux iu the fusiou of leed end copper ores.

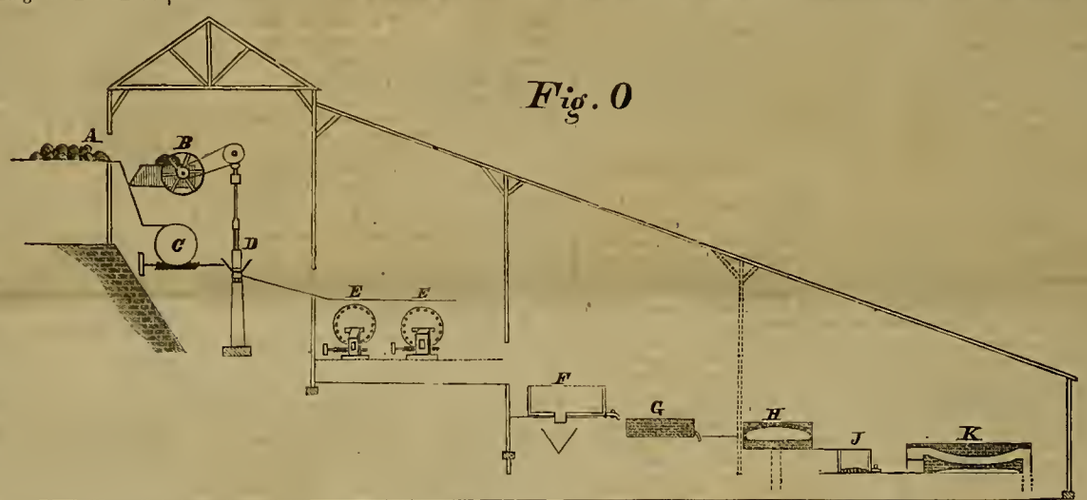
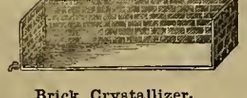


Fig. 0

MONNIER COPPER PROCESS.

The roasting in this process is extremely delicate, and herein is its principal defect. If it is not conducted by ekillful men with the utmost eere it may proceed too far aud the sulphates turned into insoluble oxides and the valueble metals thus lost. The process, aleo is not well edapted to ores containiag much arsenic, antimony, lead or zinc, as it is difficult then to roast the copper aud silver to a close percentage in a soluble form; it is also too expensive. It is not at present used anywhere for ores direct, but only for secoudary products such as epeiss end matte.

Fig. 1.



Brick Crystallizer.

Monnier Copper Process.

To meet the above named difficnities in the roasting to sulphates, and in the subsequent precipitetion to avoid the use of the expensive metallic iron, Mr. Alfred Monnier eome yeers ago invented a beautiful method of working copper ores, which has been introduced at a number of eetahliehmeuts with considerable euccess. It ie adapted to the treetment of a wider renge of ores than the process of Ziervogel; and is prohably one of the few copper wet processes which will prove practical and economical iu the working of the complex ores of Inyo county.

The Monnier process consists, substentially, ae follows: 1. calcination of the metallic eulphides with a portion of sulphate of soda, or other eimilar salt. 2. Lixiviation of the calcined ore. 3. Evaporation and crystallization of the sulphates. 4. Redaction of the sulphate of copper. 5. Smelting into ingot copper. 6. Amalgamation of any gold residuum. The working details are eubstentially as follows: The ore is mixed with sulphate of soda and crashed fine enough to pass through a No. 24 screen. It is next roasted in a muffle furnace or a revolving cylinder furnace; the sulphur will begia to burn within an konr after the introduction of the ore, and after that time but little fuel is needed until toward the end of the roasting. Sulphuric acid is formed by the oxidation of part of the sulphur, while the larger proportion of the sulphur escapes as sulphurous acid. The iron, copper and silver are converted by the sulphuric ecid into sulphetes, and the sulphate of soda into a bi-sulphate. Soon all the sulphur not combined with the soda or metallic oxides is expelled. A low red heat is now reached, and the snlphates of iron and copper snffer decomposition. The sulphuric acid at first combined in this form has been stored up, and is now evolved by the greater heat. Being nascent, its combining power is of intense activity and force, and it attacks any and all metallic oxides or sulphides remaining uncombined, convertiag them with greet rapidity into sulphates. The copper and eilver present are eoon converted into eoluble sulphates; iron oxide and gold remaining unconverted and insoluble. In this latter stage of the roaeting the value of the sulphate of soda becomes apperent; it holds faet to the excess of sulphuric ecid formed during the eerly stege, and carries it on to thie critical point. While by other methode of roasting to sulphates, only a portion of the metals are retained es sulphates and the belance is reduced to an insoluble form, by this method the acid is retained until required by the copper and silver when it is given np at the right time, and those metals are recovered with great ease. If the saving of the sulphuric ecid evolved ehould be of consequence, the gases from the furnace mey he led into the usual leed chambers.

Fig. 2.

Evaporating Furnace.

The roested ore is next placed in tanks and lixiviated with cold water. The nse of hot water is to be avoided, as it would dissolve a greater quantity of base metel sulphetes, notably those of lead and antimony. The leaching water highly charged with copper, silver and soda eulphates is conducted into tanks containing cement copper, on which the silver is precipiteted in a metallic form as cement silver, whence it may be recovered by the usual methods.

The large amount of sulphate of soda present in the liquor mnst now be recovered and regenerated for future operetions. To effect this, the solution is run into crystallizing tanks, and left for eeveral days, when most of the soda will crystallize out. See Fig. 1. The crystallization is interrupted before the sulphate of copper begias to deposit; and the solution is run into an evaporating furnace. See Fig. 2. In this, the hearth, is a wooden box lined with lead; *a* is the flue. This is only moderately heated. It receives a steady supply of liquor to maintain a constant level. In this furnace the sulphates of soda and copper as they crystellize are raked out, while the final charge is evaporated to dryness. Some sixty per ceat. of the sulphate of soda origiaelly present is obtained from the first crystallizatiion, which, as soon as it is drained and dried, is ready to go the round ageia. The forty per cent. balance is not lost, but it is recovered in a following operation.

The dry snlphates of copper and silver are next mixed with charcoal and heated in a reverberatory furnace. As soon as fluidity is attained, sulphurous acid is evolved. The mixture is gradually heated to redness, at which temperatnre it is kept until all the sulphnrous acid is expelled. The sulphate of soda remains undecomposed, and the snlphate of copper is converted into mixture of red oxide and metallic copper.

The calcined mixture when cold, is washed in a tank of water, where the unburned coel and sode are easily separated. The soda being again in solution may be run into a crystallizer and completely recovered. The copper is now ready for the refiniag furnace, which refining does not differ from the ordinery process. Fig. 1. In this engraving, *A*, represents the ore; *B*, Blake crusher; *C*, cylinder ore drier; *D*, stemps; *E E*, Bruckner cylinders; *F*, lixiviator; *G*, crystallizer; *H*, evaporating reverberatory furnace, end view; *I*, washing tank; *K*, reducing furnace.

The plent for the Monnier process costs but little. Probably no establishment for the working of complex copper ores could be built on any other plan with a less amount of cepital. About a week is required for the passage of the ore and producte through the various operations. It is estimated that ingot copper can be produced iu a works of this neture from a ten per cent. ore for five cents per pound; which is considerably eheaper than by the English or German plans of fusion. Very little skilled lebor ie required. The use of metellic iron for the precipitetion of the copper ie avoided by the use of sulphete of soda and the method of reducing the sulphate of copper. The soda is need continually with but very little loss. Wear and teer are very smell, as only low heats are required. The process enables all the valuable metals in the ore to be extracted, while the sulphur can be converted into enlphuric acid. The concentration of poor oree is not so obligatory as in the fasiou processes, and poorer ores can be worked. Dnring the roasting it is probable that e double salt of eods and copper is formed, which helps to keep the copper in a soluble form. The weehed copper has almost the exact appearance and richnese of cement copper precipitated by metellic iron, and undergoes the same epecies of refiniug. The actuel coneumption of sode does not exceed one per cent. for each operation. The loss of copper is not more than five per cent., and may be even less with good management.

A weak point in the Monnier process, as well as in some others, is that it requires considerable fnel to eveporete its solutions, and in a country where fuel is high priced and inferior, that may be a serious dissdvantage. Bnt, however that may be, it is probeble thet where the ores are rich enough to hear beneficiation by eny process that nothing has ever been discovered, which will do its work cheeper and cleaner then the process of Monnier, just described. Its only rival in this field is the newly invented Hunt & Douglass process, next to be noticed.

[To be Continued.]

The Transit of Venus—Results Obtained from the Astronomical Observations.

The observations of the transit of Venus for the purpose of determining the true distance of the sun from the earth, for which costly expeditions were last year equipped and sent out by most of the civilized nations on the globe, do not now promise to correct materially the information before possessed. Just what the expeditions did accomplish, so far as the labors of the American observers are concerned, is given in a statement made by Prof. Harkness of the Naval Observatory at Washington, which a *N. Y. Times* correspondent lately obtained. The following is the statement of Prof. Harkness:

As yet it would be premature to attempt to state definitely what has been accomplished by the transit of Venus expeditions; but the subject has so much intrinsic interest that a brief survey of it cannot be otherwise than attractive. We will consider only the American expeditions, of which there were eight. Those in the northern hemisphere being stationed at Wladivostok, Siberi ; Pekin, China, and Nagasaki, Japan; and those in the southern hemisphere at Kerguelen i land; Hobart Town and Campbell Town, Tasmania; Queenstown, New-Zealand, and Chatham island.

Many of these are such out of the way places that the question naturally arises how came they to be chosen? The answer is simple. To see the whole transit each observer had to be so situated that the sun would be above his horizon all the time that Venus was on its disk. This limited the stations to a region which may be defined generally as comprising Asia and that part of the Pacific ocean in which the Australian islands lie. Again, the distance of the sun was to be measured by means of a triangle, and to get a long base line it was desirable to put the northern observers as far north, and the southern observers as far south, as possible. Finally, the success of the observations was dependent upon the sky being clear at the critical time, and on that account it was necessary to select those points which usually have the largest percentage of clear weather in December. Upon examination it was found that at the season in question the weather was usually so much better in the northern hemisphere than in the southern that to equalize the chances of obtaining observations in these two regions it would be necessary to send five parties to the southern and only three to the northern one. These were the conditions which led to the choice of the stations already mentioned.

The commission to whom the arrangement of the expeditions was intrusted naturally supposed that on the day of the transit clouds would prevail at some of these places to such an extent as to preclude all observations, while at others the sky would probably be clear enough to permit the continuous observation of Venus during the whole of her passage across the sun. However, these anticipations were not realized. On the contrary, the entire earth seems to have been involved in broken, drifting clouds; and, strangely enough, although all the American stations suffered from them, still there was not one at which some observations were not obtained.

Method of Finding the Sun's Distance.

It will assist us in estimating the value of the results achieved at these stations if we consider for a moment the nature of the problem attacked. If a person sitting at the back of a room looks out of the window he will see the window bar projected against the house on the opposite side of the street. Now, without removing his eyes from the window, let him rise from his chair and the window bar will appear to sink to a lower position on the opposite house. In the same way when Venus was passing between the earth and the sun she appeared nearer the sun's northern limb to the observers at the southern stations than to those at the northern ones. The object of the expeditions was to measure the exact amount of this displacement, and it was proposed to effect this by two different methods, known respectively as the photographic and the Halleyan. To fix our ideas, let us consider only one northern and one southern station. If at both these stations photographs of the sun are taken at short intervals during the whole of the transit they will furnish the means of laying down two paths of the planet over the sun's disc, as seen respectively from the two stations, and the distance between these paths can be measured with very little trouble. This is the photographic method. Again, as the velocity with which Venus appears to move is nearly constant all the world over, it follows that the time occupied in her transit will be a measure of the length of her path on the sun's disc. Hence, if at each station we note accurately the time when she enters on and leaves the sun's disc, we have the means of computing the length of the two paths required, and by laying them down on a drawing of the sun we can find their distance apart as before. This is the Halleyan method. Of course, in the actual use of these methods as many stations as possible are employed, and numerous small corrections have to be taken into account, which make the computation very difficult and laborious. But enough has been said to enable the reader to comprehend the principle of the methods.

The Success of the American Expeditions.

The number of photographs taken was as follows: At Wladivostok, fourteen; at Pekin, ninety; at Nagasaki, sixty; at Kerguelen, twenty-six; at Hobart Town, thirty-nine; at Campbell Town, fifty-five; at Queenstown, fifty-nine, and at Chatham island, eight. That is, there was 160 pictures taken in the northern, 187 in the southern hemisphere, making a total of 350. On the whole, this is a tolerably satisfactory result, especially as the pictures are quite evenly distributed between the two hemispheres; but if the weather had been fine about three times as many would have been obtained. These numbers refer only to pictures taken while Venus was completely within the disc of the sun. In addition, about 250 others were obtained in which Venus appears only as an indentation in the edge of the sun.

The Observations of Contacts.

Before passing to the observations made according to the Halleyan method, it may be remarked that the instant when Venus first touches the sun's edge is technically called the first contact. Passing gradually onto the face of the sun his light finally closes around her, and she appears as a black dot upon his face. The instant when this takes place is the second contact. After traversing the sun's disc, the black dot arrives a second time at his edge, which is the third contact, and finally at the fourth contact it passes entirely off.

The contacts observed at the American stations were as follows: At Wladivostok, the first, second and third; at Pekin, all four; at Nagasaki, the first and second; at Kerguelen island, the first only; at Hobart Town, none; at Campbell Town, the third; at Queenstown, the first and second; and at Chatham island, none. Although both the second and third contacts were observed at two northern stations, still, as this was not done at any southern station, they cannot be used according to the Halleyan method. Fortunately it will be possible to utilize them by employing a somewhat different system of reduction known as Delisle's method. However, the comparative failure in obtaining contact observations is probably not a matter of very serious importance, because the experience of these astronomers, who were favored with the best weather last December renders it at least questionable if the atmosphere of Venus does not impair the accuracy of those observations to such an extent as to render them almost worthless for determining the solar parallax. The preliminary results lately published by the French commission seem to strengthen this view of the case, for, although some of the contact observations give satisfactory values of the parallax, others give values which are evidently quite erroneous.

Importance of the Photographic Method.

Under these circumstances it is not unlikely that the value of the transit of last December as a means of finding the sun's distance will depend entirely upon the accuracy of the results given by the photographic method. Within the last few years a great deal has been written about astronomical photography, but unfortunately the results obtained from actual use of the method have never been so discussed as to show conclusively the degree of accuracy it will afford. It is hoped that the American photographs will give the distance of the sun within 200,000 or 300,000 miles of the truth, but it is needless to deny that the uncertainty of the result may be considerably greater. It will take some months to read off these photographs and submit them to rigorous computation, but until that has been done any opinion as to their accuracy will be mere guess-work.

The Transits of Venus Give Unsatisfactory Results.

For more than two centuries almost all astronomers have held that transits of Venus are by far the best method of determining the sun's distance, but it is at least questionable if this opinion is borne out by the observations made last December. Until then no astronomer of the present age had seen Venus upon the sun's disc, and, perhaps, the very rarity of the phenomenon gave it an importance and enshrouded it with a glamour which was not its own; but now that it has been studied by the aid of all the appliances which modern science can bring to bear upon it, we can form a better estimate of its actual worth. Let us compare it with another phenomenon which occurs somewhat more frequently, and which is also used to measure the sun's distance.

Advantages of the Opposition of Mars.

The planet Mars is nearest the earth when in the position technically known as "opposition," but its orbit is so eccentric with respect to our own, that at some oppositions it is almost twice as far off as at others. It so happens that in September, 1877, an opposition will occur, when its distance from the earth will be almost the least possible, and, of course, this will be a peculiarly favorable opportunity for measuring its parallax, and thus determining that of the sun. This is the phenomenon which we are to compare with the last transit of Venus.

The localities from which the transit was visible were in parts of the world where there are few or no fixed observatories, and consequently the observations had to be made with portable instruments, by field parties sent out especially for the work. No one who has had any experience in such matters needs to be told of the numerous difficulties incident to such expeditions. The opposition of Mars will be visible from all parts of the world, and consequently it can be observed at the fixed observatories with the largest and best instruments known to astronomers. The transit of Venus lasted but little more than five hours, and at any station where the sky was cloudy during those few precious moments the observation was irretrievably lost; but during the opposition Mars will be so situated that he can be observed every night for at least a month, and it is very unlikely that bad weather will prevail at that time. Again, Venus had to be observed upon the face of the sun, which is about the worst possible position for delicate work, because the solar heat generally disturbs the earth's atmosphere so much as to destroy all possibility of fine definition in the telescope; but Mars will be observed at night, when the atmosphere is quiet and everything is in the most favorable condition for good seeing. Thus far the comparison has been entirely in favor of Mars, but in the only remaining point, and it is a very important one, Venus has the advantage. The parallax of Venus at her transit was thirty-three and a half seconds; but, as observations were differential, we must deduct from this nine seconds for the solar parallax, which leaves twenty-four and a half seconds as the angle to be measured. In the case of Mars the angle will be only twenty-three and a half seconds, which is four per centum less than that for Venus; but, unless the photographs of the transit can be measured with very great accuracy, the knowledge we now possess would lead us to infer that this disadvantage will be more than counterbalanced by the other circumstance mentioned above. On the whole, it seems not unlikely that the observations of Mars in September, 1877, will give more accurate results than those of Venus in December, 1874; but this is a state of affairs which could not have been anticipated a year ago; and, moreover, the transit was so important a phenomenon that unless every effort had been made to utilize it to the utmost, the astronomers of this age would not have been held blameless by their successors.

Locomotives for Steep Inclines and Short Curves.

Among the foreign inventions is that of an improved system of locomotives and cars, for the safe and easy ascent of trains up steep inclines, and their facile passage around sharp curves, so as to meet the difficulties usually experienced under these circumstances.

In this arrangement the locomotive engine is coupled to the train, to be hauled up an incline by a rope or chain, which is wound on a drum mounted in the framing of the engine. The axis or shaft of this works horizontally in bearings in the main framing, and is driven or rotated direct or by gearing, as found most convenient, from a separate pair of cylinders, distinct from the usual cylinders which drive the locomotive in ordinary cases; and these separate cylinders are secured to any convenient part of the locomotive. They transmit a rotary motion to the shaft of the hauling drum by connecting rods coupled to cranks secured to the ends of the hauling drum shaft.

The drum or windlass barrel is loose upon its shaft, and is coupled therewith, when required for hauling purposes, by means of a sliding clutch, having projections or teeth, beveled off at the back, these teeth engaging into corresponding holes in the end of the drum. A clutch lever is provided for throwing the hauling drum into or out of action, as required.

On arriving at the foot of a steep incline, the engineer releases the hauling drum on the engine, and without stopping the engine, runs it up the grade to any desired distance. On the engine being stopped, struts immediately come into action and maintain it firmly in its place. The hauling drum is then started by throwing the clutch into gear therewith—the rope or chain having been paid out as the engine ascended—and the entire train, or any part of it, is hauled up by the sole power of the cylinders which work the winding drum.

The struts on the train act to prevent any retrograde motion, when required, or in case of an accident to the hauling apparatus; they also allow the engine to start again without the train to take another length of the incline, and so on, until the complete ascent of the incline has been effected, the train being hauled up by the engine by the aid of the winding drum.

Catalan Forges in New York.—The opinion is entertained, even among the best informed of our iron makers, that the Catalan forge is a thing of the past, and that it certainly could not be found in the United States. But a correspondent of the *Iron Age* assures us that the Catalan forge represents a large manufacturing interest in what is generally known as the Adirondack section of New York. About 40,000 tons of iron are produced annually, which will be sold this year for about two and a half millions of dollars; but even this does not convey an accurate idea of the business interest, as the forge owners manufacture almost everything they use in producing the iron. There are about twenty-five establishments in this part of New York for making iron by this ancient process, and two new concerns have commenced work within the past year.

At the Ophir mine a fine turning lathe and machine shop are in course of erection, both of which will be a vast benefit and saving, both in expense and time, in the way of necessary repairs to the machinery. The erection of the new incline hoisting engine and the new powerful pumping machinery goes steadily forward. Sinking the incline below the 1500-ft level will soon be commenced.

Nebraska Central and Black Hills narrow gauge railway, capital $1,000,000, has been organized in Omaha.

All They Want Is Capital.

Capital, capital, capital, is the cry from all kinds and classes in all communities everywhere. The universal cry is capital, from one end of the land to the other. Everything could be done with it; everything could be undone with it; all sorts of people could be helped or relieved; all sorts of schemes could be floated; all sorts of Utopian ideas carried out; and all sorts of things accomplished. In fact, capital is supposed to be *the* necessity of the age. But unfortunately it is much easier asked for than obtained; and if obtained, much easier spent than increased.

The Inventor needs capital to perfect his invention, or get his patent; and sometimes spends what he gets in foolish experiments. But oftener he gets none.

The Miner wants it to develop his claim or buy machinery. But if it doesn't pan out properly, and fails, it is because he needed more capital and couldn't get it.

The Speculator wants it for "investment" in stocks on which he has a "point" from Mr. Deluge's clerks' friend's next door neighbor's acquaintance. If he loses after getting it, the reason is he didn't have more to make good his margins.

The Manufacturer needs it to enlarge his business and increase his establishment, and half the time branches out on a larger scale than is good for him.

The Merchant wants it to get in a heavy stock, and buy up all of a certain class of goods in the market; and if he fails, it is because for want of *sufficient* capital.

The Farmer wants it to buy more land, which makes him land-poor. Or he wants it so as to hold his crop over until next year, when, if prices are low, he is sorry he had the capital, as the interest and poor market combined set him back two or three years.

The Philanthropist wants it to carry out a scheme of universal brotherhood and wide spread charity (with other peoples' money,) according to his own idea. When spent, he only wants—more—and doesn't get it.

The Railroad men want it, and when they get it, carry out their schemes in such a way as to make the mention of their names a reproach, when before they were respected.

The lazy men want it, to keep from working, and when they don't get it—which they don't—continue to be lazy.

The Ambitious men want it to lift themselves to a position just high enough to make them dissatisfied.

The Newspaper men want it—but *they* never get it.

Everybody wants it—because they haven't got it.

The Capitalist, that mighty man who has it, he wants it, just like the rest—and keeps it.

So after all, capital, when acquired, is not an unmixed evil. All of us were not formed to be capitalists, any more than all of us were formed to be geniuses. Enough is as good as a feast, and we shouldn't be envious of our neighbors with more of the world's goods than ourselves.

The funniest thing is, that people all want this large amount of money called "capital," although they know if they get it they will be called "bloated monopolists," close-fisted capitalists, etc., but they don't seem to mind these consequences at all. In fact the capitalists bear it meekly and never respond. There must be something in the possession of money which makes a man feel so independent that he can afford to be called names. A good many men would let the world call them all the names in the slang dictionary, and any impromptu ones they could invent if they could thereby be possessed of $5,000 or $10,000.

Natural History Specimens.

A new and interesting feature of the Mechanic's Fair in this city, this year, is the representation of Natural History in several of its most interesting branches. In different parts of the building are cases of birds, shells, natural curiosities from the South Seas and elsewhere, and articles of this character too numerous to mention. Especially would we call the attention of the public to the fine display of conchological specimens entered by Messrs. Fisher and Harford. This collection, comprising over two thousand species, scientifically arranged, and legibly labeled, represents the principal features of their conchological cabinet.

We are informed by these gentlemen, that owing to lack of space, a great many families are not represented. The collection contains specimens from almost every part of the globe, viz: the west coast of North and South America; from the Arctic Ocean to the Straits of Magellan, Mediterranean, Europe, Africa, Australia, Tasmania, the Indo and South Pacific Islands, Madagascar, Red Sea, Palestine, the West India Islands, Japan, China, and Eastern North America. More space would have enabled these gentlemen to have exhibited collections of Lower Silurian, Devonean, and Carboniferous fossils, Echini, Radiates, Crustacea and other interesting objects. What there is exhibited, however, will be found of great interest to natural history students and scientists.

Useful Information.

sical Instruments Improved by Use.

ccommodation plays an important part in ical instruments. It is a well known fact t trumpets, before they can be employed in blic performances, must first be blown in, ased, for a considerable time, in order to de- op their full tone action, and make them eeble of being easily blown. In fact, the dening has first to be lessened for the tone rations (or the resistance of the metal to se); and this is effected by putting the metal quently in vibration. A trumpet may also blown out of tune. If, when quite new, it nes into the hands of an inexperienced per- mer, who often blows certain false notes, trumpet is blown out of tune. That is to , the deadening decreases for these particu- notes, so that the trumpet is more easily own into these vibrations, then into others, lch are not so often excited; and it becomes, refore, very difficult for even a practical former to avoid these false tones. It would this case be of no use to diminish the dead- ing of the trumpet metal by a temporary ating, for this process would affect all the es similarly; only correct blowing will bring at the desired result.

A similar experience is had with striaged in- uments. In these, it is not the strings that uire long playing, for their resistance to vibratory motion is (owing to the smallness the mass to be moved) unimportant; but resonence ceases. However excellent the struction of the latter, a long continuance good playing is indispensable for them. is is accounted for by the fact that the good ayer awakens a stronger tone, and so, vibra- ns of greater amplitude; hence, also for ase, the deadening is diminished. Further, excites only a certain kind of overtones, hich determine the "clang color," and for se overtones the deafening is diminished. hrough long rest without use the advantages this playing out are again lost, as the accom- odation also partly disappears through rest. he reason why pianos do not also grow better er long use is due to the fact that the mech- ism of the instrument wears out.

Progress of Flying Machinery.

A new steering balloon by Smitter is being hibited, suspended in the middle of the Alca- r in Paris. The measurement is only 6,000 bic feet, but the balloon is so light that, hen filled with pure hydrogen, it must float. considerable sum of money has been invested it, and great ability has been displayed in the astraction. Although no practicable result open air may be hoped for, it is a wonderful ece of clockwork. In connection with this bject, it is stated that, for several months ast a firm of engineers have been experiment- g privately at the Crystal Palace with an rial steamer of a novel and promising charac- r, weighing 160 pounds. Experiments are ated to have proved the capability of two verti- l screws, each 12 feet diameter, to raise a eight of 120 pounds; the steam engine, with ater and fuel, etc., forming part of the eight so raised to the extent of 80 pounds. he power exerted by it is equal to two and a lf horses. The communication of motion is iven by a vertical axis emanating from the car. —*Nature.*

Mending China Ware.—A very ready and fficient means of mending broken china ware s to take a very thick solution of gum arabic nd stir into it plaster of paris until the mix- ure is of the proper consistency. Apply it ith a brush to the fractured edges of china are, and stick them together. In a few days will be impossible to break them.

In connection with the above we may re- mark that a correspondent of the *Scientific merican* says a pipe may be mended so that it ill stand both heat and water by a mixture ade of glycerine, and enough litharge to form paste as thick as putty. Use while soft.

Why do Kerosene Lamps "Sweat" Oil.—The appearance of oil on the sides of lamps illed with kerosene oil is due to the evapora- ion of the oil drawn up through the wick by apillary attraction while the lamp is not in se, which is condensed in part upon the cold urfaces of the lamp. This is sometimes called "sweating," as though it passed through the ubstance of the lamp. This is particularly oticeable in brass lamps, from the fact that the surface is colder than glass, and hence con- denses the escaping gases more readily.

A Saving of Waste.—It is well known that zinc is very easily lost under any considerable degree of heat, and that hence in stamping sheet zinc in dies, much waste occurs from the small difference between the melting point and the temperature at which sheet zinc should be stamped to get the best effect. To obviate this waste, heat the zinc by dipping in oil at the proper temperature.

The Philosophy of Settling Water with Alum.—The sulphuric acid of the alum unites with the lime held in solution in the water, and forms an insoluble salt which precipitates, and in settling down carries the other impurities with it. The practice is to powder fine about a teaspoonful of alum into the water, and agitate for a minute or two quite briskly by stirring.

Impact.—A correspondent asks the *Scientific American*: "If two engines and trains of equal weight and resisting power, both moving at the same speed, should approach each other upon a level track and collide, would either train prove a greater wreck than if, running at the same speed, it had impinged upon an immovable object? Answer. Either train would have the same effect upon the other as an immovable body; for the reason that, at the time of collision, the motion of each train would be instantaneously arrested. At all events, we are confident that the wreck would be quite as complete in one case as in the other.

A New Source of Caoutchouc.—Just as the world was beginning to be told that the supply of this useful material was about to come short by reason of the destruction of the tree which produced it, and the thriftlessness which failed to keep up the supply by artificial cultivation, we are also informed of the fact that an entirely new source of supply has been discovered in Burmah, in a creeping plant whose botanical name is *Chavannesia esculenta*. The plant is very common in Burmese forests, and is cultivated by the natives for the sake of its fruit, which is said to have an agreeable acid taste, and to mature at a season when tamarinds are scarce.

Steel Pens become softer through use, which involves continual slight changes of form within the limits of elasticity. A similar thing occurs in the seats of iron chairs, formed with tips of wrought iron or steel. They lose their hardness through use, and are ultimately bent.

Mechanic's straight edges and squares are not so apt to warp when made from old saw blades, as when they are manufactured from rolled iron or steel that has not been used since being rolled.

Painting Boats.—Boats should be painted with raw oil. Boiled oil used in the paint is very apt to blister and peel from the wood.

Leather thoroughly saturated with glycerine will prevent, it is said, the passage of gases.

Good Health.

Sore Throats—Interesting Facts.

The following is a short resume of a lecture, recently delivered by a distinguished medical practitioner, in New York:

Cold manifests itself differently in different people. In some it produces fever and pains in the limbs, in others catarrh, in still others sore throats. Whatever part of the system is weakest will be attacked by the cold.

A large proportion of cases of deafness comes from neglected sore throat. This is because of the intimate connection between the throat and the ear by means of the eustachain tube. Hence the importence of keeping the throat in a healthful condition. The tendencies of sore throat are to the worse and not to the better; hence any affection of this part of the body should receive prompt attention. In case of ordinary sore throat, the simplest and best treatment is the wet pack, using a linen cloth wrung from cold water, and over this a knit or crotcheted yard band, four feet long and four inches wide. Apply this two or three nights in succession, unless it is a very serious case, when the pack should be kept on during the day. If taken off in the morning, wash the throat in very cold water, rub dry with a coarse towel and with the hand. This will prevent taking more cold.

Mucous membranes have three kinds of inflammation—catarrhal, croupous and diphtheritic. Everybody knows how the first appears; in the croupous a liquid is poured out which collects on the outer surface of the mucous coat, and forms a membrane which can be peeled off or removed without injury to the mucous coat beneath. In the diphtheritic the liquid poured out infiltrates itself into the mucous membrane, and if forcibly removed leaves the mucous coat raw and sore. Diphtheria is blood poison. The patient complains of feeling stupid; the angle of the throat swells; there is likely to be more or less nasal catarrh; there appear in the throat patches looking like dirty washed leather, which, being removed, leave a raw spot; the odor of this exudation is offensive, but the disease is not usually contagious unless the exudation comes in contact with mucous membrane of another individual. Hence the greatest care should be taken that no towel or drinking vessel or spoon used by the patient touches the lips of any other person. Croup is inflammation of the larynx, and usually attacks the patient suddenly in the night. The membrane is formed in the larynx, is white, and extends each way up and down. In diphtheria it forms in the throat and extends downward.

The food of a patient suffering from diphtheria cannot be too nutritious and stimulating. All physicians agree in this. There is nothing better for the patient than beef tea, made by putting a pound or two of tenderloin into a glass can, or bottle, sealing it tightly and immersing in water, gradually raised to the boiling point, and kept there until the juices of the meat are extracted. Give as much of this as the patient will take. Old sherry is also prescribed as a stimulant by the most devoted adherent to temperance principles.

Imperfections of the Human Eye.

Prof. M'Leod, in lecturing on this subject at the Physical Society, spoke of the chromaticity of the eye, and said there was abundant evidence of the defects of the organ in this respect. For instance, to short sighted persons the moon appears to have a blue fringe. In using the spectroscope the red and blue ends of the spectrum cannot be seen with equal distinctness without adjusting the focussing glass. A black patch of paper on a blue ground appears to have a fringed edge if viewed from even a short distance; while a black patch on a red ground, when observed under similar conditions, has a perfectly distinct margin. Professor M'Leod then explained that the overlapping of images in the eye produces the mental impression that there is no want of achromatism. It is interesting to note that Wollaston considered that the colored bands of the spectrum were really divided by the black (Fraunhofer) lines, and his statement that the red of the spectrum does not appear to have a boundary line "because the eye is not competent to converge the red rays properly," shows that he had very nearly, if not quite, discovered the achromatic defects of the eye. Dr. Young ascribes to Wollaston the merit of having observed that when a luminous point is viewed through a prism, the blue appears to be wider than the red, the eye being incapable of recognizing that the spectrum has the same width throughout its entire length. An experiment was exhibited to show the relative distinctness of a dark line on grounds of various colors. A string or wire was so arranged that its shadow traversed the entire length of the spectrum, which was thrown on a screen by an electric lamp. When viewed from a short distance the edges of the shadow appeared to be sharp at the red end, but gradually became less distinct, until at the blue end nothing but a blurred line remained.

Mental Peculiarities.

The following will explain many of the mental peculiarities which are met with from time to time in almost every community: A correspondent of the *Phrenological Journal* sends to the editor the following statement: "I am troubled with a queer complaint. If I look a door, I stand and question whether it is locked, and go back and try it over and over again. If I fill a stove with coal, I will stand and say to myself 'Is it filled; am I sure it is filled?' and so with much that I do. I cannot believe it is done. I am not yet twenty years old, and am in pretty good health."

To the above the *Journal* replies as follows: "It arises from a want of co-ordination between the two hemispheres of the brain. Some persons seem to possess double consciousness; one hemisphere of the brain acting in favor of a given course, and the other (containing similar organs) leading to or suggesting different action. The eyes and ears do not always report facts alike, and there is, consequently, confusion of vision and of hearing. Spectacles have to be adjusted to different distances to accommodate the sight of the two eyes of the same person. We often have patients whose hearing is acute who complain of hearing voices with one ear when the other ear is not affected by them."

Man's Best Period.—The Jewish *Messenger* thus fixes the supreme period of man's life. From forty to sixty, a man who has properly regulated himself may be considered as in the prime of life. His natural strength of constitution renders him almost impervious to the attack of disease, and experience has given his judgment the soundness of almost infallibility. His mind is resolute, firm and equal; all his functions are in the highest order; he assumes the mastery over business; builds up a competence on the foundation he has laid in early manhood, and passes through a period of life attended by many gratifications.

Catarrh.—A medical authority asserts that the severest catarrh cold can be removed in about ten hours by a mixture of carbolic acid, ten drops, tincture of iodine and chloroform, each 7.5 drops. A few drops of the mixture should be heated over a spirit lamp in a tube, the mouth of which should be applied to the nostrils as volatilization is effected. The operation should be repeated in about two minutes, when, after the patient sneezes a number of times, the troublesome symptoms rapidly disappear.

Croup can generally be greatly alleviated, if not cured very speedily, if the following remedy is applied promptly: Take a knife and grate and shave off in small particles about a teaspoonful of alum; then mix it with twice its quantity of sugar to make it palatable, and administer it as quickly as possible. Almost instantaneous relief will follow.

Bathing and Exertion Good for the Eyes.—William Cullen Bryant has the best eye sight of any man of his years in this city. It is well known that he bathes daily, and goes through sundry gymastics with an invariable regularity, which ensures a remarkably good health. Is there no connection between those habits and the rare strength of his vision?—*N. Y. Letter.*

Lemon Juice in Diphtheria.—Dr. Revillout states that lemon juice, used as a gargle, is an efficacious specific against diphtheria and similar throat troubles. He has successfully thus employed it for over eighteen years.

Domestic Economy.

Information About Yeast.

Prof. C. E. Bessey, of the Agricultural College of Iowa, furnishes the *Western Iowa Journal* the following information with regard to the nature and uses of yeast as employed in domestic cookery. The question asked by the correspondent of the *Journal* are pertinent and important:

1st. Will flour and water fermented, answer the purpose of stock yeast? Yes, but there will be some trouble usually in controlling the fermentation; it requires careful adjustment of heat; with too little it will not "work," with too much it passes beyond the proper point and becomes sour.

2d. If I proceed in the usual manner of making yeast, by scalding flour with water in which potatoes and hops have been boiled, having ready a mixture of flour and water which has been kept at a proper temperature a sufficient time to induce fermentation, and adding this to the former, will it produce ordinary yeast? This would produce good hop yeast, and it would be identical with what is known as "ordinary yeast."

3d. What is the office of the hops? According to the authorities hops do help fermentation to a certain extent, by accelereting the earlier stages of the process. Beyond these earlier stages, hops appear to aid the yeast in remaining in the condition of yeast, and prevent its passing so rapidly into the sour state. Hop yeast will last longer without souring than that made without them. And last, but not least, the peculiar flavor given to the bread by the hops is greatly relished by many people, as appears to be the case with the questioner.

To sum up—yeast is the fermenting, or decomposing condition of starch; it may be made by simply exposing moistened flour for some time to a heat of about 90° Fahrenheit, when it will be found to contain myriads of minute vegetable organisms which contribute to its activity; the process may be hastened in its earlier stages by adding a solution of hops; the yeast is rendered less liable to sour by the addition of hops; and finally the bread made by using yeast containing hops, has for most people a more agreeable flavor than that made by other methods.

Welsh Rabbit.

Messrs. Editors:—Will you please give me a recipe for "Welsh Rabbit' through the columns of the Press. A Lady Reader.

San Juan, Aug., 1875.

Cooked Welsh Rabbit is made as follows: Take old, dry cheese, grate it on a coarse grater, place on a tin plate upon a moderately hot stove, with butter (one pound of cheese, a piece of butter, the size of a hen's egg), warm slowly and stir until the whole is thoroughly mixed. Cooked Welsh Rabbit; grate as above and moisten with wine or brandy.

"Dutch" Cheese.—The process is to set the sour milk on the stove, over a kettle of water, and let it heat up slowly till the milk thickens and the whey is partly separated. As soon as the curd becomes firm enough to handle it is removed and suspended in a cloth or perforated tin long enough to drain off the whey and cool. If for domestic use, it is broken up, and about half as much sweet cream added as originally belonged to the milk, salted and otherwise seasoned to taste with some aromatic, if desired, and either made into hand cakes or packed away in a vessel for use. If for market, the curd is drained and broken up, and salted and seasoned with a little pepper or caraway seed, and a little butter added, so that the particles of curd will adhere, and then molded by hand into four ounce cake or cheeses and placed at once upon the market, where a ready sale is usually found at remunerative prices. The original German practice was to place the hand cheeses as above made between layers of straw, and let them lie till cured, so as to develop some of the Limburger flavor. But the general practice now is to place them upon the the market and use them while fresh, says Arnold in the *Tribune.*

Preparation of Washing Blue.—Twenty pounds white potato starch, twenty pounds wheat starch, twenty pounds Prussian blue, two pounds indigo carmine, and two pounds finely ground gum arabic are mixed in a trough, with the gradual addition of sufficient water to form a half-fluid homogeneous mass, which is poured out on a board with strips tacked to the edges. It is then allowed to dry in a heated room until it does not run together again when cut. It is next cut, by a suitable cutter, into little cubes, and allowed to dry perfectly. They are finished by being placed in a revolving drum, with a proper quantity of dry and finely pulverized Paris blue, until they have a handsome appearance. The cost is about twelve cents per pound.

Grape Sauce.—Let those who have not done so, stew a small quantity of Isabella grapes, adding a little sugar as the grapes become soft. It makes one of the richest and best flavored of sauces. Try it.

Mining Summary.

The following is mostly condensed from journals published in the interior, in proximity to the mines mentioned

California.

ALAMEDA

The Cumberland Coal Mine.—Alameda county *Independent*, Aug. 28: The vein in the Cumberland mine, near Niles, is about 3 ft 8 in thick. The tunnel runs in 100 ft, and the prospects are so good as to warrant running in 500 ft for the development of the vein and the bringing out of the coal. Parties from San Jose who visited the mine last Tuesday, speak of it in the most flattering terms and estimate its value at a very high figure. The tunnel is going to be pushed vigorously forward, and the enterprising men, who are engaged in the work, feel sanguine of being able to begin shipping coal by next Christmas.

The Black Hawk.—In the Black Hawk mine, the workmen have struck coal after running the tunnel in 380 ft, but this is only a branch vein. The principal vein requires 220 ft more of tunneling before it can be reached. Old coal miners and experts in the business entertain the most favorable anticipations as to the quality and quantity of coal to be found in this mine.

AMADOR.

Dispute as to a Placer Claim.—*Foothill Ensign*, Augt. 27: Work has been brought to a standstill on the placer claim in Sutter Creek, within the town limits, which has been operated by R. Paterson and others for several months past. It appears that the Lincoln and Eureka companies claim the ground under a title raised by the town of Sutter Creek, and have raised the dam just below the place where sluicing has been carried on, thereby flooding the claim and preventing work. The ground is said to be highly remunerative, a large portion of it having never been worked. It is stated to be worth in the neighborhood of $20,000, and litigation is talked of to decide the question of ownership.

Clean-up in the Volunteer.—We learn that the owners of the Volunteer mine, near Jackson, made a clean-up on Saturday last, the result fully meeting their most sanguine expectations. We have not heard the exact amount realized, but we understand that it is sufficient to pay the working expenses, and also for the erection of their small 5 stamp mill. The proprietors are jubilant over their prospects, and are talking of adding another 5 stamps to the mill without delay. Work in the mine has been kept back during the past month, in order to ascertain the result of the first run, but now that the paying character of the rock is a demonstrated fact, work will be pushed ahead with all possible speed.

Maximilian Mine.—Work is still being pushed on this mine, the prospects improve as the developments proceed. They are now drifting on the ledge from the bottom of the shaft, 80 ft deep, and intend to sink shortly to 100 ft, when another drift will be run in a northerly direction. There are over 100 tons of rock on the dump.

Oneida Mine.—We are told by the superintendent that the scarcity of water in the canal is also affecting this mine, the supply being sufficient to run only 20 stamps. The full complement of hands will be kept at work taking out rock, ready for crushing when a full supply of water again becomes available.

INYO.

Darwin.—Panamint *News*, Aug. 25: This district is developing to a most wonderful degree, and we think must soon outrank all the camps and districts in this section of this most miraculous mineral country, if it does not already. They have two furnaces now in operation; that of the New Coso and the other, the Tyler or Union company. The New Coso stock is now quoted at $3.25 in the Pacific stock board. The raw ore turned out averages over $200 per ton, which is certainly immense for argentiferous ores. The latter company turned out 80 bars of bullion a short time since, but finding their furnace of insufficient capacity, they are now enlarging it. We also hear that P. Reddy, Esq., the principal owner of the great Defiance mine, is about to construct a large furnace, and before the snow flies it is believed not less than 10 furnaces will be in operation. Messrs Reddy & Jewett are now in San Francisco, where they have been attending to the incorporation of the Defiance company. They have succeeded in selling stock to the amount of $50,000.

NEVADA.

New York Hill.—*Foothill Tidings*, Aug. 28: We learn that everything about this mine and mill is in splendid shape and that the mine never looked as well as it does at the present time. As the work of exploration advances better prospects are being brought to light and the idea is now general that New York Hill will soon be on the dividend list.

The Pittsburg mine, over at Deadman's flat, is said to be doing well. A recent crushing of 32 loads turned out $2,240, or $70 per load, and the ledge is said to indicate lasting qualities.

PLUMAS.

The Genesee.—Plumas *National*, August 28: On Saturday last we met Mr. H. McCutcheon, Superintendent of the Genesee mine. He informs us that the mill is running steadily on good paying rock, and the prospects for the future are brighter than ever before. Dr. Quinn, the principal owner, is now residing at the mine, having recently erected a dwelling house. Many improvements are also being made in and about the mill. A new five-stamp battery is being added, which will double the capacity for crushing. The Genesee mine has paid steadily for years, and gives promise of being a valuable property for many years to come.

Crescent Mills.—A large body of splendid rock was discovered by the workman on the lower level of the Crescent mine one day this week. We are indebted to Mr. Hallsted for a specimen of the rock, which he picked up in the dump-pile, and which shows the "ore" plenty. The mill and mine are in good condition at present, and we expect to chronicle some good results in a short time. We are glad the old Crescent has fallen in good hands. It is one of the best mines in the county if properly and economically managed.

SIERRA.

New Mill.—*Mountain Messenger*, Aug. 28: Manson & Co. are busily at work on a new ten-stamp quartz mill for Spencer & Brown, of Camptonville, for the Alaska quartz mine at Pike City. This mine paid well some years ago with a little five-stamp mill, and the owners, J. W. Sterrett and others, took out a good deal of money. The mine is worked through a shaft, and when it reached a depth that it required heavier machinery to work to advantage work was stopped, and it has been lying idle since. Mr. Pelton has the contract for putting up the mill which insures its being first-class. We are informed that the rock from this mine always pays handsomely and well, and we see no reason why the present owners, who have plenty of capital to work with, cannot make it pay largely.

SAN MATEO.

A Newly Discovered Mine.—San Mateo *Times*, Aug. 28: Some two years ago a son of Mr. Eikenkotter discovered some indications of mineral wealth upon his father's property. These indications were gradually developed and at present we have a mine in full blast within a short distance of La Honda, turning out ore which assays $30 gold and about $10 silver to the ton. It is owned by Mr. Eikenkotter, of Searsville, and John Crowley, of Redwood City.

SONOMA.

The Great Eastern.—Russian River *Flag*, Aug. 26: The bench of five retorts on the Great Eastern mine, near Guerneville, roasts two tons of ore per day, and is working very satisfactorily. The yield from these retorts for the first month, ending August 23d, was 149 flasks of quicksilver, which, at the present market price, amounts to $7,450. One-fourth of the metal in the flasks is given by the lessee, Tiburcio Parrott, to the owners of the mine, according to the terms of the lease. The principal owners are A. J. and William Zane, Isaac Gunn, Col. R. Abbey and Ransom Powell. The lease, which is to run six years from August, 1874, required that Mr. Parrott should have a furnace in running order within the first year. This furnace is now being built, and will be finished within a few days. It is of a new pattern, called the "rotary furnace," and is designed to roast decomposed ore without mixing it into adobes. The inventor has agreed to run the furnace thirty days and demonstrate it to be a success, or receive no pay for it. It is a popular and well informed belief that the Great Eastern and its mate, the Mt. Jackson, are the best mines in the county.

Chromic Iron.—Sonoma *Democrat*, Aug. 28: We went with an expert last Friday to examine some chrome deposits in this county. They are located on the east side of Dutch Bill canon through which the Cosst narrow gange railroad will run affording a ready means for transportation, and it is believed there is a large deposit of rich ore in close proximity to the line of the road. This will prove an important auxilliary to the support of the road. The chrome deposits are along the hills on the east side of the canon within a mile of the grading now in progress for the railroad. The hills on the west side of the canon and road are covered with a dense forest of the finest redwood in the State—the Moore Bros. tract—extending several miles in the direction of Russian river, to which point, at the mouth of Austin creek, the road is destined to go. At a future time we will have more to say of these chrome deposits, which are no doubt the most extensive in this section of the country.

TRINITY.

Mining Matters.—Trinity *Journal*, Aug. 28: We made a business visit to the Center last Saturday, having but little time to gather items. While there, we learned that work had commenced on a new wagon road from Davis' place to Cinnabar, and that it would be completed this fall. The new owners of the Hawkett & Lytle property have taken possession and intend erecting new machinery and crowding work ahead. Everything in Cinnabar district is flourishing. About the Center the mines have cleaned-up, and report says they did well. We met with Messrs. T. H. Blythe and H. G. Bixby, comprising the firm of Blythe & Bixby, of San Francisco, who are the projectors of the Coffee creek canal, and who informed us that although little would be done this season, they would make a new start early next spring, and be ready for active mining operations by the opening of another season. Both gentlemen seem well pleased with the appearance and prospects of the gravel deposits of that section of the county.

Nevada.

WASHOE DISTRICT.

Californania.—Gold Hill *News*, Aug. 26: The main north drift, at the 1550-ft level, is making good headway, and the ore in the face still continues of an excellent grade. Cross-cuts Nos. 3 and 4 are also in fine ore. At the 1500-ft level the lateral drift north from cross-cut No. 5 is in 42 ft, with its face yet in fine ore, and the same may be said of the lateral drift from cross-cut No 6, which is to-day in 29 ft. The ore deposit at this level is now becoming pretty well understood, through the systematic and thorough development of it by means of the various drifts and cross-cuts, dividing it up into regular blocks and squares throughout the entire length. At the 1400-ft level the lateral drift in the ore body is now in a distance of 209 ft from cross-cut No. 3, and has run into ore of a lower grade which does not seem to improve as the drift advances. The joint C. & C. shaft is 637 ft deep to-day, and well timbered throughout. Excellent progress is being made placing the massive and powerful new hoisting and pumping engines and machinery, and in the erection of the main buildings.

Cons. Virginia.—Six hundred tons continues to be the yield of this famous mine, and the bullion returns thus far this month have considerably exceeded those of last month at this time. The prospecting drifts south at the 1400 and 1500-ft levels, toward the Best & Belcher, are progressing well and give very encouraging prospects. The west cross-cut at the 1500-ft level, near the north line, has not yet reached the west wall. It is in 115 ft, and the face continues in excellent ore. The various working stopes and breasts of the mine are looking and yielding splendidly, as usual. The mill, and in fact everything in and about this mine, is running splendidly. Of the great C. & C. shaft, and progress at that point, which is intimately connected with this mine as well as the California, we have made mention in the portion of our report specially referring to the California mine.

Belcher.—Owing to scarcity of water in Carson river, as stated in last week's report, and the consequent inability of the mills to crush the ore, the yield of this mine has fallen off greatly, and less men are employed in ore extraction. This, however, is no detriment to the mine, for surely the ore remaining in it indicates no practical exhaustion, but will come very acceptably by and by. Prospecting and development meanwhile goes ahead vigorously at various promising points. Drifting east, at the 1600 ft level, progresses well, and the air shaft is raised up from that level 152 ft. Connection was made last Monday night with the 1300-ft level and the main portion of the air shaft being sunk from the surface.

Ophir.—Daily yield about 160 tons, principally from the 1400 and 1500-ft levels. The ore breasts and stopes are looking well, and average assays from car samples run over $100 per ton. At the 1700-ft level cross-cutting both east and west goes ahead lively, with very encouraging results, and sinking the incline below the 1500-ft level will be next in order. The new buildings are just what are required, and in fact all the workshops and other surface arrangements fill the bill admirably. Everything works well and smoothly, and the development of the mine is carried forward judiciously and well, regardless of the price of stocks.

Houston.—This mine, which lies in the mountains about four miles west of Carson City, is now being brought into prominent notice through recent valuable developments. The ledge is about 10 ft wide, between well defined walls, runs in a northerly and southerly direction and dips east. It is rich in free gold and contains considerable copper and silver. The shaft is 80 ft deep, and the character of the ore improves as further depth is attained. Experts say that it will eventually prove to be a silver mine.

Democratic.—This is a new and very eligible mining location lying just north of the Prospect and east of the Centennial in the eastern ore range or belt of the Comstock. The company owning it is composed of energetic men, with capital to back them, and they are going in for the development of their mine in good earnest, having a three compartment working shaft already sunk to a depth of eight feet with the bottom in very promising quartz.

Sierra Nevada.—New shaft sinking at a good rate of progress, the ground at the bottom working favorably and water giving little or no trouble. The drifts both north and south at the 1700-ft level of the old shaft are also making very satisfactory advancement, with no particular change to notice in the material.

Challar-Potosi. — Daily yield, 90 tons, from the old upper workings. The various prospecting drifts at the 1150-ft level and the two levels below it, show no new feature of interest. Good work is being done sinking the new combination shaft, and the erection of the requisite buildings at that point also goes ahead satisfactorily.

Imperial-Empire.—The south drift, at the 1930 ft level, continues in excellent ore, and a fine, rich streak or seam of ore is found in the north drift. The east drift, at the 2000-ft level is cleaned out and is being run further east to see what may be found in that direction.

Julia.—Main drift south, at the 1000-ft level advancing well, in favorably working porphyry and clay, with fine looking quartz seams. No water in face of drift. The shaft is also making very good downward progress, and excellent work is being done opening out the 1400-ft station; The shaft is now down about 1450 feet.

Crown Point.—Daily yield not much over 300 tons at present, owing to the low stage of water in the Carson river not allowing the mills to crush the full amount of ore heretofore extracted daily. The Morgan mill, however, will come to the rescue next week, crushing 50 tons per day. This mill has recently been undergoing repairs. The main east drift at the 1700-ft level is in 175 ft, with no change of interest to record. The ore producing section are looking well as yet, with plenty of ore in sight.

Bullion.—The joint drift of this and the Alpha and Exchequer companies, recently started from the 2000-ft station of the Imperial is going ahead finely. It is a very important drift, and will develop those mines at a great depth. The main drift north from the 1700 ft level of the Imperial shows no new feature this week. It is still in very promising vein matter, however. The enlarging and sinking deeper of the old Bullion incline progresses well.

Yellow Jacket.—At the 1740-ft level the principal development work of this mine is being done. The main north drift is in 505 ft to-day, with the face in very hard porphyry. The north winze below this level is down 146 ft and the south winze 211 ft, both in dry, tough working material. The east cross-cut, between those two winzes is in 65 ft, with the face in quartz and porphyry No water.

Hale & Norcross.—The main west drift or cross-cut at the 2200-ft level is in to-day 111 ft but has not yet cut into the main ore vein, although there is every indication that it is not far off. The north drift from the winze is about completing its connection with the south drift from the Savage. The ore body at the tenth station continues looking well.

Caledonia.—Very good progress continues to be made sinking the new shaft; also sinking the main incline at the old works. The erection of the new hoisting and pumping machinery is also being urged forward as speedily as possible. The new pump will have plenty to do, as there is quite a flow of water already in the shaft to contend with.

West Belcher.—The tunnel is being driven ahead at a lively rate and will soon be under the incline, where good ore is known to exist and the extraction and milling of which will be at once commenced. The development of this mine is being done in a very systematic as well as energetic manner, and the prospects are very flattering.

Silver Hill.—Sinking the shaft progressing well, the rock working favorably. The station for the winze below the north drift of the third level is nearly completed. Cross-cutting at this level goes ahead well with improving indications.

Overman.—Drifting south at both the 900 and 1100-ft levels goes ahead vigorously, and those parts of the mine are being explored at a lively rate. The water in the shaft is kept reduced out of the way with perfect ease, the pump and machinery working well.

Globe Consolidated.—Main north drift from the old tunnel level advancing in porphyry, clay and quartz. Some little water is coming in at the face, which increases somewhat as the drift advances. South drift from head of incline in very promising ledge material. Face of north drift at the 260-ft level in quartz. Preparations for the reception of the new machinery steadily going forward.

Alta.—At the recent meeting of this company, held at their office in San Francisco, the following named gentlemen were elected as officers to serve for the ensuing year: Seth Cook, President; W. F. Myers, Vice President; W. H. Watson, Secretary; Bank of California, Treasurer. Trustees—Seth Cook, W. F. Myers, Daniel Cook, John Skae and R. N. Graves.

Leo.—Making good progress in driving northward drift from foot of winze. Ground continues to work very well, and no increase of water has yet been met with. Still have about 3 ft of fine looking quartz in face, some of which yields good assays. Are driving for a point underneath where the rich body of ore was found on the main tunnel level last year.

Iowa.—The drift for the ledge from the 400-ft station of the shaft is now 32 ft. The rocks in the face is hard, but blasts and works well. This tunnel will cut the ledge at a good depth in running 150 ft.

Savage.—Sinking the main incline below the 2200-ft level, and also the south winze below that level, going ahead as usual. The south drift is about completing connection with the drift north from the Hale & Norcross.

Prospect.—Shaft sinking as usual. Bottom in hard rock which blasts well. Face of tunnel in hard porphyry, with streaks of clay and quartz seams, which give excellent assays. Water increases a little.

Mexican.—Bottom of winze below 1465-ft level in very fine looking ledge matter, with occasional spots of good ore. This material is soft and easily worked, allowing of very good progress in sinking.

Amazon & Glasgow.—Very good progress continues to be made sinking the shaft. Bottom of winze in low grade ore, which shows constant improvement as further depth is attained.

Baltimore & American Flat.—Nothing new to report this week. The various prospecting drifts at the 750, 450 and 850-ft levels are going ahead vigorously, and good progress is made sinking the main incline.

Europa.—Sinking the new shaft progresses finely, the bottom being in very favorable material.

Gould & Curry.—The enlarging and retimbering of the drift connecting with the Best

r Belcher at the 1700-ft level, as well as the epairs to the main shaft, are progressing toward completion, and good developments will ollow, as a matter of course, in due time.

Cosmopolitan.—The extraction of ore from he stopes is discontinued. The main tunnel is being driven ahead to the northward following he vein, with its whole face in milling ore at present. The winze, below the tunnel level, is also in fair grade ore.

Dayton.—The new machinery works finely, and the water in the shaft is reduced to the second station, where the heavy pump is. This is now being brought to bear in the case, and will make short work with the balance of water in the shaft.

Centennial. The machinery for this mine has been overhauled and is now ready to be put in place. Sinking the main shaft will be prosecuted with vigor. It is thought that the shaft can be sunk 80 ft per month.

Union Con.—The winze below the 1300-ft level is making very good progress downward, sinking in very promising vein matter, interspersed with occasional spots and streaks of ore, but no concentrated body of it is met with as yet.

Rock Island.—Driving the main north and south drifts at the 450-ft level, and sinking the main shaft deeper below that level makes very good progress. No new features of interest to report at either point.

Phil. Sheaman.—The new hoisting machinery is already arriving, and will be put in position at the shaft as soon as the requisite grading is completed. It is proposed to sink the shaft 600 ft deeper.

Sutro.—Very good work is being done in the main west drift, although, owing to the extreme hardness of the rock in the face, progress is rather slow at present. Very little water coming in.

Senator.—The water tapped in the face of the drift decreases. It does not interfere at all with working progress. The work of development goes on as usual. Nothing new to report.

Best & Belcher.—Owing the great heat and lack of ventilation, the work of cleaning out, enlarging and timbering the main south drift necessarily progresses but slowly.

Utah.—Sinking the shaft deeper is progressing energetically, the machinery works as well as could be desired, and cross-cutting is resumed at the 400 ft level.

Florida —West drift advancing finely in splendid looking vein matter, streaks of which give good assays. Very little water and that constantly decreasing.

Daney.—Placing the new machinery and making necessary repairs goes ahead energetically, and the works will be ready to start up again the last of next week

North Con. Virginia.—The new hoisting machinery works well, and water does not interfere, consequently the sinking of the main shaft progresses at a very lively rate.

Niagara & Monumental.—One compartment of the incline is diacontinued and the other two are being sunk at a very lively rate, over 30 ft being sunk last week.

North Chapman —The three compartment first-class working shaft for the development of this mine, is commenced and is being sunk at a lively business-like rate.

Nevada.—Drifting in very favorably looking rock. Some good ore was struck in the crosscut yesterday, which may lead to a large and valuable body of ore.

Justice.—Nothing new to report. Drifting south at the 800-ft level as well as the ore developments of the old mine progresses as usual.

Knickerbocker,—The pumps are doing their best to reduce the strong flow of water, and are slowly getting the best of the situation.

Buckeye.—The pumps are nearly completed, ready for active service, and prospecting at the lower levels will be resumed very shortly.

Leviathan.—Drifting at the 400-ft level in the ore vein, driving ahead vigorously, with no feature of importance to note as yet.

Lady Bryan.—Drifting north and south at the 380-ft level, and sinking the main shaft at the usual good rate. Nothing new.

Wells-Fargo.—Bottom of shaft in good working ground, and water not interfering; work goes ahead to very good advantage.

Succor.—Both main drift and cross-cut at the 550-ft level are in very favorable, easy working vein material at present.

South Comstock.—Cross-cutting at the 275-ft level going ahead finely as usual with no change of interest to report.

North Carson.—Face of main west tunnel still in fine looking ledge matter, and driving onward toward the main ore vein.

Mint.—Shaft sinking is tough, hard blasting rock at present. No water. Total depth today, 792 ft.

Pictou.—Face of main tunnel in porphyry, with occasional streaks of clay and quartz. Driving ahead vigorously.

Woodville Consolidated.—Sinking the main incline is resumed, the chamber or station at its head being completed.

New York Consolidated.—Placing the heavy new machinery and the other surface work goes ahead well as usual.

Moore and Morgan.—Under the new contract, sinking the shaft is resumed and good work being done.

Occidental.—Faces of both cross-cuts east at the tunnel level in quartz with good streaks of ore.

Dardanelles.—Face of drift in improved ore, indications looking better than last week.

Original Gold Hill.—Face of north drift in milling ore. South ore body still showing finely.

Idaho.

Mining Notes.—Owyhee *Avalanche*, Aug. 28: Work at the mines is going on as usual. At the Pauper the new ledge in the vicinity of the 4th level is turning out splendidly. It is four feet in width, and as far as operated there is the best of reason for the statement that it will realize the most sanguine expectations of those interested. From the 3d level down the ore has been continuously improving in quality, while the rich sections of the ledge have been improving in dimensions. As the work progresses, the fissure has been constantly enlarging. There is a well defined body of ore throughout and the most favorable results may be expected from present operations in the mine.

At the Silver Cord matters generally wear a very promising appearance. The new machinery is nearly all on the ground and much activity is noticeable in the preparations connected with the erection of the hoisting works, all of which promise to be of the most substantial description. The new engine will arrive in a few days. The rich ore body in the 4th level continues to show up well, and affords daily the most promising indications for the future.

The reports from the Mahogany are quite favorable and fully confirmatory of the satisfactory developments alluded to a few days ago. In the south drift of the 9th level on what is known as the Dolphin ground, the ledge continues to disclose a splendid grade of ore, and competent judges express the belief that there is abundance of it. In the 4th and 7th levels the south drifts are making the same favorable progress as hitherto reported. There is the usual force of men at work in the mine, numbering in all about seventy or upwards.

The machinery at the Ida Elmore is undergoing repairs, and the pumps and boilers are being made ready for active service preparatory to the work anticipated in connection with the cutting of the ledge. Other matters about the mine remain the same as usual.

Preparations are in progress for more active work at the Belle Peck. The recent developments being regarded as highly encouraging, the mine will soon be worked on a large scale There is already a large quantity of good ore at the dump awaiting shipment to the mill.

At the Golden Chariot, Superintendent Lennon is pushing the new works with vigor, and the exterior of the mine will soon wear an entirely new visage.

There are 80 men at work in and about the Oro Fino. The ore, which is being shipped daily to the South Chariot mill, continues to be of good quality. The mill is being run day and night on this ore.

At the Illinois Central and Poorman mines, matters remain about the same as at the date of our last report. In the former the work of taking out ore is progressing favorably, and Superintendent Linkton reports the most favorable indications for a good fall business.

Parties interested in the Wagontown mines say that the rock taken out is steadily improving in quality, and the best foundation exists there for one of the most lively camps on the coast.

From several of the smaller mines in this immediate vicinity, we continue to receive favorable reports. The Potosi, the Black Jack and other mines near town are being worked with a limited force, and recent developments are such as to afford much encouragement to the owners.

South Mountain is recovering gradually from the recent quiet prevailing there, and the people generally feel quite encouraged in the prospect of having new furnaces and other works carried out.

Lower California.

New Discoveries.—San Diego *Herald*, August 21: Mr. Schofield, arrived yesterday from Ensenada bay, brought with him 1,500 lbs. of chloride silver ores which assays from $300 upwards. He has three ledges, averaging from six feet to nine in width, situated within two and a half miles from the main harbor of Ensenada bay. He will be in readiness to supply 500 tons per month to any ship, schooner or vessel that may call there and contract at reasonable prices.

Montana.

Moose Creek Mines.—*Mountaineer*, August 19: Discoveries have been made in the channel of Moose creek proper, Perry, Fairweather, and other gulches tributary. Considerable excitement and quite a stampede. 150 to 200 men are prospecting on Moose and other gulches. A mining camp in embryo christened Treanorville, is on the bar above the junction of Mosse and Perry gulches, with one store and saloon by Burgess & Co.; one saloon by Connor & Way, and a saw mill three-quarters of a mile below camp. Moose creek proper is located and staked from the canyon below to its head, and nearly all the tributary and neighboring gulches. Something out of the common line so-called Secret channel, upon which Messrs. Thompson, Dickey and others have thoroughly prospected, and are at work. They have traced an old channel or bed from below the mouth of Perry gulch over or, rather, through a hill of granite 300 ft high, across Perry gulch, near the upper end of the claim of Perry & Co., thence through another high hill or ridge into Fairweather above, a distance of a mile. This channel, worn in the solid rock, is filled with a hard wash gravel, from which fair prospects are obtained. At the highest point on the ridge, a shaft has been sunk to a depth of 70 ft. At the mouth of the channel ground-sluicing is carried on profitably. There has been but little real work done outside of that mentioned, and, of course the camp must be judged by insufficient developments, but that there are some good claims is certain.

The mica lodes in the vicinity of Ramsborn gulch are improving by development. Since the Mammoth mica was discovered, prospectors have located the George A. Poole and the Peruvian. This is a valuable mineral, and those ledges will be better than those of gold if the sheets are large and free from fractures.

The Metric System.

There has been for some time vigorous efforts to have adopted in this and other countries the metric or decimal system of weights and measures One of the principal difficulties encountered by commerce in the diversity of standards of value, weight and measure. The difference of terms, too, has only complicated matters. Not only has each nation had its own system, but in most cases arbitrary standards, having no conceivable relation to one another, have been set up. Something more simple, convenient and expeditious was sure to be invented. Out of the necessity comes the decimal system of weights and measures. It is founded on the ten or decimal relation, and is simple, so easily acquired that it is sure to chase out the old and cumbrous systems which have so long caricatured the common sense of mankind. Says a well known writer:

"It is a system, according to which the weight and dimensions of every material thing, whether solid, liquid or gaseous, whether on land or on water, whether in the earth or in the heavens, and whether determined by the scale, plummet, balance, barometer or thermometer, are ascertained by a method absolutely uniform, entirely simple, and equally suitable to the use of all mankind, resting upon a single invariable standard of linear measure, with multiples, and sub-multiples, like those of our monetary system, exclusively decimal, with appropriate names, similar in all languages; and itself secure against the possibility of change or loss through carelessness, or accident, or design, by being constructed on scientific principles and copied for distribution among the different nations of the world."

The following simple tables give all that there is in the metric or decimal system of weights and measures:

MONEY.

10 mills make a cent.
10 cents make a dime.
10 dimes make a dollar.
10 dollars make an eagle.

LENGTH.

10 milli-meters make a centimeter.
10 centi-meters make a decimeter.
10 deci-meters make a meter.
10 meters make a dekameter.
10 deka-meters make a hectometer.
10 hecto-meters make a kilometer.
10 kilo-meters make a myriameter.

WEIGHTS.

10 milli-grams make a centigram.
10 centi-grams make a decigram.
10 deci-grams make a gram.
10 grams make a dekagram.
10 deka-grams make a hectogram.
10 hecto-grams make a kilogram.
10 kilo-grams make a myriagram.

CAPACITY.

10 milli-liters make a centiliter.
10 centi-liters make a deciliter.
10 deci-liters make a liter.
10 liters make a dekaliter.
10 deka-liters make a hectoliter.

Up to date the new system has been sanctioned by law among more than half the people of the globe. The French, Germans, Italians, Spaniards, Portuguese, Dutch, Belgians, Mexicans, Swiss, Austrians, Danes, Grecians, English, Brazilians, and a majority of the nations of South America, have already adopted it. Great Britain legalized it in 1864; Germany in 1868, and in 1872 made it compulsory. In 1866 the government of the United States sanctioned it. No class here, however uneducated, will have any difficulty in becoming familiar with it, as we already use the first table, as given above, in all monetary transactions. The adoption of the others will be only the extension of the method which everybody accordingly understands. The metric system has been exclusively in use in the United States coast survey for years. Leading mathematicians, chemists, architects, etc., are rapidly adopting it in their respective vocations. In order to make its use general, a compact has been prepared and is being circulated throughout all the principal cities for the signatures of members of the scientific professions, whereby they pledge themselves to simultaneously take up the decimal system in July, 1876. The plan is meeting with general favor, and the new system will undoubtedly assume a national character from that time. The change may be regarded as a long step in the tendency of the age to adopt common standards to facilitate the multiform intercourse of the nations of the earth.

Two lines of express have been opened by the California, Arizona and New Mexico express company from San Diego to Arizona. One line goes by way of Yuma through the Penal mountains by way of Tucson to Silver City. The northern route is by way of Prescott, Hardyville and Phœnix.

The Ministerial Council at Madrid has decided to send 12,000 troops to Cuba by September 29th, and 10,000 more in October. The transports have already been chartered.

General News Items.

Advices from Egypt reports great confusion and excitement from military preparations. Troops are being dispatched to the Abyssinian frontier; at the same time the Khediva expects a call from the Porte for aid in the Herzegovinan rebellion, and all officers have been recalled from furlough. This will be a chance for our Americans in the Khedive service to distinguish themselves.

The Remington diamond badge was won on Saturday at Creedmoor by L. L. Hepburn, defeating Fulton, Yates and Campbell of the International team. Hepburn and Fulton each made 98 points, but as the former made the greatest number at the long range, 26, he was awarded the prize.

There will be another trial of the safe burglary case of Harrington and others, at Washington, important evidence having been discovered during the last three weeks.

The Commissioners appointed to investigate Prof. Marsh's charge of fraud against the Indian Agents have not yet made their report.

Hon. J. M. Thacher, Commissioner of Patents, has resigned. Ex-representative B. H. Duell, of New York, will probably succeed him.

Church, late head of the ribbon department of Jaffray & Co., New York, who absconded with $40,000, has been arrested in Montreal.

An attachment has been issued against the property of the Bank of California in New York city.

Union Adams, a well known dealer in mens' furnishing goods in New York, has failed.

The well known publishing house of Lee & Shepard, of Boston, has suspended.

A number of business failures in Montreal are reported.

The strike of mill operatives in Dundee continues.

The English polar expedition has sailed from Greenland.

Gen. Butler has been retained as counsel for Theodore Tilton.

The *Jefferson Borden* mutineers have been indicted in the U. S. court, at Boston.

A gentleman from Illinois proposes to locate a woolen mill at Chico, Butte county.

The Emperor of Germany will visit Milan in October.

Another revolution has broken out in San Domingo.

Mr. and Mrs. Sartoris and the baby have gone to England.

Cardinal McCloskey is in Nantes.

Fish at the Centennial.

It is the desire of the Centennial Commission of the International Exhibition to afford all reasonable facilities for the exhibition of fish and the various appliances and processes used in fish culture.

All parties engaged in the propagation of fish as a business pursuit will, no doubt, find it of advantage to exhibit, as also, those who are engaged in the manufacture of appliances for the culture and capture of fish.

It is therefore suggested that the "Commissioners of Fisheries" of the various States, take such concert of action as may surely accomplish so desirable an object; individual effort, however praiseworthy, can hardly be relied upon as expressing the importance and prospective extent of this new national industry.

The exhibition will open May 10th, 1876, and will continue for six months. The details of arrangement for a display of fish and fish breeding apparatus will be under the administration of the Bureau of Agriculture.

New Incorporations.

The following companies have filed certificates of incorporation in the County Clerk's Office at San Francisco:

Ryland M. Co.—August 19. Location: Nevada. Directors—John Willand, John Schweitzer Franklin V. Lee, Albert Cramer and William Moody. Capital stock, $720,000.

Oriental Soap Co.—August 19. Location: San Francisco. Directors—Wm. F. Flick, D. Henderson, Wm. F. Buswell, J. M. Johnson, A. P. Williams, George A. Treadwell and Wallace Everson. Capital stock, $250,000.

Russian River Land & Lumber Co.—August 20.—Location: Sonoma county, Cal. Directors—Milton S. Latham, Austin D. Moore, Wm. H. L. Barnes, Joseph P. Moore and James H. Dane. Capital stock, $1,090,000.

Steep Hollow G. & S. M. Co.—August 20.—Location: Nevada county, Cal. Directors—John Calvert, M. L. Power, S. T. Walsh, John Hutchinson and Wm. Corcoran. Capital stock, $3,000,000.

Swan Brewery.—August 23.—Location: San Francisco. Trustees—Frederick A. Elliott, Charles Willmot, J. S. Bugbee, Frederick Clay, A. J. Bryant, Caleb S. Hobbs and Frank M. Pixley. Capital stock, $100,000.

California Land and Building Association.—August 23.—Location: San Francisco. Trustees—A. S. Bristol, W. H. Carter, J. B. Wilson, R. T. Houston and R. W. Davis. Capital stock, $100,000.

Quadville Cons. M. & M. Co.—August 23.—Location: Placer county, Cal. Trustees—Frank F. Taylor, A. Badlam, Samuel Brannan, B. B. Strawsbury and Thos. Hannah. Capital stock, $1,000,000.

Moore's Flat Blue Gravel M. Co.—August 23.—Location: Moore's Flat, Nevada county, Cal. Trustees—S. B. Hunt, John J. Noon, John M. Witley, W. B. Cluff, N. H. Westfall and W. Small. Capital stock, $1,000,000.

Keokuk G. & S. M. Co.—August 23.—Location: Arizona. Trustees—M. A. Baldwin, W. F. Flick, W. F. Buswell, Fred. A. Elliott and L. J. David. Capital stock, $6,000,000.

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THE FAIR CATALOGUE.

List of Exhibits

OF

The Tenth Industrial Fair

OF THE MECHANICS' INSTITUTE.

* Entries marked tbus were entered too late to compete for Premiums.

First Entry Book--Numbering 1 to 300.

No. 1. A S Hallsdie: Wire and wire rope.
2. Mercns C Hawley & Co: 1 Scbutler California Wagon.
3. J Spaulding & Co: Pioneer Carpet Beating Machine.
4. J H Smitb, San Leandro: 1 Saw Sharpener, Gosben Mannfacturing Co.
6. Housebold Furnishing Co: Rattan Goods; Artistic Furniture, including Mantles, Sideboards, Chairs, Sbaker Cbairs, Turkish Rugs (from Smyrna), Meat Safes (wire), Lanndry Table, Nicaragua Hammocks, Englisb, American and French Fireplace Furnisbing Goods.
5. Housebold Furnishing Co: Coal Hods; Sets Irons; Fenders, Vases, etc.; Toilet Sets; Tin, Brass, Copper and Japanned Utensils for cooking; 1 Horizontal Ice Cream Freezer; Library steps.
7. O Darwin Owen: 1 Groceries or Delivery Wagon; 1 Light Platform Democrat Wagon; 1 Medium Platform Independent Wagon; 1 Farmers' Peoples' Wagon: From Cortland Wagon Manufacturing Co, N Y.
8. C Juegen: 12 boxes Glue.
9. Neylan & Young: 7 Asst'd Cameron Pumps; 1 Way Valve; 1 Stoddart Pat. Condenser, with Pump Pipe complete; 1 Condenser (without pipe).
10. Eureka Gas Machine Co: 1 Eureka Gas Machine, 50 lights—in full blast.
11. James G Steele & Co: Squirrel Poison.
12. Wm J Fisher and W G W Harford: Conchological Collection.
13. S Gray: Model of Combination Safety Elevator (Twin Staire and Ligbt Shaft). Patent applied for.
14. J C Senderling: 2 sizes Baker Blower.
16. J Hendy: 2 Concentrators; 1 Planer; 1 Large Lathe.
16. Dewey & Co: 1 Large Drnm Cylinder Steam Printing Press—from Painter & Co's Type Foundry.
17. Dewey & Co: Tbe MECHANICS' FAIR DAILY Newspsper and Job Printing office.
18. Cal Pottery and Terra Cotta Works: Pottery—Chimney-tops, Vases, Pedestals, Swans, Dolphins, Statues Awning, etc.
19. Justin Gates & Co: 5 Soda Fountains variously located.
20. Herman & Co: Specimens of Ores, Minerals, Fossils, Relics, Shells, etc.
21. M P Boss: Tbe Boss Quicksilver Pnmp.
22. Adam Tollratb, Oakland: 22 Varieties Horseshoes.
23. San Francisco *News Letter* Reporter's office: John Gilman, Tbos Gidley.
24. W S Hochstadter: Sketch of Fence Post.
25. Healds Business College: Telegraph Apparatus and Office.
25. W H Jameson, Jr: 1 Davis "Steel Wbeel and Axle."
27. Brainard C Brown: 4 Wooteu's Patent Cabinet Office Secretaries.
28. M Hansen: 2 Scroll Saws.
29. G A Potter: Samples Excelsior Cooking Utensils.
30. Ackerman Bros: French, China Decorated Dinner Sets, Silver Plated Ware, Fancy Goods, etc.
31. L Heinoe: Samples of Glassware.
32. I T Milliken: Marbleized Mantels and Grates.
33. N S Coon: Tbe "Main Leaf Catarrb Remedy;" tbe Improved Perforated Frictional Belt; Hoyt's German Cologne and samples of Rubber Good..
34. Parke & Lacy: 1 Buffalo Tunnel Carriage; 1 Mining Drill; 1 Tunnel Drill complete; 1 No 5 Air Compress Tank; 1 Injector Pump; 1 12-Horse Haskins Engine; 1 10-Horse Haskins Engine witb Boiler.
35. Parke & Lacy: 1 2-Horse Haskine Eugine with Boiler; 1 6-Horse Haskina Engine single; 1 4-Horse Haskins Engine single; 1 2-Horse Haskins "Yatcb Engine;" 1 Heald & Oisco No 6 Centrifugal Pump; 2 Bucket Plungers, Nos. 2 and 3.
36. E Pander: Pedestals; Fountain and Landscape.
37. N W Spaulding: Patent Inverted Teeth Circular Saws.
38. Pacific Saw Mannfacturing Co: Circular, Mill, Mnley, Drag, Gang, Cross-cut, Band and Scroll Saws—Butcher, Ice and Metal Saws—Bevel, Backband, Table and Compass Saws—Saw Mandrels, Planing and Carriers' Knives—Cabinet Scrapers, Plasterers Mitreing Tools.
39. Geo H Atkineon: Hays' Patent Turning Latbe—Specimens of turned work.
40. C O Burr & Co: Samples Mustards, Spices and Oils.
41. H H Coe: 3 Lifting Machines.
42. R W Brehm: West Oakland, 1 Wood Turning Lathe.
43. W H Bovee: Vernon Mineral Water.
44. Sam'l S White, Philadelphia, Pa, or J H A Folkers & Bro, San Francisco: Dental Goods, Artificial Teetb, Operating Chairs and Stools—Office and Laboratory Latbes—Burring Engines and appliances—Celluloid apparatus—Extension Bracket—Corundnme Dental Instruments and Appliances.
46. Carolan, Hooker & Oory: Hardwaro: Samples: Plate Steel, Horse Shoes, Sledges, Lathe Chucks, Steel Shoes, etc.
45. Weaver, Taylor & Co: Ssmples Rubber Goods.
47. Sbowers, Jewell & Cole: 4 Remington Sewing Machines.
48. G W Briggs: 1 "Royal" Cooking Range.
49. E Guittard & Co: Samples Chocolate, Coffee, Spices, Yeast Powder, Cream Tartar, Baking Soda.
60. Ghirardelli & Co: Samples Cbocolate, Spices, Cream Tartar and Coffee.
62. W H Burton: Tbe Burton Improved Lawn and Italian Awning: Model of Carriage and Sleigh combined.
53. Alex McKay: Ssmples Domestic Carpet.
54. Dexter & Co: 1 case Bon-bons.
55. J Vogeley & Bros: Fine French Confectioneries, and Home Made Candies.
56. Mrs E H Hnhbard: Samples Humon Hsir.
57. Carl Eisenschmid: Specimen oi Penmansbip.
58. J M Keeler & Co: Slutbour Pump (force and lift), 1 5 H P Kipp's Upright Engine and 1 Coughlin's beater.
59. E A Hubbard; *Papier Mache* Ware, Undertakers' Articles, Steam Toy, Propellers and Engines, Mechanical Lamps, etc.
60. Prusso & Splivaldo, (California Italian Paste Company): Samples Maccaroni, Vermicelli, Farina, etc.
61. J Mitchell & Co: 2 Folding Bedsteads.
62. Gillins & Sanford: 1 Pulsometer Condensing Pump; 1 Eureka Condensing Pump.
63. J H A Folkers & Bro: Apparatus for Deformities; Trusses, Bandages, etc.
64. Tiemann & Co, New York, J H Folkers & Bro, agents, San Francisco: Surgical Instruments.
65. Newman Bennett: Large "Keystone Soda Apparatus;" very fine; composed of 16 varieties of marble witb beavy silver mountings; baud cut statnary; and elegant attacbments.
51. John H Pesinger: Door Springs (Foster's Premium Double Pivot) Ratcbet Drill, Rein Holder.
66. Newman Bennett: 1 Small "Keystone Soda Apparatus;" also 1 Cornucopia Fountain; Copper Fountaine and Generators, Perfume and Drnggist's sundries.
67. Wing & Co: Samples of Lasts, Boot-trees and Crimps, finished and unfinished.
68. John H. Gove: Spiral Needle—sewing machine.
69. B F Barton & Co: Samples Yeast Powder, Cream Tartar, Soda and Saleratus.
70. A Mead & Co: Sample "Weed" Sewing Mschines.
71. Bnsb & Milne: Samples Chandeliers.
72. A Vianny: 1 Silk Loom.
73. A C Morse: Fire Escape Ladder; "Bonenza" Wasbing Macbine.
74. E D Morgan: Smith Sash Balance. (Patented)
75. Tbomae Barrows: Samples "Victor" Sewing Machines.
76. John Mallon: Cut, Ground, Stained end Embossed Glass.
77. WPaulson: Rnstic Furniture; consisting of Tables, Bencb, Chair, Fern Cases, etc.
78. Thomas Tweedale: 1 case Curiosities.
79. S. F. Journal of Commerce: Pacific Coast Products.
80. Holcomb Bros & Co: 3 Top Buggies, 1 Open Buggy, 2 Family Carriages.
81. John Rogers: Lubricating Cream and Cnpe.
82. G A Norton: Samples "Wilson" Sewing Macines.
83. E W Haine: "Home" end "Home Shuttle" Sewing Machines.
84. Wm G Badger: Orchestral Grand, Concert, Square and Upright Pianos; 1 Upright Piano witb California Laurel Case. Sample of Organs.
85. L. C. Mumford: Foot Latbes and Low Weter Alarm Guage.
86. H. Epstein & Co: Dr. Henley's IXL Bitters; Dr. Henley's "Dew of the Alps" Bitters: Royal Palm Gin.
87. C M Obapman: Samples Human Hair; 1 Csse Lace and Fancy Goods.
88. Wobilke & Momsen: Rustic Window Shades.
89. J C Coburn: Tbe "Best" Wasbing Machine.
90. Mrs J Sullivan: 1 case Stamped and Embroidered Goods; Stamps.
91. James Harris: Farming Implements, consisting of: Tubular Iron Harrows; Cast Steel Plows; Model of Gang Plow; Model of "Key Shear" Plow; box of Corrugated Gsskets.
92. Dr Q L Adams: Dental Specimens.
93. A C Robison: Collections of Shells, Gold Fish, Curiosities, etc.
94. F Gruber: 7 Cases Stuffed Birds. This is a rare exhibit, showing Mr. Gruber to be a skillful workman.
95-95. Linforth, Kellogg & Co; 1 Furst & Bradley Sulky Plow; Gang Plows; 3 Garden City Plows; 1 Pitts' Thresher; 1 Woods' Reaper; 1 Mansfield Engine; 1 "Freedman" Harrow; Seed Drills; Lawn Mowers; Studebaker Iron Axe Wagon; Samples Powell Tool Co's Tools; Rumsey & Co's Pumps; Black Diamond Files, etc.
97. Davis Bro's: "Golden Rule Bazaar;" Walnut Frames, made by hydranlic pressure.
98. Frank Bro's: Single Plows; Gang Plows, Reapers; Harvesters; Mowers and Engines.
99. A Obaigneau & Co: Samples of Printing
100. Josepb Newman: Silk Worms; Eggs; Cocoons and Butterflies; Specimens California raw and manufactured Silks; Varieties of Cocoons spun by the species of worms fed on Mulberry leai; all of the first raising of California.
101. Joseph Wagner: 1 California Overflow Grain Separator; 1 Warehouse Separator; Barley Feed Mills; Burr Mills for pulverizing Quartz, Cement, Rock, etc.
102. Samuel Hill: "Florence" Sewing Machines.
103. Huntington, Hopkins & Co: Head Light and Lanterns; Fire Extinguishers; Steam Gauges; Fire Grates; Chucks; Meat Clippers; Sheep Shears, etc.
104. Joseph Figel: Mens' and Boys' Clothing.
105. W A Mathies: American Wash Blue.
106. L'Sweet: The "Sweet" Clothes Line Elevator
107. Does & Clark: Milk Wagon and Cans.
108. O Bonuey, Jr: 1 Hay Rake; 1 Shaping Machine.
109. Mrs D A Smitb: Bon-Ton for the complexion.
111. J Lobree: Patent Faucet.
112. John W Quick: Quartz, grain, cement and Stedefeldt screens; 1 emutter case.
113. H P Wakelee: Sample patent squirrel exterminator.
114. Mrs Anna Getz Lucas: Preserved Flowers.
115. Mrs Hanna Swasey: Sea mosses in frsme.
115. Tbomas Ogden: Samples Lomas Liniment.
117. H A Benjamin & Co: Baskets, jugs and bottles of Seltzer and Congress Water.
118. I Ash: Has samples of mink fur before and after dyeing. The one appears old and faded, while the other bas the fresh and glossy look of a newly dressed skin; and in color is difficult to distinguish from sable. It is guaranteed to hold this color, and ever after remain free from moths.
119. E A Brownland: Feather picture of tbe Goddess of Liberty.
120. Pacific Gas Carburetting Co: 1 Carburetor.
121. Mrs I McFadden: 2 Patcb-work quilts; 1 floor mat of rags.
122. Mrs H Gebrt: Vase worsted flowers.
123: A H Southwick, Oakland: 1 "Turbine" windmill and pumpe.
124. Mrs S Kincaid: 1 crochet bedspread.
125. Peter Crone: 1 Seal and Embossing Press; Specimens of Photographic Slides for the Stereopticion.
126. Wm McDowell: Show Cards.
127. R W Brehm, West Oakland: Articles turned from California Wood; Set of Vases made from "The Big Tree."
128. D T Pbelps & C W Edmonds: Registering and Horse Detaching Device.
129. Mrs Weister: 2 Oil Paintings—"Apple" and "Lilac Blossoms."
130. Jacobs & Glass: Ladies' Underwear.
131. Mrs Kinzler: Sample Silk Embroidery; Wax Flowers.
132. O T Peters: Model of ebip "Glory of the Seas."
133. Paulina T Grant: 2 Knit Breakfast shawls; 1 Worsted Quilt—"Herring Bone."
134. F H Merrill & Co: California Pumice Stone and Merrill's California Luster.
135. Miss Minnie Williams: Worsted Ottoman cover; 2 Cotton Quakers.
135. Mrs E Craber: Samples Knit Carpeting, Beads, Cushions and Mats.
137. Miss Ida Otis: Worsted Picture of Mrs A Lincoln.
138. Geo A Waterbury: Perforated Paper—"Cross in Frame."
139. Samuel McDowell: Carpet beating machine.
151. E B Smith & Co: Litton springs seltzer water.
152. Leltzenberg & Bro: 1 rocksway, 1 Clarence coach.
162. Pacific N W Furniture Manufacturing Co: Bedroom, parlor and dining-room furniture; 1 ladies' secretary.
154. Sweepstake Plow Co: Eureka gang plow, harrows, top and open wagon.
155. Price Press Co, San Leandro: "Eclipse" and "Price" hay presses.
165. Baker & Hamilton: Iron, axle and tbimble skein Bain wagons.
157. Frank Broe & Co. 1 self grain binder.
168-159-160. W T Garratt: Steam pumps, church, fire alarm and steamboat bells; Babbit metal, Lake Superior copper, hose pipes, nozzles and couplings, brass, iron, shell, globe valves; steam gauges and whistles, Coffin's patent brass valves, and iron and water gates; water gtges, sbip pumps, oil pumps, steam registere, safety valves, and rough brass goods of all description.
161. Warren Holt: Treadle grinding machine, treadle gig sawe, self closing gate and door hinges, window catcb and lock.
162. F Ogden: Tullock's automatic ore feeder.
163. Parke & Lacy: Hoisting engines. 1-24x12 ft lathe, Putman's iron planer, bolt cutting machine, saw bench and farmer's battery.
164. Eagleson & Co: Fine wbito shirts, and general furnishing goods.
165. J Pinet: Home apparatus for making Ice.
166-167. Bowen Bros: A fine display of groceries and provisions; Bowen's yeast powder.
168. W H Smith & Co: Crib, bedstead and bed.
169. R B Prince, Alisville: Samples silk cocoons.
170. Mrs E J Whitman: Kettle scraper, her own invention.
171. Stephen Kendall: 1 quartz mill.
172. W Jones: Encaustic and plain flooring tiles, enameled wall, beartb and mantel tile; Welch roofing slates, Portland cement, concrete, etc.
173. Holcomb Bros & Co: 1 conpe, 1 ladies' phaeton.
174. Pacific Iron Works: 1 air compressor, rock drill and drill column.
175. A J Culbertson: Improved "fire escape."
176. M McDonald: Samples stone from Eureka Menufacturing company.
177. Van Winkle & Davenport: Samples horse shoes and Globe borse sboe nails, axle arms and drill.
178. California Rock Drill Co: Air compressor and rock drills.
179. John Bollman & Co: Samples of Russian end Turkisb tobeccoe, cigsrettes, etc.; pnre Havana cigars.
180. Carl Weinberger: Saw gummer and sbarpener.
181. Cooper, Jones & Cadbury: Plumbers, brass and plated goods, water closets, steam fitters' goods, pumps and fountain jets.
182. W F Sberwood: The "Davis" sewing machine.
182. C R Westcott: Afghan, very fine.
183. P Beamish: Fine display of shirts, night shirts, underwear, bosiery, linens, handkercbiefs, gloves and gents' furnisbing goods.
184. Treadwell & Co: 1 American arbor, hay cutter, Centennial piston packing.
185. J. Hendy: Ore feeder.
185-187-188. W J Heney & Co: Set chamber and parlor furniture, side-boards, side and extension tables, leatber dining chairs, lounge and desk, mirrors, drapery, lace and Nottingham curtains, patent extension cornices, centre tables, card rcarvers, bouquet stands, etc.; music and cabinet portfolios, easy cbairs, ottomans and foot stools, Brussels carpets, witb borders to match, spring and hair mattesses, etc.
189. Judson & Shepherd: 1 Ingersoll rock drill.
190. Joseph Wagner. 1 pair French burr mill-stones.
191-192. Gilbert & Moore: Standing office, teachers, school, lift and stationary desks, cbairs, Gothic church pew, rustic, lolding seat, railroad, Eurekanud spindle back settees.
193. Adam Hein: Patent reversible baby carriage.
194. P Kelly: Gents' boots, sboes and gaiters, ladies' boots, Oxford ties and slippers.
195. Newport Coal Co: Sample of coal.
196-197. Marcus C Hawley: Threshing machine and separator; "Buckeye" feed drill; Gilpin's sulky plow; gang plows: "Buckeye" reaper and barvester; "Enterprise" coffee mill; Hntcbinson's cider mill, and Nordyke's Mormon flour mill.
198. Mrs H Cantel: Samples lacse and curtains cleaned and mended.
199. Parke & Lacy: 6 lathe chucks.
200. S Marks: Patent bottles.
201.* J Overend: Printers' leai cutter.
202.* Cornell Watch Co: Cornell watch factory watches, in process of manufacture and finished.
203.* John McCarthy: California laurel cabinet lor
204.* Neylan & Young: Pickering governors.
205. P Leinsfeldt: Redwood, veneered and carved billiard table, laurel billiard table, rosewood billiard table, bagatelle, fancy buffet.
205.* B B Redding: Granite vases.
207.* Wilcox & Gibbs Sewing Machine Co: Wilcox & Gibbs' sewing machinee.
208.* Betts Spring Co: All kinds of buggy, hack, carriage, clarence and sulky springs.
209.* John Smith: Smith patent carriage spring head, large jack knife.
210 211.* Baker & Hamilton Sweepstake Plow Co: Hill's Eureka gang plow, side-hill Eureka gang plow.
212.* Price Press Co: Price excavator and ditching machine.
213.* Mrs E Snyder: California manufactured cigars.
214.* H W McCotter: Tbayer's improved derrick.
215.* John F. Snow: Samples dyed goode in wool, silk, cotton, kid gloves, blankets, etc.
216. M Lichtenstein: Case of ladies' white wear and embroidered flannel, French corsets.
217.* Wm Vandenburg: Premium ironing table.
218.* Dunbar, Hendy & Co: Bethesda water.
219.* W H Brayton: Suspension spring bed.
220. G H Tay & Co: Richmond and Palace ranges.
221. Flint, Peabody & Co: Paper barrels, tubs and butter and egg carriers.
222.* C J Weldon: Suspender bucklee.
223.* Hutchings & Co: Sample of refined whale oil.
290. O Jas King of Wm & Co: Hermetically sealed goods, pickles, jellies, jams, preserves, catsups, sauces and champagne cider.
291. John Beach: Case of mathematical instruments, containing solar transit, double telescopes, etc.
292. Hale & Co: 3-ply veneer seat and back cbairs, cane seat and back chairs, folding chairs, setteee and cradlee.
293. Hartshorn & McPbun: Self-acting shade rollers, window shades and opaque shade cloth.
94.* W Bohm: Sets of breastpins and earrings, bracelets, watch chains, lockets, sleeve buttons, car ticket holders, etc.
295-295-297. J M Eckfeldt & Co: Manilla cloak suit, cravat, bat and bonnet stands, wire feuders and fire guards for the nursery, Forry's weather strips, disb trays, sbow stands, ore cloth painted, wire shade cloth, samples of plated ware, screens, casters and wire table furniture, ore, coal and sand screens, foundry riddles, flour and sugar sieves, wire summer bouses, wire fenca, sofas and chairs, flower pot stands, bird cages, rat and mouse traps, brass, copper and steel wire cloth.
298.* Mrs C D Alden: Cornucopia tambour embroidery scarf crocbet embroidery.
299.* O F Gilbert: Improved broom & carpet sweeper.
300. John Hahn: Family ice machine and refrigerator.

Second Entry Book—Numbering 300 to 600.

301. Cast etsel Sboe and Die Co: Samples of Shoes and Dies
302. Mies Annie Young: 1 Worsted Lamp-mat; Worsted Pin Ball; 1 Flower Wreath, in Frame; 1 Tidy.
303. Mrs A A Eaton: Raised Worsted Work.
304. Miss Annie Weston: 1 Bed Quilt.
305. Mrs Mary Bozarth: 1 Bed Quilt (Log Cabin).
306. A Daboncb: 1 Leatber Frame and Worsted Picture
307. H Parkhurst, Oakland: 1 Model of Horse Power.
308. J. M. Sabin; Model of Improved Railway Car.
309. Mrs Jane Eagan: 1 Worsted Lamp Map.
310. J Solomans: 1 Embroidered Handkercbief, made by hand witbout a pattern.
311. Mrs A A Cottrell: Specimens of Wax Flowers in vase and frames.
312. Mre Carrie E Williamson: Worsted Tidies, Lamp Mats, Hair-pfn Boxes, Card Boxes and Air Castle.
313. Mrs John Cornwall: Samples Quilt and Rag Mat
314. A Juds: Model of a Scbooner.
315. Robert Fyfe: Plan of a screw steamer.
316. Mre James Hansett: Vase; Wax Statuary "Brida Morning."
317. Dr L G Yates: Cabinet, Sbells and Fossils.
318. Mrs L. Hambrick: 1 Agricultural Wreath.
319. Mre Sarah Hyams: 1 Bottle Home-made Catsup.
320. Chas R Donner: 1 Horse-shoeing Tool.
321. Mrs J K Sbafer: "Pango Pango," made from Cocoa Bark.
322. Wm H Richardson: Air and Water Heater for attaching to stoves and ranges.
323. Miss R Alexander: Tidy in Frame, "Tbe Guard on tbe Rhine," Worsted Wreath in frame.
324. Mise Elvina Taylor: Pen Drawinc.
326. Mrs Carlsen: 1 Crocbet Table Cloth; 1 Crayon
326. Mrs D Atkineon: 4 Frames of Leatber Work.
327. Miss Fannie Atkinson: Wreath of Combed Wool Flowers.
328. C D Alden: 1 Statuette, "Greek Slave;" 1 Case of Wax Flowers; 1 Wreatb German Tufted Worsted Work.
329. E R Cleavland: 1 Combination Lock.
330. David Kahnweiler: Life Preservers.
331. Mrs C A Tabor: 1 Worsted Rug; 1 Worsted Tidy; 1 Silk Sofa Cushion.
332. Mre S F Paullin: Case of costumes.
333. Mre A S Bradley: Case of wax lillies.
334. Mra L Allason: Worsted lace shawl.
335. E Crabel: 1 patch-work bedquilt, 2 log (worsted) bedquilts, 1 worsted breakfast shawl
37. C D Alden: Case wax flowers.
340. Miss Margaret R Arnold (10 years of age) gentleman's shirt.
341. Mrs A F Darling: Shell frames, corner wbo transferred picture.
342. Mrs J Lensing: hair work in frame.
343. Martin & Vice: Specimen of A. W. Thor oughbred row-lock.
344. Mrs Letitia Ferris: Specimens of pstent fasteners, manufactured from gold and silver.
345. Mrs Sutberland: Bedcovers, dinner mats, l under vest, ladies' nabit shirt, ladies' stocking
346. E M Dudgeon: Hydraulic jack.
347. Mrs Ewing: Silk petchwork, bedspread, he pattern.
348. Mrs H B Douglas: Carriage afghan
349. J Herzog: "Eureka" hair.
350. Epstein & Co: "IXL" bitters, "Alps" bi "Royal Palm" gin, big bottle.
351. G A Scbuster: Ladies' sewing rocker.
352. Robinson, Fowler & Co: Patent metallic brooms, brusbes and wooden ware.
353. Mre Mary McMurry: Tetting tidy.
354. A Vandernailen: 43 frames of mechanica engineering drawings.
355. C W R Ford: "Eureka" spool silk, manufac in Boston, Mass.
355. Tbos C Smitb: Oregon flax, raw and scutcbe
357. Miss Alexander: Basket of worsted flowers.
358. E K Howes & Co: Pails, tubs, wash-boards, cburns, flour pails and refrigerators.
359. J D Stewart: Knit afghan, fringed edge.
360. Mrs Alexander McBean: Embroidered fire sc chair white flannel blanket, etc.
361. Mrs Mary Hafner: Worsted wreath, in oval f
363. John Nicholson: Horse sboes.
364-365. A L Bancroft & Co: 1 case of 48 volu California Reports and sundry law books; first volumes of Bancroft's "Native Races of the 1 States;" Series—Pacific Coast Readers and Spe Samples: Zincography, copperplate engraving tial and monogram stamping and printing letter-press work.
355. J H Gilmore: G Miller's pstent cottage bee-
357. Pacific Ruhber Paint Co: Samples of rubber
368. A L Bancroft & Co: Zincograpb cbromos, co litbographic views, and samples of maps.
369. Mrs Caroline C De Diaz: Flowers made of scales.
370. Mrs W E Stewart: Worsted wreath, in oval f
371. M Hansen: 2 Shaper Guards.
372. James S Smith: Baby Carriage and Perfs Baby Holder.
373. J B Rollins: Parsons' Improved Washing chine.
374. Dunham, Carrigan & Co: Samples: Mack jectors, Portable Forges, Upright Drills, Tubs Boiler Flues.
375. Carolan, Hooker & Cory: Horse Sboe Nails.
376. Sanborn & Byrnes: Stair Newels and Balu
377. Le Count Bros: Copying Presses, Brushes, celing Stamps, Fancy stationery, etc.
378. W Wainwright: "Champion" Wasbing Machi
379. Adolph Grossman: Patent Scrubbing Brush
380. F M Trueworthy: Improved Patent Ru Printing Wbeel, Rubber Hand Stamps, St Plates and Burning Brands.
381. Wm G Conklin: Improved Bilge Water Gau to ascertsin the exact depth of water in ves hold.
382. California Furniture Manufacturing Co: T Furnished rooms, viz: Dining, Drawing and Cl ber.
383. Bsloun & Stouda: Custom Made Clothing.
384. A F Sberwood & Co: Spring Bsd, Hospital Folding and Spring Cot.
385. Henry Marsh & Co: Parlor Organs.
386. E W Walton: "Montezuma Chief," or Hill I Plow.
387. Scboenfeld, Cohen & Co: Lsrge Spring He Baby Carriages, Flower and Work Stands, Mu Instruments, Toys, Bird Cages, etc, 8 Fol Chairs, Model of Ship.
388. F C M Fenn: Meat Shaver, Vegetable Sl Parlor and Piano Bellows, Twine Cutter, Sad Holders and Polishers.
389. C F Marnedel: Macbinists' and Moulders' T California made Plumb-bob.
390. New York Furniture Co: Revolving Lounge, Parlor Set and general household fu ture.
391. F M Orssebin: Woolen Goods Cleaner.
392. Does & Clark: Road Buggy.
393. Joseph Bros: Mens' Youths' and Childrens' tom Made Clothing.
394. S Farjeon & Co: A Complete Hopkins' Pa Watchmaker's Lathe.
395. Edwin Falkingham: Samples Rocking Horse Boy's Wagon.
396. Carmen Island Salt Works: Specimens of sa
397. Walwood Murray: "Lamb" knitting mach sewing and plating machine, samples of work on tbem.
398. Alex. McKay: Samples of 4 and 6 ply tweed carpet warp.
399. W H Smith & Co: assorted sizes bedsteads mattrasses.
400. Dr Morris Davis (formerly of Davis' Grove, M gomery county, Pa.): "Goodenough" horse s and nails, Mrs N N Dexter's cough medicine and t purifier, Prenties' tubular iron telegraph pole. Tile patent "Centennial" key rings. Town and ce rig bts of tbese articles for sale.
401. Geo M Weatberbee: Gig saw.
402-403. R W Jackson: Abalone shell jewelry and fra
404. L C Mumford: Marston's foot power circular small gig saw.
405. Huntington & Hopkins: Lubricating oiler.
406. W P Martin: Potato digger.
407-408. Crego & Bowley: Ladies 2-seated phae canopy topped pbaeton, doctor's pbaeton, fa rockaway, top and open buggies, sulkies and eton wagons.
409. Geo L Dimpfel: Sbeet music holder, turner stand.
410. Treadwell & Co: Treadwell tbresher and sep tor, header, Hoadley straw burning engine, Ho grain drill, side-hill Scoville plow.
411. Phoebe C Craig: Wax flowers.
412. Mrs. F E Cressey: Buggy robe and "Star" quilt.
413. Mrs C Alden: Wax roses, worsted embrol and tetting collar.
414. J B Ransom: Rag rug, socks, needle work.
415. Mrs R Alexander: Tarletan and wax flow worsted mat and scarf, tidies, crocbet and a basket.
416. S H. Roberts: 24 boxes ruffling.
417. Albert G. Nye: Variety of moss work.
418. Mrs C. Alden: Case of water lillies, japonica 1 crochet sbawl.
419. Emma Hunter, Point Arena: Shell basket.
420. Mrs O A Williamson: Worsted lamp mat.
421-422-423. A S Hallidie: Steel copper and galvan wire sash and picture cord, galvanized telegr wire, Rall'e brass and iron cloth, Rall's galvan wire netting, painted and figured fly cloth, sta etc. Model showing principal of Clay Street Railroad, with Hallidie's gripping attachment use same; model of ropeway for transmitting ores, patent grip pulley for transferring power; wi pulley for iron and steel sash, wire rope clamps,
424 425 426-427. Treadwell & Co: Boulte' wood co moulder and dovetailer, horizontal borer, face la block saw, bolt cutter, drill press, moulders, Cali nia planer and matcher, band and scroll saws, oil 10-borse power safety engine, yacbt engine, sbi machines, hoisting engine, steam gauges, ma gauges witb clocks, injectors, test pump and ga emery grinders, patent gine pot, etc.; a large disp

428 429. Kimball Manufacturing Company: 1 landau—unfinished; 1 Clarence coach, 1 coupelette, 1 double cheribane, 1 covered 4 seat phaeton, 1 open phaeton, phaeton huggies, top, end spring buggy, side bar top and open buggy, and wood spring buggy.
431. Mrs J G Read: 1 Afghan, worsted chair back and seat, 1 chinelle and velvet sofa cushion, velvet slippers, etc.
432. Mrs J H Fuller: Rag and braided rugs.
433-434. Henry Marsh & Co: Smith's Am organ, Chappelle's Alexander organ, telescope organ: Occidental piano, cottage piano, music desks and stands, and case brass instruments; 2 glass cases, H Marsh & Co's musical publications.
435. Mrs O D Alden: Wax work, flowers, "Greek Slave," "Forbidden Fruit."
436. Mrs J C McCauley: Moss work.
437. Mrs T Green: Velvet quilt and white quilted bed spread.
438. S Bierhoff & Co: Samples breeders' scissors and shears.
439. Koehler & Ritter: Display of fine, solid, California made silverware.
440. Jacob Strahle & Co: Billiard and center tables; cue racks.
441. Pacific Wire Manufacturing Co: Bright and annealed market wire; stone, spring, telegraph and tinned wire; tin and solder wire.
442. Mrs L Faulie: Bed quilt
443. Herman Reinhardt: Sifting box bluoing.
444. H Royer: Pulled rawhide belting, lacing.
445. San Jacinto Tin Co: Samples of tine ore and tin.
446. H F Wellington: California garden seeds.
447. Moody & Farrish: California wool.
448. J T Stratton: Blue gum.
449. Littlefield, Webb & Co: California Alden dried fruit.
450. P B Cornwell: Black Diamond coal.
451. Oregon Iron Works: Iron and iron ore.
452. Thos Butterfield & Son: Wool.
453. Pacific Glue Co: Glue.
454. — Yarrington: Rawie.
455. T Duffy: Ornamental rustic work.
456. August Lisewski: Piano.
457. A Crawford & Co: Tahita cotton.
458-459. Pluth & Kitzmiller: Double top phaeton, open phaeton, top and open buggies with side and end springs, business wagons.
460. Cyrus Spaulding: Lamp wick trimmer.
461. Mrs. Alden. Fruit piece in water, silk embroidery in frame, chinnolo and silk embroidery.
462-463. Honsoworth & Co: Imperial photographs in gold frames; life-size photographs, views, imperial water colors, life-size water colors, India ink crayon, life-size pictures, Abrotypes, new styles.
464-465-468-467-468. S F Pioneer Woolen factory: Plaid goods, ¾ and 6-4; honey comb flanneis, cashmeres, water proof goods, scarlet and white; plain flannels, scarlet and white; fulled flannels; opera flannels; indigo and navy blue, cloths and beaver; ladies' diagonals; extra undershirts and drawars—colorsd and white—Assorted overshirts.
467. Mrs Shelley: Glass case, shell, coral, moss and sponge bouquet.
470. S F Pioneer Woolen Factory: Full assormant of blankets.
471. E A Upton: Cut flowers; roses gladiolas and dahlias.
472. Theodore Gidley: Pheumatic thermometer.
473. Price & Tryon: Patent sash elevator.
474. T O'Connor & Co: Assorted plants: Ferns, camelias, magnolia, oloes, dracenas, begouias, lemon trees, seedless orange trees, etc.
475.* G E. Hersey: Improved power sheep shears.
476. F X Kast: Gents', ladies', youths' and children's boots, shoes and slippers.
477. C D Wheat, Agent: Wooden pipe for water and gas, new rule for cutting patterns of all kinds.
478. F I Curry: 1 boller.
479.* Mrs Cbas A Taber: 1 Cradle.
480.* C G Ives & Co: 1 Harrison ranch wagon.
481.* Cook Bros: Match machine.
482.* Opitz & Osgood: Rubber spring buggy.
483.* Elizabeth Barringer: Case of paper dolls.
484. Henry G Henks: 4 cases of minerals and fossils.
485. Geo Haas & Co: Candles.
486.* John Hoey: Sofa bed, music cabinet and basket, hongnet stands.
576. John Hoey: Sofa beds, 1 bed lounge.
577. T H King & Co: 2 sets Sarven wheels.
578.* C W M Smith: Model of marine engine, parlor skates, American and foreign letters patent.
579.* T O'Connor & Co: 20 sheets fern leaf.
580.* J M Miller: Silver show case.
581. E F Lorquin: Stuffed birds, naturalist's work, etc.
582.* Mrs J Kelly: 1 Quilted bed spread.
583.* J F Danzi, Fancy glass signs.
584.* Alice Burrington: Wax flowers and cross.
585.* L Wells: 1 case horse shoes.
586.* Dewey & Co: 1 L A Martin's patent type case, 1 type stand.
587. Coos Bay Union Coal Mining Co: Samples of coal.
588. Giant Powder Co: Giant powder Nos 1 and 2.
589.* Dr A F Evory & Co: Patent gaiter boots.
590. C O Kleeman: 1 India luk sketch of Residence.
591. Gov Purdy: 1 map of expedition through Eastern Africa under Col. Purdy.
592. Misses Addie and Emma Garcier: crayon and pencil drawings.
593.* Wm Cameron: Stamping, pinking and embroidery.
594.* A Feuhousansen: Bottled whisky, bitters, demijohn, rum pnoch, etc.
595.* — Applebee: Australian tree ferns.
596.* Bayley & Son: Forest trees.
597.* D Fish, of Kelsey's Nursery, of Cakland: Collection of new and rare plants.
598.* R B Woodward: Collection of tropical and variegated leaf plants and ferns.
599.* F Luderman: Evergreen trees.
600.* Millor & Sievers: Collection of new and rare plants, cut flowers, case of floral decorations.

Third Entry Book—Numbering 600 to 900.

601. Ackerman Bros: 1 French cabinet.
602. H P Gregory: Steam pumps, mortiser, lathes, etc.
604. J Curie: Model of Root's Wrought Iron Sectional Safety Boiler and an Improved Window Hanging.
606. A Paltenghi: Statuary; Marble Mantel.
607. T G Cockrill & Co: Whisky.
608. B R McPherson: Dr. Price's Baking Powder and Lemon Sugar.
609. S P Taylor & Co: Book Paper, News Peper, Blue Paper, Manilla Paper. (California Manufacture).
610. Henry O Langrehr: 2 Patent Pitch Runners, invented by exhibitor, aged 19 years.
611. Locke & Montague: Moorman's Patent Cast Iron Mantels, Van's Patent Ranges, "Maggie" & "Plantation;" Eureka Range and Warming Oven; Excelsior Patent Refrigerator.
612. Snizbach's Sentinel Boiler Protector.
513. W S Brown & Co: 4 cases California Machine Spool and Skein Silk, Twist, etc.
614. Wm Webmoller: Corrugated Stovepipe Elbows
615. Tubbs & Co: (S F Cordage Co); Rope.
616. Weister & Co: 12 Complete Washing Machines Double Sot Stove Shelves.
617. Dr A F Evory: Diamond Catarrh Remedy.
618. John Renz: Reoz's Bitters and Blackberry Brandy.
619. Hucks, Lambert & Greou: "H & L" Axle Grease.
620. Holmes & Taylor: Martin's Challenge Axle Grease.
621. Geo Hayes & Co: Hayes' Patent Sky-Light and Ventilators; Architectural samples of Galvanized Iron and Zinc.
622. John West: Sewing and Cutting Tables; "Ladies Favorite."
523. Wagnor & Todt: 1 Soda Machine.
624. Gillespie, Zan & Co: Samples Brooms and Brushes.
625. Henry Lake: Shoe Blacking.
626. B Bendel & Co: Parlor, Saisty and Block Matches.
627. H A Cook: 1 Double Belt; Bullion Bags; Fire Buckets.
628. H Williams & Co: Yerba Buena Bitters; XXX Horse Medicine.
629. Standard Soap Co: Washing and Toilet Soaps Washing Powders.
630. M Price: California Manufactured Cutlery.
631. Am Tract Society: Bibles, Testaments and Prayer Books.
632. H Palmer & Co: cases of Port, Hock, Frontignan, and Muscat Wine.
633. Lang & Co: Wine Bitters; Cases.
634. S F *Chronicle*: Stereotype Plates; Matrix.
635. Falkiuburgh & Co: Samples of Soap.
636. E B Smith & Co: Litton Springs Seltzer Water.
637.—638.—639. V S W Parkhurst: Howe's U S Standard Scales. Embracing a variety of Platform, Counter, Gold, Postoffice and Beam and Spring Balances.
640. T. Rodgers Johnson: Military Regalia Goods.
641. Max Bernstein: Wood Carpet, Floor and Wainscoting.
642. A Roman & Co: School Furniture, Blank Books, Stationery, Bibles and Albums.
643. Wm H L Gibbs: 1 Bed Lounge.
644. Rickoff & Clark: Spring Beds, Lounges, Easy and Parlor Chairs.
645. Main & Winchester: Bridles, Lap Robes, Saddle Blankets, Saddle Trees, Harness, Whips, etc.
646. J Browell: Vitrified Sewer and Water Pipe, Patent Chimneys and Tops, Stove Bricks, etc.
647. J Johnston: Sample California Wheat Starch.
648. Mrs E Ewing: "Pearl of Yonth," for the Complexion.
649. J G Hodgs & Co: Stationery, Copying Press and Stand.
650. Kendell, Klinger & Co: Patent Wool Mattresses.
651. Kimball Manufacturing Co: Babcock's Engines and Extinguishers, Fire Trumpets.
652. Lucas Gesner & Co (Golden Gate Plaster Mills): Building, Casting, Dental and Land Plaster; Figur of "Atlas" cast in Plaster; Specimen of Gypsum.
653. Mrs Maxfield: California Hose Suspender and Buckle.
654. Geo H Mixer: Patent Bungs.
655. Consolidated Tobacco Co: Cigars and Tobacco.
656. McMillan & Kester: Syrups, Bitters, Cordials, Essences and Wine.
657. M Freud: Corsets, Underwear, Infants' Robes, Skirts, Busties, etc.
658. Locke & Montague: Parlor Heating Stoves, Improved French Ranges, Van's Patent Nickle-plated Coffee and Tea Urns, Water Coolers, etc.
659. Will & Finck: Samples of Table and Pocket Cutlery, Frame of Bell Hanging Pneumatic Annunciator, Electric Annunciator, Patent Transom Lift.
660. A D Sampson: Case of Jewelry, Case of Human Hair, Case of Silk Imitation Hair.
661. F L Spencer: Potter's Patent Venetian Blind.
662. James T White & Co: American Encyclopedia.
663. S F Steam Brush Factory, R W Simpson proprietor: Brushes and Rattan Brooms.
664. Joseph H Jory: Case, Boot and Shoe Patterns and Designs.
665. Pacific Rubber Paint Co: Rubber Paints.
865. J F Fugazi: "Fountain of Youth" Hair Restorer; Oriental Hair Dye, Hair Oils, Perfumery, etc.
867. B Rosenthal: Turkish Machine for cutting and manufacturing Tobacco and Cigarettes.
668. J J Knowltons: Knowltons' Liquid Bluing; Mucilage, Writing Fluid, Ink, etc.
669. Drs Loryea & Trask: Turkish Goods: embracing mattrasses, towels, pillow, sheets, shoes, pipes and stems, tobacco, etc.
670. Weed & Kingswell: Brass Goods.
671. P J Phillips: Gas Lamps and Stoves.
672. C E Wehn: "Eclipse" Washing Powder.
673. California Vitrified Sewer Pipe Works: Ironstone Sewer Pipe.
674. H F Marsh: Agent New England Glass Co: Cut-Glass, table ware, chemical and philosophical and apothecarys' ware, lamps, shades, red lead and litharge.
675. Mrs L Sorbier: A beautiful display of Millinery Work by Madame Sorbier, embracing all the latest Parisian styles. Madam Sorbier has displayed so much taste in her work, as well as in the selection of her material, that it is difficult to decide as to the merits of each. Of the variety of styles exhibited by her, we are inclined to give the preference to the "Mary Stuart," and think that it will be admired most.
675. McNeale & Urban: Fire and Burglar proof Safes and Vaults.
677. Brittain, Holbrook & Co: Stoves and Tin-ware, Japanned-ware, Reflectors, etc.
678. Polheim & Lancastor: Tallor's goods.
679. J M Bryan: Ranges, cooking utensils of all kinds, toilet sets, etc.
680. Pacific Cordage Co: Rope and cable.
681. Lancaster & Northen: Merchant Tailor's goods.
682. N. Seibert: Patent lubricator.
6-3. Pacific Proprietary Medicine Co: "Elephant" Bitters.
684. W. K. Vanderslice & Co: Silverware.
685. Ornamental Tree Co: Tree boxes and plant guards.
686. W Corfield: California boot blacking.
687. California Bleaching Soap Co: Soaps and potash.
688. S F Gas Light Co: Preparations of ammonia.
690. Bergman Bros: Rockingham, yellow, stone and earthen ware; Terra Cotta roof and flooring tiles; fruit jars.
691. Lewis & Marden: Scrubbing Brush, Mop and Wringer combined.
692. Bryant & Taylor: Burglar and Fire Proof Safes and Vaults; Combination Locks, etc.
693. J Grey: "Star" Spring Beds.
694. E Detrick & Co: Bags, Small Fancy Tent.
695. Jonathan Begg: Cones and Ornamental Rustic Arbor.
696. Mrs Philip Quigley: Spirit Levels.
697. W F Palmer: Edge Tools.
698. J S Hittell: Patent Rein Holders.
699. John B Owens: Iron Stone Sewer Pipe, and Fire Brick.
700. Teubner & Hoffman: Samples Metal.
701. Wm S Moses: Patent Safety Catch Marine Look.
702. John S Hittell: Book—Brief History of Cuiture.
703. Warner & Silsby: Furniture and Mattress Springs.
704. Thos McKibben: Wheel-barrow.
705. Miss ———: Crayon, "Mother and Child."
706. Schulz & Fischer: Silverware and diamonds.
707. Jacob Unna. Feather dusters, horse plumes, street and stable brooms.
708. Mrs H Stettin: Stamping and embroidery.
710. Swan Brewery Co: Brewers and bottlers; exhibit pale ale, XXX ale, brown stout. Brewery, corner Fifteenth and Bryants streets; Cutting & Co., agents.
711. California Powder Works: Samples of powder.
712. Fulda & Sons: Large oak wine cask, oak cask of spirit and steamed lumber, wine rank, etc.
713. S Lachman & Co: Assorted wine.
714. Osgood & Stetson: Ranges, stoves, tinware, copperware, ship lanterns and office ventilators.
715. J A Robinson: 2 chair seats, 3 pair slippers.
716. Standard Manufacturing Co: Baking powder.
717-718. California Chemical Paint Co: "Averill chemical paint," "Pacific metallic paint," samples of graining.
719. Wm R Smith: Jars of crystallized fruit, jellies, peach, honey, etc.
720. S & G Gump: 1 mirror.
721. Sweetzer & DeLoog: Apple cider, vinegar.
722. Eugene Lunt: Model steam engine.
723. August Junghint & Co: Billiard and pool tables, fancy cut rack.
724. Hueter Bros & Co: Varnishes and brushes; wax flower material.
726-727-728. C Newman: Newman's patent elastic demijohn, boxed demijohns, patent process for flattening rattan, bare demijohn; plain, druggists glassware; amber glassware; fruit jars, private mold with trade marks; large crucibles, large blow pipe; mould clamps with tools and stand.
729. Sol Wangeheim: Bottled and canned goods.
730. Mrs G W Cowles: Millinery goods.
731-732-733. G W Swan & Co: Dental machine, mirror and picture back board; office boxes, coin trays, fruit chests, delivery boxes, card racks, butter and lard chests; miter, pin and lock corner dovetail boxes; crates, cheese drnius, bottle covers, etc.
734. Locke & Montague: 2 Eureka ranges, coal hods, toilet ware, kitchen utensils.
735. Jacob Zech: 2 pianos for Palace hotel.
736-737. Gibb & Co: White lead, varnishes and brushes: Egyptian cement (for mending everything.)
738. E T Memony: Cement pipe.
739. John H Myer: Fancy glass work.
740. J Kittredge: Fire and burglar proof safes. music.
741 742-743. S F Pioneer Woolen Factory: Flannel and waterproof overskirts; scarlet Havre overshirts; blanket coat; scarlet, blue, grey, plaid and plain shawls; full assortment blankets, buggy robes, etc.
744. I L Merrill: Covering for boilers and steam pipes: soap stone, pulverized and crude: Steatite paint; fire brick for stoves and furnaces; tale asbestos.
745. B H Freeman & Co: Samples court and stair work; railings; Newells and varieties of woods finely polished and used in Palace Hotel.
746. Samuel Gray, Santa Cruz Tannery; Leather.
747. Gen. G. W. Deitzler: Samples Aiden dried fruit and vegetables.
748. Prescott, Scott & Co: 1 horizontal engine; 1 upright engine and boiler; 1 baby hoisting engine; set, cut spur, and bovel gears.
749. Gray & Noyes: Quartz and mineral ore pulverizer.
750. R B Woodward: Band wagon.
751. — Casebolt: Balloon street car.
752. Savage & Son: Ranges, mounted grates, pipe and fittings, ornamental vase, radiator and dinner bells.
763. Nelson & Doble: Case of cast-steel tools.
754. F C Pomeroy: Case of hand made ivory trinkets.
755. Mrs H A Moore: Samples of hair producer.
756. J A Plummer: Samples from Crystal salt works.
757.* C C Kleemann: 1 portrait.
758. Chenery, Souther & Co: Cedar Run Bourbon whisky, Sevilla orange bitters, Dr. Abernethy's ginger brandy.
759. Indianapolis Chair Manufacturing Co: Chairs, step-ladders, etc.
760. Renton Coal Co: Samples of coal.
761. D Jones: Opera glass.
782. S P Randolph, Improved tooth for saw plates and rotary cutter.
763. Chas C Farciot: Safety pump and partial condenser combined, model steam pump, balance slide valve, etc.
764. B Goldman: human hair work and hair dyes.
765. L Fish & Co: Knowles' patent steam pump; extra heavy mining pump, Clapp & Jones' steam fire engine, Ferris & Meyers' planer, steam hammer and upright drill, Hawkins' blower, Waters' governor.
780. Bryant & Taylor: The "Yale time lock."
767. Theo Gruenhagen: Air castle.
768.* Miss Mary Dailey: 1 afghan.
769.* Mrs A S Bradley: Worsted toilet set.
770.* Mrs James Daley: 1 hair wreath.
877. W H Burton: Hair felting.
885.* Womens' Missionary Society, M E Church: Fancy needle work.
886.* W P Harrison: Samples printing.
887.* Maynard & Jones: Boots and shoes.
878.* Mrs J H Nevins: 2 hets made of pine leaves.
879.* R J Trumbull: Seeds, plants, rustic baskets, etc.
880.* C N Crittendon: Hale's honey of horehound and tar.
881.* Henry Waes: Oak and sugar pine bungs, turned work, etc.
882. Henry Waas: Rosewood faucets with brass and wood keys, corking machine, bung starter and embroidery frame.
883. S L Basey: plated ware, fancy goods, wax figures, dolls, etc.
884.* H Edwards: Roots of California pitcher plant.
888.* Capt S Johnson: Model of ship.
889.* Mrs Eliza Donahue: 1 quilt.
890. Wm Lynch: Ventilating and illuminating tile.
891. Union Wire Mattress Co: 1 bedstead, wire mattresses, hair mattress, bed comfort, chairs, hospital bed, etc.
892. Herman Reinhardt: Combination belt punch.
893. S C Gray: Samples of Santa Cruz sole leather.
894. Mrs F. McKennea: 1 frame worsted flowers.
896. Mrs M H Lewis: Case of moss work.
898. Joseph Green: Case of California manufactured silk ribbons.
897. L. Bonstel: Glass case containing specimens of blown glass, choice selection of shells, crustaceans and sea weeds, all from Pacific coast; collection of ancient coins, 2 Chinese swords, box of Alaska bird eggs. The above curiosities can be purchased at private sale in the Pavilion.
898. Mmo Morrow: Royal chart.
899. Osborn & Alexander: Mechenics' tools, amateur lathe, iron mitre box, scroll saw, and tub, washer and wringer.
900. R C May: Combined mop.

TOTAL NO. OF ENTRIES.....627

Unseaworthy Ships.

Under this heading the London *Monetary and Mining Gazette* of August 7th, says:

Some important amendments were made on Thursday evening, in the Unseaworthy Ships bill, when it received substantially its final shape. It was read a third time last evening, will be sent np immediately to the House of Lords, and in a few days will receive the Royal assent. It will he recollected that in committee a clause was adopted making it compulsory, when more than one-third of the cargo of a British ship consists of any kind of grain, to carry that grain in bags, or by means of bulkheads, or otherwise, to prevent its shifting. Although several amendments were proposed to this clause on Thursday, no material change was made in it. Besides this clause, the government accepted in committee the principle of a load line, promising to bring up a clause on report embodying that principle in a form more satisfactory than that proposed by Mr. Norwood. It also accepted a clause making it penal to send or take a ship to sea in an unseaworthy state. We congratulate Mr. Plimsoll on this substantial triumph in a cause which he has sustained single handed for so long a time. We say single handed advisedly, for notwithstanding the favor with which his efforts have been regarded by the country, he alone has been the champion, and the press and the public have but stood round to applaud and encourage. The victory has been attained, and the dauntless champion must have all the honors. We cannot refrain from re-echoing the noble words of John Ruskin, and we are assured that that independent and patriotic Briton will not accuse us of plagiarism, when we request of the British nation "permission to convey their thanks to Mr. Plimsoll, for his christian, knightly and valiant stand made against the recreant English Commons, on Thursday, July 22d, 1875."

Cheap Coal.

Coal has always been a pretty expensive article in San Francisco, and it is only within the past few years that any attempt has been made to furnish it at a reasonable price. Now, however, it is possible to buy good coal at $8 per ton, by owning stock in the mine which produces the coal. There are, in this city, a few companies doing business on this basis, who furnish coal to stockholders at $8 per ton, with the charges for delivery added. The Coos Bay Union coal mining company is one of these.

The plan adopted to furnish cheap fuel is simple. The company offers for sale 2,000 shares of their capital stock, at the rate of $30 per share, in gold, payable in six monthly instalments of $5 each. The holder of each share of stock, for each and every share which they may severally hold, is entitled to receive on the wharf or company's yard, in San Francisco, one-half ton of screened coal per month, at $8 per ton of 2,000 pounds, payable in gold coin. Should they want the company to deliver at their respective houses, the cost for delivery is charged according to the distance to be hauled.

The usual cost to consumers of Coos Bay coal is $13 per ton. It will be seen that a family using six tons of coal per year will save more than the cost of a share of stock in one year; and in addition thereto, they will be entitled to their pro rata of the dividends declared by the company. The company does not furnish sacks to those doing their own hauling. At the expiration of five years the shareholders have the option of returning their several shares to the company, and receiving therefor $30 worth of coal, at the rate above mentioned. The stock issued to purchasers is unassessable, and subscribers are entitled to draw coal from the date of the first payment.

The property of the company consists of 640 acres of coal land, in Coos county, Oregon. The title is U. S. patent. On the land there is an abundance of good lumber, principally white cedar and yellow pine, sufficient for the requirements of the mine and a large surplus for sale. A railroad has been constructed from the wharf at Coos bay to the mine. There are on the property, in sight, four distinct veins of coal, from five to six feet in thickness respectively. The mines can now deliver over one hundred tons of coal per day.

No extensive hoisting works or pumping gear is required. Two-ton cars are run into a long tunnel, there loaded and the coal delivered on board the vessel with one handling. The company have several vessels bringing coal to San Francisco. Coos bay coal is so well known here that it would be superfluous to say much of its qualities.

The coal is bright and of excellent quality, containing more than the usual quantity of carbon. It burns free, leaving no clinker, and much less than the usual quantity of ashes and soot. It is admirably adapted for household purposes and for steam.

Saw Making in California.

The Pacific Saw Manufacturing Company of San Francisco, has now been in operation almost nine years, and opened out a very important mechanical enterprise.

The extraordinary size of the forest productions of California has naturally led to the employment of saws of very large size. As the saws increased in size, the care in their manufacture, necessary to secure a perfect run and rapid feed, has increased in a doubled ratio. To keep pace with this augmented demand, both as to quality and quantity in this line, this company has secured the most perfect machinery and best skilled workmen to be found in the trade. The raw material is obtained from abroad, and consists of the very best cast steel that can be procured. That used for circular saws is imported in circular pieces. The material for all other saws comes in the rough, uneven and as unlike the beautiful polished surfaces exhibited as can well be imagined.

The art of turning and tempering huge circular saws is a very difficult one. Great care is taken in performing this difficult work to its utmost perfection, and they have succeeded greatly in this specialty. The process of the manufacture of the movable teeth, although carried on at this establishment, is quite a separate business.

Spaulding's patent movable saw teeth have almost entirely revolutionized the business of large mill saws, and added greatly to the economy and capacity of the instrument. The casual observer cannot fail to see with what simplicity these teeth are made and how easily they can be replaced.

The company also manufacture reaper and mower sections, planing knives, curriers' knives, saw mandrels, etc. Saws of any description or size can be made to order if desired. This manufactnre of saws is a home industry, which, we believe, is receiving the support it merits from the community.

NORTH CHIPMAN.—This is another of the old mining locations of the Comstock belt, which, in the hands of live men, with plenty of capital and energy, is now being brought into deserved notice, through active operations towards its practical development. It lies on the east range of the Comstock, a short distance east of Gold Hill, and a few hundred yards south of the Europa.

MINING AND SCIENTIFIC PRESS.

W. B. EWER.....SENIOR EDITOR.

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San Francisco:
Saturday Morning, Sept. 4, 1875.

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ANOTHER GRAND SUCCESS.—The present fair of Mechanics' Institute has now been open about three weeks, and during this time the receipts have even exceeded those of the corresponding period of last year. The highest degree of satisfaction is manifested by all parties, visitors, exhibitors and officers of the Institute. The conservatory or horticultural department still holds its own in attractiveness. A visit to this exhibition enters in the programme of all who come to San Francisco, and in many cases it is the special object of the visits now being made from different parts of the State.

THE Silk Association of America have made up a comparative table of the imports of manufacturers of silk at this point, in August, from 1758 to 1875 inclusive, which shows a total gold value of the imports for the past month of 2,850,789. This averaged well with the last five years, and is a considerable increase over August, 1874. Of the 482 bales received 65 came from England and the Continent, 313 by the overland route and 48 by Panama. This represents nine-tenths of the whole imports, from which the Government derives about a million dollars duties.

THE Nevada *Transcript* says that quite a large force of men and horses have been put to work on the tunnel near the toll house, on the Grass Valley road. On all other parts of the route the work is being crowded. The prospect is very good for the entire completion of the work and the cars running into Nevada city by the 1st day of November.

A DISPATCH from London, under date of the 31st ult., says that the steamer *Faraday* had recovered the eastern end of the direct cable, and is in communication with London. Unfavorable weather retards the recovery of the western section.

THE Secretary of the Treasury has decided that hewn pine timber, commercially known as squared or sided, is subject to duty at the rate of one per cent. per cubic foot, and twenty per cent. ad valorem, as heretofore held by the department.

SUTRO TUNNEL.—Face of header in porphyry and clay, which has to be kept very carefully timbered and looked out for. Total length of tunnel 10,645 ft.

ENGINEERS are at work surveying for a narrow gauge railroad between Newark and Santa Clara.

THE Mechanics' Institute Fair has proved successful thus far.

The Financial Situation.

In the last issue of the MINING PRESS we briefly mentioned the failure of the Bank of California. Twenty-four hours later came news of the terrible fate which had overcome the deposed President, Wm. C. Ralston, who was drowned while bathing. In the fearfully impending panic people made a spasmodic grasp for their deposits in several other banks, and one, the National Gold Bank and Trust Co., supposed to be intimately connected with the Bank of California, was compelled to submit to a temporary suspension, and the Merchants' Exchange Bank did not open its doors on Friday morning. It is true an electric shock was felt in all business and trade circles, from the highest to the lowest; and it is also true that when the news of Mr. Ralston's tragic death flashed through the city, all money considerations seemed at once to be laid aside, and the noble sympathies and tender feelings of San Francisco were manifested in generous pity; and the honors that were paid to the dead banker, in the grandest and most impressive funeral that ever occurred in California, cannot be considered as offerings to wealth and power, for all know that he died penniless and powerless. San Francisco did herself great credit in this.

She has also done herself great honor in the way in which her people with stood this financial crisis. No matter though the business of the country is in a sound and healthy condition, very serious consequences would have ensued had the people yielded to excitement and alarm even to a degree that the circumstances of the case would seem to have warranted. A fearful after clap in the form of commercial failures might have been expected, resulting from losses of money in some quarters and loss of confidence in others; but suppositions of this character are now merely laughed at or receive no consideration. A strong feeling of hope and confidence is manifested, and we see no indications of a disposition to crowd or "apply the screws" to creditors. If we accept the slur cast upon our "way of doing things," implying that such a failure could not have occurred in any city but San Francisco, we certainly have the right to claim that no other city would have displayed the same courage and skill in averting a seemingly impending commercial crash.

As sad and serious as this financial drama has been, and though people have merely had time to comprehend and fit themselves to the present situation, ludicrous episodes are already claiming the attention of the community. The most conspicuous of these is the remarkable fact that nearly every man who now fails to meet his obligations, had a large amount of money deposited in the Bank of California. This trick, however, will soon get "too thin" to be of any avail. In conversing with a shrewd business man on the probable consequences of the great failure, he remarked that he did not believe one legitimate failure would result from it; but that it might be expected that some who *wanted to fail* would make a pretext out of it, either that they had lost heavily by the bank's failure, or that their creditors were crowding them in consequences of it.

Another ludicrous failure already discernable is the, "I told you so" brigade, composed of representatives from all classes, journalists being especially conspicuous, who now declare that they knew that this would happen, and had warned the public accordingly; but seeing that people were joined to their idols and were not educated up to the requisite standard they let them alone.

On Tuesday last at a meeting of the Directors of the Bank of California it was decided to resume business again, and for that purpose $5,000,000 were subscribed, $1,000,000 of stock being taken by each of the following gentlemen: D. O. Mills, Wm. Sharon, Michal Reese and J. R. Keene, and $1,000,000 is to be made up by small subscriptions. It is supposed that all arrangements will be perfected for beginning business again within ten days. This action on the part of the Trustees will meet with general approval. The Merchants' Exchange Bank resumed business to-day, and the National Gold Bank and Trust Company will do so by Monday next. The latter institution is especially deserving of praise for the noble stand made by it on the afternoon of Thursday last. Their hour of closing was an hour later than the other banks, and yet the officers put a double force of tellers at work when the run commenced, and at four o'clock when they closed their doors had paid out over $800,000.

The banks of San Francisco generally were never on a more substantial footing than they are to-day, and we believe their financial condition is sounder than the banks of any other city in the Union. The outlook which one week ago was so dark and threatening is now bright and hopeful.

J. S. PHILLIPS, M. E., of this city, has recently started for Colorado Territory, to examine some discoveries recently made there in the way of deep placer mines, coal and gold and silver ledges. Mr. Phillips goes out in the interest of certain European capitalists, who will open up some heavy works in that region, should he be able to make a satisfactory report.

THEY talk of establishing an academy at Healdsburg.

Short Lectures on Patents.

No. 13.—By J. L. BOONE, of Dewey & Co's. MINING AND SCIENTIFIC PRESS Patent Agency.

Licenses.

A license is given by the patentee when a person desires to purchase from him the privilege of making or selling the thing patented. The license may empower the licensee to manufacture only, or it may empower him to make and use without confining upon him the privilege of selling. It can also empower him to sell without the additional privilege of manufacturing, this latter privilege being generally conferred under the title of *agency*. Any right disposed of under a patent which does not alienate the entire title of the patentee in a portion of the territory covered by the patent is termed a license. A license may be limited, or it may be exclusive. A limited license can be a simple shop, or farm right, or it can be made to include a special area of country. A patentee can dispose of as many limited licenses in one neighborhood as he pleases, but where the license is exclusive it has all the effect of an assignment inside of the territory covered by the license, and the patentee cannot dispose of any other rights inside of that territory. The only difference is that the licensee cannot maintain a suit against an infringer, but he must call upon the patentee to protect him in the enjoyment of his exclusive license in case another should infringe his rights. If a licensee exceeds the bounds of his license, he can be prosecuted as an infringer. A license is not a recordable document, that is, it cannot be recorded in the Patent Office at Washington, but it should be recorded in the clerk's office of the county in which the licensee resides and carries on business. This latter is for the protection of the licensee in case he should lose his license, document, or in case it should be destroyed by accident. An agent is usually appointed by the patentee when the privilege granted is to sell the manufactured article, but the certificate of agency unless it expressly gives the agent the privilege of manufacturing would not empower him to do so, and in this case the certificate of agency would be converted into a license. A patentee may appoint an agent to sell rights under his patent, or he can empower him to do so by giving him a power of attorney. In the former case the agent would only have the power to make contracts and submit them to the patentee. The sale or transfer would in that case have to be consummated by the patentee himself, but in the latter case the attorney would by virtue of the power given him be privileged to consummate the sale and sign the patentee's name to an assignment or license transferring the right without consulting the patentee, and his signature would bind the patentee. In giving a power of attorney to another the patentee should be careful to state the minimum price which his attorney is to receive for rights, otherwise the attorney could dispose of the patent for a mere nominal sum, and thus defraud the patentee of his invention. Too great care cannot be taken in drawing up these documents, for often the want of a single word, or the failure to observe a single formality proves disastrous to the patentee. Every power of attorney should be acknowledged before a Notary Public or other authorized officer, and it must be recorded in the Patent Office before the attorney completes a sale, otherwise the Patent Office records will not show the authority under which the attorney acted, when the assignment given by him is presented for record. Patentees should beware of a class of persons who make it a business to solicit agencies for disposing of their patents; especially when the solicitors require the payment of a sum of money, usually five or ten dollars in advance, ostensibly to cover preliminary expenses. These solicitations are usually made with a grand flourish of trumpets and a profusion of nicely printed circulars which are well calculated to win the good opinion of the patentee. In most cases should the patentee accept the proffered aid and advance the small amount required he is very sure to receive no benefits therefrom, while he is sure to lose the amount advanced. There are a few such agents who actually do advertise inventions placed in their hands to the full amount of money thus advanced, but where one person or firm is acting as the agent of so large a number of persons as this class of agents generally do, it is impossible for it to bestow much time on any single invention. Their plan is to place the models furnished them by inventors upon shelves where they can be examined by persons who desire to invest in patents, and if an intending purchaser should discover amongst the models on exhibition, one representing an invention that he desires to purchase the agent will sell him the right, but further than this they do not go. It is far better for the patentee to place his patent in the hands of some well known energetic person, with whom he is acquainted, and who will give it his personal and undivided attention. It is usually the most profitable for a patentee to sell his invention by counties. Such sales do not eat up the profits in traveling expenses like selling out in shop or farm rights, while the aggregate receipts from all the counties in a State are usually more than any single individual will pay for the entire State right. No fixed rule, however, can be laid down, while one invention requires to be handled in one way another requires an opposite treatment and each patentee must be his own judge as to the best means to realize from his invention. If an inventor intends to sell his invention by licenses, it is always better for him to have a number of blank licenses printed for his especial benefit. It gives his sales an appearance of solidity, and looks business-like. However a written license will answer every purpose, if the inventor prefers to make them in that way.

Electro-Plating.

Plating articles of inferior quality with gold or silver, is one of the most useful and beautiful of arts. It is largely practised in San Francisco, and no one does it better than Edward G. Denniston, proprietor of the San Francisco Plating Works, Nos. 653 and 655 Mission street. Mr. Denniston has shown us specimens of his work, including table ware, watches, jewelry, cutlery, door plates, numbers, articles of *vertu*, etc., all plated with gold or silver, and executed in the highest style of the art.

In addition to the articles above mentioned, we notice a mammoth silver amalgamating plate for mining purposes. This plate measures about 6½ by 4½ feet in area, and is, we believe, the largest piece of electro-plating ever produced in the world. Mr. Denniston makes a specialty of this kind of work. Until quite recently plain copper plates have been merely covered or "amalgamated" with quicksilver for such use; but practice has proven that silver electro-plated copper plates are much superior, and their use results in a much larger saving of gold. Some report the saving at double that which can be obtained from the ordinary plates. This combination of copper and silver causes the quicksilver, and consequently the gold, to adhere to the plate much more tenaciously, and consequently saves much of the gold that is washed away by the rush of water and friction of sand on the ordinary silver plates.

Mr. Denniston has a mammoth vat fitted up especially for this work, containing about seven hundred gallons of solution, so as to be able to turn out plates of any desired size. The copper of which these plates are made, is covered very heavy with silver for this especial purpose; a much heavier coating being deposited on them than on ordinary table ware, etc., a matter required to meet the extraordinary wear to which they are subjected. Generally one ounce of silver is deposited upon every square foot of their surface, although less is applied, and of course at reduced cost, whenever it is required.

By this art a set of ordinary britannia tableware may be made to look as gorgeous as though it were solid silver; or any ordinary article of table ware or *vertu* may be converted into the outward appearance of solid gold, at a comparatively trifling cost. Silver watches and jewelry are also plated with gold. Samples are shown as they appear both before and after being gold plated. Articles are plated light and heavy, to suit customers. Over two thousand gallons of solution are kept constantly on hand at this establishment, which is the most extensive and complete of anything in this line on the Pacific coast.

Gilding by galvanic action was produced as a laboratory experiment, as early as 1805; but it was more than thirty years afterwards, or about 1835, that this interesting process was formally applied to the arts, substantially as now done. As it may interest some of our readers to learn how this interesting process is accomplished, we append a brief description as follows: For costing articles with silver, a bath is made consisting of one part of cyanide of silver, to two or three parts of cyanide of potassium, dissolved in about 150 parts of water. The article to be plated is made the negative pole; and the plate of silver from which the plating is derived is made the positive pole, both being connected by suitable wires with a galvanic battery of an intensity suited to the amount of work to be done. The silver when deposited upon the article to be plated has a dead, silvery appearance, and wherever luster is required, it is brought out by a suitable application of polishing appliances. Great care is taken to have the articles to be plated thoroughly cleaned by acids, and rinsed in clear water. Every particle of grease or corrosion must be carefully removed, or the plating will not adhere. Any thickness of metal may be given according as it may be desired, by keeping the article in the bath for a longer or shorter period. From three to six hours is the time usually employed. For silver, one-half an ounce to a square foot forms a very suitable plate.

In gold plating the double cyanide of gold is employed in the solution, instead of the cyanide of silver as above described, while the positive pole consists also of a plate of gold.

Paper and other fibrous materials may be electro-plated by first rendering them good conductors of electricity. This may be accomplished by immersing such articles for two or three hours in a solution of nitrate of silver, with ammonia added, until the precepitate first formed is entirely dissolved again. After this immersion, the articles are thoroughly dried, and then exposed to a current of hydrogen gas, by which means the silver is reduced to a metallic state, and the articles are rendered sufficiently good conductors to be electro-plated in the usual manner. Fibrous articles so prepared are as yet considered as mere curiosities, although the art is a beautiful one, and one which might be utilized to much advantage in the way of ornamentation.

American Supremacy.

So fsr as can be determined with regard to the comparative resnlts to be reslized from the scientific parties sent ont from the various nations to observe the transit of Venne, the American parties were extremely fortunate, and more successful than those of any other country. Her choice of stations was excellent; the localitiee affording remarkably favorable weather, whilo the choice of methods employed seems also to have been snperior. Our partiee relied on the Halleyan method and photography, which were very successful; while the Delislean method, adopted by Grest Britain, fell short of anticipations, and quite failed in Nsw Zealand.

In mechanical appliances, also, America is just now making rapid etridee, not only in rendering herself indepeudent of Europe, but also in competing with England—heretofore the great workehop of the world—for the sale of mechanical products in various foreign countries.

The British saw trsde in this country is completely extinguished. The general trade in steel is also trembling in the balance. Sheffield is no longer a particularly formidable rival for our manufacturere in this line. In the finer qualities of steel, for cutlery, drilling tools, etc., the Americans have for a long time held the ascendancy. American razore are now nowhere excelled, while throughout the oil regions of Penneylvania not a pound of foreign steel is nsed for the toole employed in boring wells; where the resulting cost of breaking a drill is so large aa oftentimes to involve the utter abandonment of an expenaive well. Hence price is there nothing as compared to quality, and operators employ that kind of steel which experience has proven the moet durable. Cheap steels are now just as much the staple product of America ae of England.

The file trade is another instance of Americsn supremacy, having become so by the adaptation of machinery in this conntry for the hand labor of Europe, which hae brought to pretty near an effectnal end the sales of Sheffield files in this conntry. In the pocket-knife trade the Sheffield makers are still doing a good business in this country; hnt that will soon he ewallowed up also. The keenness of Americon competition in Canada and South America is also exercising a diaaatroue effect on the Britiah manufacturere. In the latter country the American axe and mining shovel is coming into almost nniversal nse.

The American axe has for msny yeara held an acknowledged snpremacy the world over. Five thoneand of theae pioneer implements were recently sent to Norway hy a Pittaburg firm, being preferred there to any other make. A late correspondent of the London *Times* writing from the South African gold golds, saye: "No one here will look at an English axe; it was the same at the diamond fields, and also elsewhere."

In the mannfacture of both iron and steel rails America is now independent of Enrope. It ie to the recent and wonderful development of the iron trade of this country, more than to any other one thing, that the present depresion in the English iron trade is due. The London *Mining Journal*, in alluding to this fact, eays: "We are not altogether clear that the almost complete loss on our part of tho American outlet for our iron must not be regarded aa permaneut."

Barrancas is reported free from yellow fever.

Tool for Undergraving and Clinching Horse-Shoe Nails.

C. R. Donner and C. F. Subl of this city, have iuvented a pecnliar tool which they have recently patented through the sgency connected with this office. It is intended for undergraving and clinching horse-shoe nails. "Undergraving," is a fitting for the ends of naile which project through the hoof of a horse after faetening the shoe, so thst it will uot be necee ary to use a file as is ordinarily done, and the grooving or marring of the hoof is thus avoided. On the tool ie another device by which the nail may he folded down into the groove, and thus clinched without the nse of a hammer. The accompanying engraving showe the appearance of the hoof with the nail driven through, the groove for the nail, and the nail after it is clinched.

The implements with which theee objecte are accomplished, ie an addition to an ordinary pair of forceps. Upon one of the handles is fixed a eteel plate, one end being elotted transversely, so that the plate can be moved in or out. A sliding socket is fitted to be placed on the handle, and hetween the two lugs the graver and a flattened, corrugated or roughened plate (formed in one piece,) are hinged. The graver is a scoop shaped chisel, made sharp at its end, and when the forceps are closed, this graver projects from one side of the handle, and is retained in tbat position hy allowing the end of the plate to enter a elot between the plate and the handle, and this holds the graver

Improved Method of Clinching Horse-Shoe Nails.

steadily while the forceps are grasped by both hands, and the grooves cut in the hoof below the point where the nails come through. The grooves being all cut, the handles are opened, and the roughened plate turned outward, this carrying the graver into a slot in the socket, between the sides of which it lies. Notches are cnt in the handle and the edges of the graver, thns holding the socket, and preventing it sliding on the handlo dnring the operation of clinching the nails.

This operation is performed hy simply opening the handles, and placing the roughened plate beneath the hoof. The edge of the steel plate is then placed above the projecting point of the nails, and hy closing the handles the nail will he bent down into the groove already cnt, where it lies nearly flush with the hoof, and needs hut little, if any, finishing with the rasp.

The traneverse slot before mention has a screw passing through it. By loosening this screw the plate may he lifted nn a little and a short iron which projects below it may be allowed to drop into either of the holes made in the handle for its reception, after which the screws may be tightened. This arrangement allows the plate to be adjusted to fit it to large or small hoofs.

The inventor states that hy means of this device the necessity of filing the hoof is obviated. Some horses are very tender footed and the rasping and hammering hurts them. When the nail ie clinched it gives them great pain. A small hole about an eighth of an inch long and sn eighth of an inch wide is made by the graver and the other device clinches the nail into this hole and leaves no end out. The foot is not bruised by this method of clinching. No unnecessary portion of the hoof is filed away and no ring is made around the hoof by the rasp. If a shoe comes off on the road a farmer or teamster can, with this tool, remedy the evil without the aid of a blacksmith. Any one can learn to nse it and shoe his own horses. Chas. Donner or C. F. Subl, corner of Commercial and Drumm streets, San Francisco, will answer all enquiries concerning this implement.

Rock Drills.

Of all machinery at the Mechanice' Fair, the rock drille attract the largest shsre of attention. These implements, being used mostly in mining work, are operated where the general public have very little chance ever to see them. People generally have very vague ideas on the subject of mining machinery or mining work, and they feel interested when they are able to see machinery of this class in operation. Every afternoon and evening, while the drills are being run, crowds of people stand about and watch their operation, wondering to see the bar of iron go pounding into the solid block of granite like an auger into soft wood. The details of the operation of the different drills, of course, are of little interest to the many, although miners and those interested in mines naturally have their preferences for a particnlar kind. There are no diamond drills exhibited at the Fair, those shown striking rapid quick blows and running at a wonderful speed. To many it is a matter of snrpriso to see how rapidly they work, and they are somewhat puzzled to understand what runs them.

If we say steam, everybody has some idea of the process, hut the idea of compressed air as a motor is not so familiar. They see no steam jet, or blow off, or indications of steam at all, yet the drills work away rapidly, boring into the rock with marvelous speed, and with very little labor on the part of the attendant. The method of working is simple enough. Air compressors, aa they are called, are run by steam, and compress air into large boiler-like tanks until it reaches a pressure of from 50 to 70 pounds to the square inch. The air is then allowed to pass through pipes and strong hose from this receiver to the drills. These drills are provided with valves and appropriate mechanism so that the compressed air operates them as steam would an engine. They can also be run hy steam if necessary.

The reason why compressed air is used, however, in preference to steam, is that it may be conveyed a long distance in pipes at a much less loss of power than in the case of steam. Moreover, the cool air forced down to the drills in a hot mine, when used hy the drill, is exhausted in the mine, where it tends to cool and purify the atmosphere and furnish better air to the miners. The drille, too, are easier handled than when run hy steam, so that compressed air is now used almost entirely in preference to steam.

On this coast, where mining machinery is in so much demand, a great deal depen e on the cost, construction, durability and pattern of a drill. There are, accordingly, different opinions on the subject of the best drill, and as there are many competitors in the market, there is a correeponding difference of opinion. Among us on this coast, however, only a few of the many patterns inveuted are in use as yet, but this year several new candidatee for favor appear. Some of these have been tried in the Eastern States and have their records to prove their claims to popular favor. Others, again, are as yet untried practically for any length of time in real hard mining work. The excellency of a rock drill hy no means consists alone in its ability to get through a piece of rock of certain dimensions, at a greater speed than a rival. It must stand the test of continued work, ho simple in its parts, easily repaired and not liable to get out of order. It must be convenient to handle and not consume too much air. One drill may do more work in a given time than another, yet cost more to operate than one which does the same work more slowly. Economy of operation is a great point which has to he taken into account. The drill must, moreover, he of such construction as not to shake itself to pieces in a few months, although the strain upon a machine of this kind is very great, the repeated solid blows tending to jar the parts much more than ordinary tools are calculated to stand.

All the rock drills nsed are made to rotate slightly at each stroke, so as to give a new cnt-ting plsce for the sharp edge of the drill. Each time the blow is struck, the drill itself rotates, though so little as not to he noticed by the casual observer. The drill is "fed" into the rock hy the attendant, who turns a small crank at the upper end of the rock drill, which moves the drill forward into the hole it is working.

GENERAL VIEW OF CARS AND DUMMY ON CLAY STREET RAILROAD, S. F.

View of the Clay Street Railroad.

We give on this page a view, recently taken, of cars and dummy on the Clay street railroad in this city. In our issue of September 27th, 1873, we gave a full description of the working of this road. It has proved a success, and to-day is the most popular street railroad in San Francisco. It is excellently managed, and its extension is soon contemplated as well as the adoption of the principle in other streets of the city.

J. H. Culver, the efficient Secretary of the Mechanics' Fair, has received blank applications for space and other information in regard to the Centennial Exhibition at Philadelphia in 1876. Mr. Culver is authorized by J. Dunbar Creigh, Centennial Commissioner for California, to issue the applications to persons desiring to exhibit there.

The Petaluma *Argus* says that work on that end of the Sonoma and Marin railroad is progressing favorably. The line is nearly all graded between the Haystack and Novato and a large force is at work south of the last named locality.

The Assistant Treasurer at New York has been directed to sell $4,000,000 in gold in September, $1,000,000 on the first, third and fifth Thursdays, each, and one-half million on the second and fourth Thursdaye, each.

The Wilmington *Enterprise* says that the channel has already been materially improved hy the work of the Government dredge on the bar.

Banking.

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4v27tf G. MAHE, Director.

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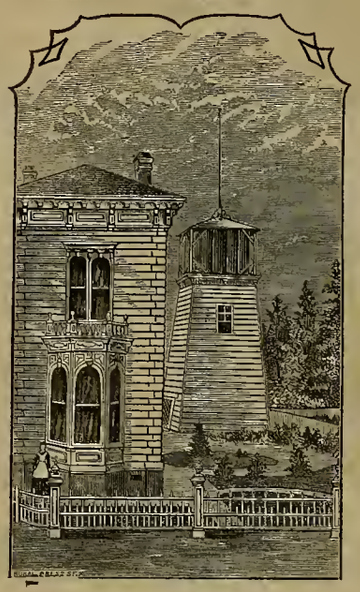

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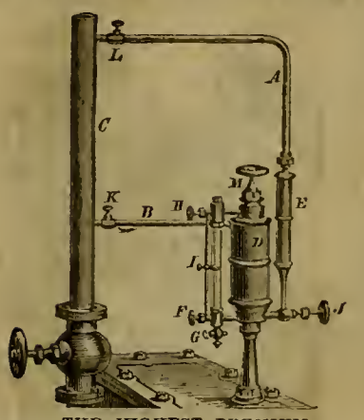

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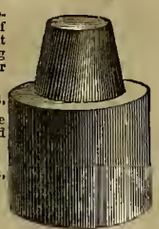
Made by our improved process. After many years of patient research and experiment we have succeeded in producing STEEL SHOES AND DIES for QUARTZ MILLS, which are unequalled for *Strength, Durability and Economy.*

Die.


Shoe.

Will wear three times longer than any iron Shoes.

BUILDERS AND CONTRACTORS

Of Quartz Mills, Pans, Separators, Concentrators, Jigs, Hydraulic Rock Breakers, Furnaces, Engines, Boilers and Shafting, and General Mining Machinery in all its details, and Furnishers of Mining Supplies.
All orders promptly filled.

MOREY & SPERRY,
88 Liberty etreet, N. Y.
Examination solicited.

PLANING AND MATCHING MACHINES

UNIVERSAL WOOD WORKERS

TRADE MARK

WOOD WORKING MACHINERY.

BENTEL, MARGEDANT & CO.
HAMILTON, OHIO.
Send for Catalogue and Price List.

MACHINE WORK BY CONTRACT.

Estimates given for Special Work of every description. Are fully equipped with first-class Machinery and Tools.
The Hull & Belden Company, Danbury, Ct.

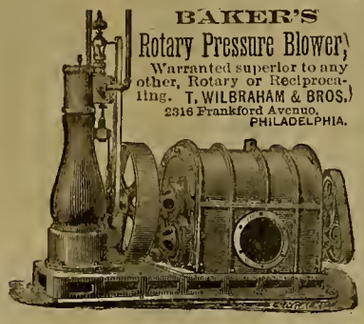
1845. The Harrison Portable Mill Machinery. 1875.

FAST GRINDING. SMALL POWER.
Thirty Years' Experience in this Specialty, covered by Twenty Patents.

French Burr Stone Mills, run by hand, horse, wind, water or steam power. Flouring Mills and Bolters, combined or separate; Vertical and Horizontal Corn Mills, Feed Mills and Universal Pulverizers—will grind all Grains and Mineral and Vegetable substances.
Send stamp for Illustrated Catalogue containing cut of each design and price-list.
EDWARD HARRISON, Manufacturer,
No. 135 Howard Ave., New Haven, Conn.

BAKER'S Rotary Pressure Blower,

Warranted superior to any other, Rotary or Reciprocating. T. WILBRAHAM & BROS.,
2316 Frankford Avenue,
PHILADELPHIA.



For Smelting Works, Foundries,

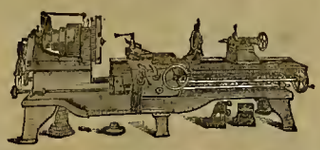
—AND FOR—

Ventilation of Mines.

Full stock always on hand.

J. C. SENDERLING,
Sole Agent for Pacific Coast, 32 Fremont Street, S. F.
1am-16p

EDWIN HARRINGTON & SON,



Manufacturers of ENGINE LATHES, 48 inches swing and smaller; VERTICAL BORING MACHINES, suitable for jobbing and boring Car Wheels; UPRIGHT DRILLS, 36 inches and smaller, and other Machinists' Tools.
OOR. NORTH FIFTEENTH ST.
AND PENNSYLVANIA AVENUE,
Philadelphia, Pennsylvania.

The Ingersoll Rock Drill.

This Drill is ueed extensively in the Eastern Statee and all Foreign Countries.

IT CAN BE RUN WITH

LESS POWER, LABOR AND REPAIRS,

—AND—

DO MORE WORK

THAN ANY OTHER DRILL IN THE MARKET. THE

Automatic Feed

Is an important feature, as it saves labor. We ask for a trial against any competitor. For information regarding the same, send for circular to

JUDSON & SHEPARD, Agents,
Cor. Olay and Front streets, San Francisco.

"THE DANBURY" DRILL CHUCK.

The Favorite Everywhere.
Send stamp for circular.
The Hull & Belden Company, Danbury, Ct.

P. S.—These Chucks are now on hand and for sale at manufacturer's prices by

H. P. GREGORY, Agent,
Nos. 14 & 16 First Street, S. F.

LEHIGH Emery Wheels

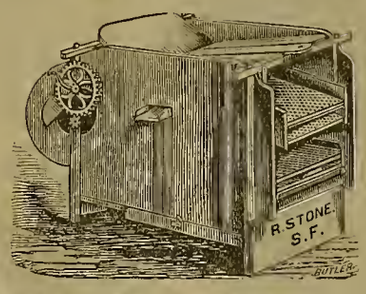
Are the best. Try them.

Emery Wheels under a new patent. Send for circular to TREADWELL & CO.

ROOT'S BLOWER

JOHN CAINE, General Agent and Manufacturer of Root's Patent Forco Blast Blowers and Portable Forges for the Pacific States and Territories.
Steam Engines, Steamboat, Mining and Agricultural Machinery built to order. Job work of all kinds.
GLOBE IRON WORKS, Stockton, Cal.

THE PATENT Novelty Mill and Grain Separator



Is one of the greatest improvements of the age for cleaning and separating grain, while it combines all the essential qualities of a first-class Fanning Mill. It also far excels anything that has been invented for the separation of grain. It has been thoroughly tested on all the different kinds of mixed grain. It takes out Mustard, Grass Seeds, Barley and Oats, and makes two distinct qualities of Wheat if desired. For further information, apply to

R. STONE,
eowhp 422 Battery street, S. F.

LANE & BODLEY,

John & Water Sts., Cincinnati.
Sole Manufacturers of Bruckner's Patent
REVOLVING FURNACE

For Chloridizing, Desulphurizing and Roasting Ores. Steam Engines and Mining Machinery.
☞ Send for our illustrated catalogue.

"DEAD STROKE" POWER HAMMER.

IMPROVED ADJUSTABLE CRANK PIN.
Strikes Blow Heavy or Light, Fast or Slow.
Prices Reduced Jan. 1st, 1875.
The Hull & Belden Company, Danbury, Ct.

IRON AND STEEL DROP FORGING.

Of Every Description, at Reasonable Prices.
The Hull & Belden Company, Danbury, Ct.

CRANK PLANERS.

Superior Design and Workmanship, Extra Heavy (1400 lb.)
DOWN, ANGULAR & GROSS-FEED,
TO THANE lxtents.
The Hull & Belden Company, Danbury, Ct.

IRON AND STEEL.

VAN WINKLE & DAVENPORT,

Importers and Dealers in Iron and Steel, Norway and Sligo Iron, Heavy Hardware and Boiler Plate, Axles, Springs, Blacksmith's Tools, etc. Agents for Perkins' Horseshoe and Globe Horse Nails, Sheet-iron, Rivets and Cumberland Coal. All sold at the lowest rates Nos. 413 and 415 Market street, San Francisco, Cal.

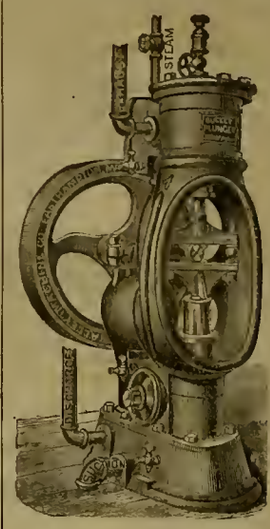
GAS AND STEAM PIPE

IN LOTS TO SUIT.

TREADWELL & CO., San Francisco.

PARKE & LACY,

310 California street, San Francisco



Sole Agents for WRIGHT'S
BUCKET-PLUNGER STEAM PUMP.
ALWAYS RELIABLE.

ROOT'S "SAFETY" BOILER

MANUFACTURED BY THE

Abendroth & Root M'f'g Co.,

BROOKLYN, N. Y.

THE ROOT WROUGHT-IRON SECTIONAL SAFETY BOILER has been improved and perfected by Eight years experience, and the sale of

Over Twelve Hundred Boilers,

for all manner of use. Is perfectly safe from Destructive Explosion, all parts easily accessible for cleaning, Utmost Durability, Highest Economy in Fuel, Reasonable Price. Working portion composed of Wrought-iron Boiler Tubes, teeted to a pressure of 500 pounds per square inch. Steam from cold water in from *ten* to *twenty* minutes.

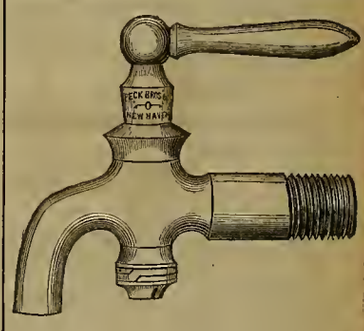
We refer to the following parties, among others, who are using the Root Safety Boilers:

H. F. Williams	San Francisco, Cal
Humphrey & Mock	Millerton, Cal.
Parke & Bowie	Virginia City, Nevada.
Chollar-Potosi Mining Co	Virginia City, Nevada.
Union Mill & Mining Co	Gold Hill, Nevada.
Belcher Silver Mining Co	Gold Hill, Nevada.
Imperial Mining Co. (170 h-p)	Gold Hill, Nevada.
J. B. Montgomery	Portland, Oregon.

Send for Circular and Price List.

J. CURLE, Gen'l. Agent for Pacific Coast,
No. 513 Montgomery St., San Francisco.

IRON PIPE



Pipe Fittings & Brass Goods

AT BOTTOM PRICES.

JAMES L. BARKER,
406 and 408 Market street, San Francisco

☞ Orders by mail will receive prompt attention.
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JOHN THOMSON. JOHN B. PARKER

THOMSON & PARKER,

(Formerly with David Stoddart.)
112 Beale Street, San Francisco, Cal.,
ENGINEERS and MACHINISTS
MANUFACTURERS OF
STEAM PUMPS, STEAM ENGINES,
And all kinds of Machinery
REPAIRING PROMPTLY ATTENDED TO.

Thursday Noon our last forms go to press. Communications should be received a week in advance as advertisements as early in the week as possible.

The Mining Share Market.

As the Stock Board adjourned on Thureday leet and no s essione have been held since we heve little of interest to report in the mining share market.

The following companies heve levied assesments since our laet issne, viz.: The New York mining company, New York Consolidated mining company, Original Gold Hill, Poorman, Pruesian, Senator, Surprise Valley, and St John. No date has as yet heen fixed for the opening of the Board.

There was a rumor on the street this morning that there had heen a strike mede on the 1700-foot level of Crown Point end although it lacks confirmation the stock has advanced $3 per share in conesequence.

The Merchants' Exchange Bank which snspended payment on Friday last resnmed today and the National Gold Bank and Trnst company will probably resume hy Monday next.

Tbe reports from the mining districts continue of the most favorable character.

PATENTS & INVENTIONS.

A Weekly List of U. S. Patents Issued to Pacific Coast Inventors.

FROM OFFICIAL REPORTS FOR THE MINING AND SCIENTIFIC PRESS, DEWEY & CO., PUBLISHERS AND U. S. AND FOREIGN PATENT AGENTS.]

By Special Dispatch, Dated Washington, D. C., August 31st, 1875.

FOR WEEK ENDING AUGUST 17TH, 1875.*

PAINT BRUSH.—Gustavus A. Schuster and John L. Driscoll, Oakland. Cal.

SAFETY CENTER PINION FOR WATCHES.—Charles R. Bacon, and Leuthold C. Browu, S. F., Cal.

DENTAL PLUGGER.—Truman Crossett, S. F., Cal.

*The patents are not ready for delivery by the Patent Office until some 14 days after the date of issne

NOTE.—Copies of U. S. and Foreign Patents furnished by DEWEY & Co., in the shortest time possible (by telegraph or otherwise) at the lowest rates. All patent business for Pacific coast inventors transacted with perfect secnrity and in the shortest nossible time.

CONSUMPTION,

The ecourge of the human family, may in its early stages he promptly arrested and permanently cured.

RAVENSWOOD, W. Va.

Dr. R. V. PIERCE, Buffalo, N. Y.:

Sir:—For the last year I have heen nsing your Goldeu Medical Discovery. I owe my life to it, having heen afflicted for years. Did not use it but a short time before I was benefi ed; at that time I was very bad, not ahle to sit up much, was suffering greatly with my throat, was getting hlind, had a dry cough, and much pain in my lungs. I have used twelve bottles of tbe Discovery and am almost well.

KATE T. WARDNER.

A son of Mr. J. H. Meseck, of Chatham Four Corners, N. Y., has heen cured of Consnmption by Dr. Pierce's Golden Medical Discovery,—so says Mr. C. B. Canfield, editor of the Chatham *Courier*.

S. R. EGLAR, druggiet, of West Union, O., writes to state that Dr. Pierce's Golden Medical Discovery has effected a wonderful cure of Conenmption in hie neighborhood.

UNITED STATES

Mineral Land Laws, Revised Statutes,

And Instructions and Forms Under the Same.

We have just issued a pamphlet contaiuog the general mineral land laws of the United States, with instructions of the Commissioner of the Land Office The contents of this pamphlet comprise all of the Government laws with relation to mineral lands of interest to the mining community, as follows: Mining Statute of May 10th, 1872, with Instructions by the Commissioner of the Land Office; Mining Statute of July 26th, 1866; Mining Statute of July 9th, 1870 Forms required under Mining Act of May 10th, 1872, as follows: Notice of Location; Request for Survey; Application for Patent; Proof of Posting Notice and Diagram of the Claim; Proof that Plat and Notice remained Posted on Claim during Time of Publication; Registers' Certificate of Posting Notice for Sixty Days; Agreement of Publisher; Proof of Publication; Affidavit of $500 Improvements; Statement and Charge of Fees; Proof of Ownership and Possession in Case of Loss or absence of Mining Records; Affidavit of Citizenship; Certificate that no Suit is Pending; Power of Attorney; Protest and Adverse Claim; Non-Mineral Affidavit; Proof that no Known Veins Exist in a Placer Claim, etc. There is also given the U. S. Coal Land Law and Regulations thereunder. The work comprises thirty pages, and will be sold, post-free, for 50 cents. It should be in the hands of every one having any mining interests. DEWEY & CO.,

Publishers of MINING AND SCIENTIFIC PRESS, S. F.

N. B.—We have also added to the above publication the REVISED STATUTES OF THE UNITED STATES, so far as relates to Mining Laws.

Thanks for Prompt Attention.

STOCKTON, June 26, 1875.

Messrs. Dewey & Co., S. F.:—

I have received the patent for my invention in wagon brakes, which you prosecuted for me; patented May 11, 1875—No. 163,046. Thanks to you for your prompt attention to this case; you will hereafter be my attorneys in such cases. I recommend all inventors on the Pacific coast to give you a call, which I think they will never have any cause to regret. Very truly yours,

GEO. G. BUCKLAND,
Stockton, Cal.

MINING SHAREHOLDERS' DIRECTORY.

Compiled every Thursday from Advertisements in the Mining and Scientific Presa and other S. F. Journals.]

ASSESSMENTS.—STOCKS ON THE LIST OF THE BOARDS.

Company.	*Location.*	*No.*	*Amt. Levied.*	*Deling'nt.*	*Sale.*	*Secretary.*	*Place of Business.*
Alpha Cons M Co	Washoe	7	1 00	Aug 12	Sept 17	Oct 7	Wm Willis	419 California st
Alta S M Co	Washoe	2	50	Aug 23	Sept 27	Oct 19	Wm H Watson	302 Montgomery st
Arizona S M Co	Nevada	2	1 00	Aug 20	Sept 24	Oct 15	Wm Willie	419 California st
Baltic Cons M Co	Washoe	2	25	Aug 13	Sept 16	Oct 6	Theo C Kibbe	419 California st
Cherry Creek M & M Co	Nevada	4	50	July 15	Aug 19	Sept 14	D F Verdenal	409 California st
Condor M Co	Ely Dist rict	4	50	July 9	Aug 16	Sept 7	G T Grimes	240 Montgomery st
Cosmopolitan M Co	Washoe	2	25	Aug 11	Sept 15	Oct 4	M Landsre	507 Montgomery st
Empire M Co	Idaho	10	50	July 7	Aug 12	Sept 1	W Willis	419 California st
Europa M Co	Wasboe	4	25	July 23	Aug 27	Sept 14	R B Noyes	419 Cali ornia et
Globe Cons M Co	Washoe	6	75	July 20	Sept 1	Sept 13	Joseph Magnire	419 California st
Hale & Norcross S M Co	Washoe	47	5 00	Aug 21	Sept 24	Oct 15	Joel F Lightner	438 California st
Ida Ellmore M Co	Idaho	18	1 00	July 20	Aug 27	Sept 18	C B Higgins	402 Montgomery st
Lady Bryan M Co	Washoe	8	50	July 9	Aug 12	Sept 3	F Swift	419 California st
Lady Washington M Co	Washoe	5	50	Aug 19	Sept 22	Oct 12	H C Kibbe	419 California st
Mahogany G & S M Co	Idaho	16	2 00	July 15	Aug 21	Sept 11	C B Higgins	402 Montgomery st
Mammoth S M Co	Nevada	19	15	Aug 16	Sept 29	Oct 26	D A Jennings	401 California st
New York Cons M Co	Washoe	15	83½	Aug 31	Oct 4	Oct 23	H C Kibbe	419 Cali ornia et
New York M Co	Washoe	6	50	Aug 31	Oct 4	Oct 23	H C Kibbe	419 California st
Omega Table Mt M Co	Cal	7	5	July 27	Aug 31	Sept 20	David Wilder	Merchants' Ex
Original Gold Hill G & S M Co	Washoe	4	50	Aug 26	Sept 30	Oct 18	W M Helman	309 California st
Pauper M Co	Idaho	5	30	July 24	Aug 30	Sept 23	W F Sorgan	402 Montgomery st
Phil Sheridan G & S M Co	Washoe	3	50	Aug 6	Sept 8	Sept 29	W R Townsend	330 Pine st
Pooch S M Co	Ely District	10	1 00	Aug 13	Sept 21	Oct 12	Chas E Elliott	419 California st
Pioone West Ex M Co		8	2 00	July 12	Aug 18	Sept 10	T L Kimball	409 California st
Poorman G & S M Co	Idaho	3	1 00	Aug 25	Sept 30	Oct 21	Wm H Watson	419 California st
Rocky Bar M Co	Washoe	3	10	Aug 5	Sept 16	Oct 6	J P Cavallier	513 California st
Rye Patch Cons M & M Co	Nevada	4	50	July 30	Sept 6	Sept 30	D F Verdenal	409 California st
Senator S M Co	Washoe	12	50	Aug 27	Oct 2	Oct 21	J H Sayre	331 Montgomery st
Silver Central Cons M Co	Nevada	2	10	Aug 3	Sept 8	Sept 29	Lucien Hermann	330 Pine st
Silver Cord M Co	Idaho	11	1 00	July 20	Aug 26	Sept 20	C B Higgins	402 Montgomery st
South Mountain Cons M Co	Idaho	3	2 00	Aug 9	Sept 14	Oct 4	Wm Willis	419 California st
S Overman S M Co	Washoe	3	1 00	Aug 6	Sept 7	Sept 27	David Wilder	Merchants' Ex
St Patrick G M Co	Cal	11	50	Aug 12	Sept 15	Oct 7	D F Verdenal	409 California st
Succor Mill & M Co	Washoe	12	50	Aug 18	Sept 22	Oct 13	Wm H Watson	302 Montgomery st
Surprise Valley M & M Co	Inyo Co Cal	1	20 00	Aug 30	Oct 4	Oct 23	W R Townsend	330 Pine st
Ward Beecher Cons M & M Co	Nevada	5	50	July 14	Aug 25	Sept 22	D A Jennings	401 California st
Woodville Cons S M Co	Wasboe	3	1 00	Aug 21	Sept 23	Oct 11	W M Helman	309 Califo nia st
Woodville G & S M Co	Washoe	11	1 00	Aug 21	Sept 23	Oct 11	W M Helman	309 California st

OTHER COMPANIES—NOT ON THE LISTS OF THE BOARDS.

Annie B Icher Q M Co	Cal	2	25	Aug 17	Sept 20	Oct 7	J M Buffington	311 California st
Blue Jacket M Co		2	1 00	July 30	Aug 31	Sept 18	J Patou	724½ Market st
Cascade Blue Gravel M Co	Cal	3	10	July 20	Aug 25	Sept 13	J M Buffington	311 California st
Cole S M Co	Washoe	27	5 00	Aug 21	Sept 27	Oct 19	Joel F Lightner	438 California st
Cons Poe M Co	Wasboe	8	25	July 24	Aug 24	Sept 24	Jas H Kinrad	Reno Nevada
Coquille Black Sand G M Co	Oregon	1	10	June 8	Sept 15	Oct 21	F P Reynolds	111½ Leidesdorff st
El Dora'o State Co	Cal	1	40	Aug 19	Sept 21	Oct 9	Hugh Elias	416 Montgomery st
El Dorado W & D G M Co	Cal	10	10 40	Aug 5	Sept 6	Sept 21	Hugh Elias	416 Montgomery st
Enterprise Cons M Co	Cal	4	10	July 29	Sept 6	Sept 24	F J Hermann	408 Kearny st
Georgia S M Co	Washoe	1	10	July 29	Oct 2	Oct 22	B Wegener	414 California st
Hayes G & S M Co	Nevada	7	20	Aug 18	Sept 28	Oct 25	Geo K Spinney	320 Ca ifornia st
Howard Hill G M Co		3	25	July 28	Sept 6	Sept 24	F J Hermann	408 Kearny st
North Bloomfield G M Co	Cal		1 00	Aug 14	Sept 22	Oct 12	Thos Derby	320 California st
Omega Table Mt M Co	Cal	7	5	July 27	Aug 31	Sept 20	D Wilder	Merchants' Ex
Orleans M Co	Cal	6	1 00	July 23	Aug 28	Sept 13	Geo P Thurston	315 California st
Oro Fino M Co	Idaho	1	1 00	Aug 17	Sept 17	Oct 8	Frank Swift	419 California st
Picacho M & M Co	Cal		10	Aug 2	Sept 13	Oct 18	Ford H Rogers	330 Pine st
Pruesian G & S M Co	Nevada	5	50	Aug 19	Sept 27	Oct 20	R H Br wn	402 Montgom ry st
Rattlesnake Q M Co	Cal	3	25	Aug 24	Sept 28	Oct 18	Andr w Baird	310 California st
San Francisco Copper M Co	Nevada	2	10	Aug 4	Sept 6	Sept 30	R D Cl rmont	Front & Jackson st
St John G M Co	Kern Co Cal	3	5 00	Aug 30	Oct 4	Oct 23	W R Townsend	330 Pine st
Tolman & Miller M & M Co	Cal	2	30	July 14	Aug 16	Sept 6	O H Bogart	402 Montgomery st
Union Gravel M Co	Cal	11	1 00	July 16	Aug 23	Sept 14	T Derby	320 California st
Victoria & Imperial Tun'l & M Co	Utah	5	10	July 8	Aug 12	Sept 2	W H Wa'son	302 Montgomery s
Weaverville D & H M Co	Cal	7	2 25	Aug 19	Sept 20	Oct 18	Ford H Rogers	380 Pine st
West Point G & S M Co	Cal	1	10	July 23	Aug 24	Sept 13	J O Connel	400 Montgomery st
Wm. Penn Cons G & S M Co	Washoe		6	Aug 7	Aug 21	Sept 30	John F Boyle	424 Montgomery st
Woodside M & M Co	Cal	2	25	July 17	Aug 17	Sept 2	J Glassman	335 Montgome y st
Wyoming G M Co	Nevada Co Cal	7	35	July 13	Aug 17	Sept 4	J M Buffington	311 California st

MEETINGS TO BE HELD.

Name of Co.	Location.	Secretary.	Office in S. F.	Meeting.	Date
Beaver M Co	Nevada	W G Hughes	309 California st	Annual	Sept 6
Cuervo M Co		Wendell Eastou	419 California st	Special	Sept 8
East Branch M Co		A Martin	520 Washington st	Annual	Sept 7
Fresno Q M Co	Cal	R Wegener	414 California st	Annual	Sept 15
Gold Run M Co		C C Palmer	41 Market st	Annual	Sept 6
Hartford M Co	Washoe	Edward F Stone	419 California st	Annual	Sept 2
Hartford M Co	Washoe	Called by Trustees	419 Calif rnia st	Speci l	Sept 20
Julia G & S M Co	Washoe	Called by Trustees	419 California st	Special	Sept 7
Linden G M Co		Chas J Collius	331 Montgomery st	Annual	Sept 6
Northern Belle M & M Co	Nevada	Wm Willis	419 California st	Annual	Sept 13
Oakland Q M Co	Cal	W W Prayler	408 California st	Annual	Sept 6
Stanislaus River M Co	Cal	Called by Trustees	113 Leidesdorff st	Special	Sept 20
Succor M & M Co	Washoe	Wm H Watson	302 Montgomery st	Annual	S pt 6
Surro M Co	Washoe	Called by Trustees	424 California st	Special	Sept 15
Victoria & Imperial T & M Co	Utah	Wm H Watson	302 Montgomery st	Annual	Sept 9
Virtue G M Co	Oregon	R H Brown	402 Montgomery st	Annual	Sept 6

LATEST DIVIDENDS (within three months)—MINING INCORPORATIONS.

Name of Co.	Location.	Secretary.	Office in S. F.	Amount.	Payable.
Black Bear Quartz	Cal	W L Oliver		25	July 19
Cons Virginia M Co	Washoe	Chas H Fish	401 California st	10 00	Aug 7
Empire G M Co	Sierra Co Cal	C Collischou		5 00	Aug 17
Empire M Co	Nevada Co Cal	D A Jennings	401 California st	50	Aug 16
Eureka Consolidated M Co	Nev	W W Traylor	419 California st	1 00	Aug 5
Excelsior M & M Co		Frank Swift	419 California st	1 00	April 10
Gila S M Co	Nevada	W Aug Knapp	116 Leidesdorff st	25	Aug 16
Jefferson S M Co		C A Sankey	331 Montgomery st	50	May 15
Leopard M Co		R H Brown		50	July 15
Lyon Mill & Mining Co	Washoe	E F Stone	Hayward's Bldg	50	Aug 19
Manhattan S M Co	Nevada	Chas S Neal	419 California st	1 00	June 15
Northern Belle M & M Co		W Willis	419 California st	1 00	Aug 16
Oneida M Co		L Kaplau	Merchants' Ex	50	Aug 21

METALS.

[WHOLESALE.]

WEDNESDAY M., Septsmber 1, 1875.

American Pig Iron, ₱ ton	28 00	@	39 00
Scotch Pig Iron, ₱ ton	40 00	@	44 00
White Pig, ₱ ton	— —	@	38 00
Oregon Pig, ₱ ton	— —	@	28 00
Refined Bar, bad assortment, ₱ lb	— —	@	— 3½
Refined Bar, good assortment, ₱ lb	— —	@	— 4
Boiler, No. 1 to 4	— —	@	— 5½
Plate, No. 5 to 9	— —	@	— 5½
Sheet. No. 10 to 14	— —	@	— 5¾
Sheet, No. 16 to 20	— —	@	— 6
Sheet, No. 22 to 24	— —	@	— —
Sheet, No. 26 to 23	— —	@	— 6½
Horse Shoes, per keg	7 50	@	8 00
Nail Rod	— 10	@	— —
Norway Iron	— 9	@	— —
Rolled Iron	— 6	@	— —
Other Irons for Blackemitbs, Miners, etc.	— —	@	— 4½
COPPER.—			
Braziers'	— 35	@	— —
Copper Tin'd	— 37½	@	— —
O'Neil's Pat	— 37½	@	— 40
Sheathing, ₱ lb	— 24	@	— 40
Sheathing, Yellow	— —	@	— 25
Sheathing, Old Yellow	— —	@	— 12½
Composition Naile	— 24	@	— —
Composition Bolts	— 24	@	— —
STEEL.—English Cast, ₱ lb	— 20	@	— 25
Anderson & Woode' American Cast	— —	@	— 16½
Drill	— —	@	— 18½
Flat Bar	— 18	@	— 22
Plow Steel	— 9	@	— 10
TIN PLATES.—			
10x14 I C Charcoal	11 50	@	12 00
10x14 I X Charcoal	13 50	@	14 00
Roofing Plate I C Charcoal	10 50	@	11 00
Banca Tin	— 25	@	— 30
Australian	— 25	@	— 30
ZINC.—By the Cask	— —	@	— 11
Zinc, Sheet 7x3 ft, No 7 to 10 ₱ lb	— —	@	— 11
do do 7x3 ft, No 11 to 14	— —	@	— 11½
do do 8x4 ft, No 8 to 10	— —	@	— 11½
do do 8x4 ft, No 11 to 10	— —	@	— 12
NAILS Assorted sizes	— —	@	— 4 10
QUICKSILVER, per ₱	— 65	@	— 70

Gold, Legal Tenders, Exchange, Etc.

[Corrected Weekly by CHARLES SUTRO & Co.]

SAN FRANCISCO, September 1, 3 P. M.

LEGAL TENDERS in S. F., 11 A. M., 88 to 88⅛

GOLD in N. Y. 114½

GOLD BARS, 890. SILVER BARS, 6½ and 7½ per cent. discount.

EXCHANGE on N.Y., 60-100 per cent. premium for gold; on London bankers, 4; Commercial, 49¼; Paris, five francs per dollar; Mexican dollars, three to five per cent. discount.

LONDON — Consols, 93 to 93⅛; Bonds, 102⅝

QUICKSILVER in S. F., by the flask, per ₱, 65c.

LEATHER.

[WHOLESALE.]

WEDNESDAY M., September 1, 1875.

City Tanned Leather, ₱ lb	25	@	29
Santa Cruz Leather, ₱ lb	26	@	28
Country Leather, ₱ lb	24	@	29
Stockton Leather, ₱ lb	25	@	29
Jodot, 8 Kil., per doz	$50 00	@	54 00
Jodot, 11 to 13 Kil., per doz	68 00	@	79 00
Jodot 14 to 19 Kil., per doz	82 00	@	94 00
Jodot, second choice, 11 to 16 Kil. ₱ doz	57 00	@	74 00
Cornellian, 12 to 16 Ko	57 00	@	67 00
Cornellian Females, 12 to 13	63 00	@	67 00
Cornellian Females, 14 to 16 Kil	71 00	@	79 50
Simon Ulmo Females, 12 to 13, Kil	60 00	@	63 00
Simon Ulmo Females, 14 to 15, Kil	70 00	@	72 00
Simon Ulmo Females, 16 to 17, Kil	73 00	@	75 00
Simon, 18 Kil., ₱ doz	61 00	@	63 00
Simon, 20 Kil. ₱ doz	65 00	@	67 00
Simon, 24 Kil. ₱ doz	72 00	@	74 00
Robert Calf, 7 and 9 Kil	35 00	@	40 00
French Kips, ₱ lb	1 00	@	1 15
California Kip, ₱ doz	40 00	@	72 —
French Sheep, all colors, ₱ doz	8 00	@	15 00
Eastern Calf for Backs, ₱ lb	1 00	@	1 25
Sheep Roans for Topping, all colors, ₱ doz	9 00	@	13 00
Sheep Roans for Linings, ₱ doz	5 50	@	10 50
California Russett Sheep Linings	3 75	@	4 50
Seet Jodot Calf Boot Legs, ₱ pair	5 00	@	5 25
Good French Calf Boot Legs, ₱ pair	4 00	@	4 75
French Calf Boot Legs, ₱ pair	4 00	@	—
Harness Leather, ₱ lb	30	@	37
Fair Bridle Leather, ₱ doz	48 00	@	72 —
Skirting Leather, ₱ lb	33	@	37½
Welt Leather, ₱ doz	30 00	@	50 00
Buff Leather, ₱ foot	17	@	⅓
WAX Side Leather, ₱ foot	17	@	—

LUMBER.

CARGO PRICES OF REDWOOD.		PUGET SOUND PINE —Retail Price.	
Rough, ₱ M	$18 00	Rough, ₱ M	22 50
Rough refuse, ₱ M	14 00	Fencing, ₱ M	22 50
Rough clear, ₱ M	30 00	Flooring and Step, ₱ M	32 50
Rough clear refuse, M	20 00	Flooring, narrow, ₱ M	35 00
Rustic, ₱ M	32 50	Flooring, 2d quality, M	25 00
Rustic, refuse, ₱ M	24 00	Laths, ₱ M	3 50
Surfaced, ₱ M	30 00	Furring, ₱ lineal ft	—
Surfaced refuse, ₱ M	20 00	REDWOOD—Retail.	
Flooring, ₱ M	28 00	Rough, ₱ M	22 50
Flooring, refuse, ₱ M	20 00	Rough refuse, ₱ M	18 00
Beaded flooring, ₱ M	30 00	Rough Pickets, ₱ M	18 00
Beaded floor, refuse, M	25 00	Rough Pickets, p'd, M	20 00
Half-inch Siding, M	22 50	Fancy Pickets, ₱ M	30 00
Half-inch siding, ref, M	16 00	Siding, ₱ M	25 00
Half-inch, Surfaced, M	25 00	Surfaced and Beaded	37 50
Half-inch Surf. ref., M	18 00	Flooring	35 00
Half-inch Battens, M	22 50	Do do refuse, ₱ M	25 00
Pickets, rough, ₱ M	13 00	Half-inch surfaced, M	32 50
Pickets, rough, p'ntd	16 00	Rustic, No. 1, ₱ M	40 00
Pickets, fancy, p'ntd	28 00	Battens, ₱ lineal foot	½
Shingles, ₱ M	3 00	Shingles ₱ M	—

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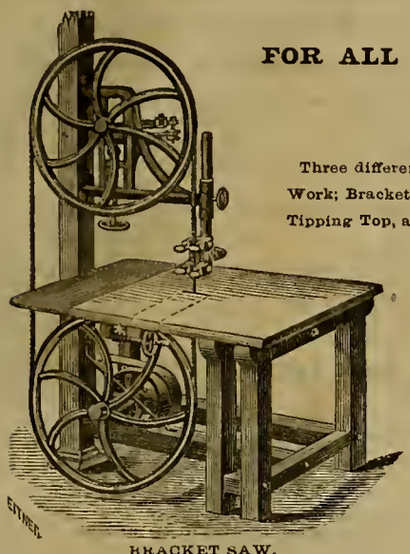
Band Sawing Machines



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For Pattern or Bracket Work the Tipping Top is very necessary. Being raised and lowered by eccentric, it is adjusted without delay, to any angle, and rests upon a solid bed when cutting square work.

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The machines are worked with the least lost time in adjusting, and are guaranteed to work as well as any machine made, costing twice the money.

Manufactured by

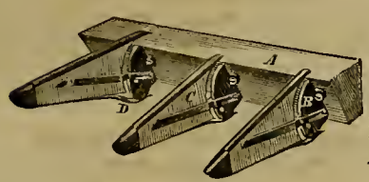
O. BONNEY,

221 Mission Street, S. F.

BRACKET SAW.

BONNEY'S PATENT ADJUSTABLE GRAIN LIFTER,

FOR HEADERS.



All farmers who wish to save their grain without waste in cutting, should examine these. They can be run at any inclination to the ground, as seen at *D*, in cut. Are light, strong and durable, and can be adjusted in fifteen minutes, or removed in five when not required, by drawing bolt in malleable shank, *B*. Set of 8 for 30-foot header (in putting on which bore with ⅝-inch bit for lag screws), are the cheapest, and give the best satisfaction for any in use. Parties can save additional the cost of a set in one day's cutting, where grain is lodged or trinkles down.

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OVER $3,500 PER MONTH SAVED

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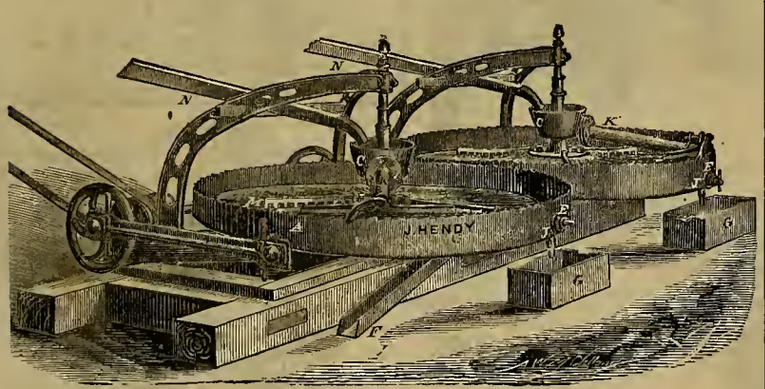

Can be seen at the Manufactory, No. 32 Fremont Street, San Francisco.

SAN FRANCISCO, April 27, 1872.

JOSHUA HENDY, Esq.—*Dear Sir:*—As a practical miner and millman, I take pleasure in recommending the use of your Concentrators in all mills where gold or silver ores are reduced. No mills should be without them, for the following reasons:

1st. They are good sizers (no perfect concentration in pulverized ores can be effected without first sizing).

2d. The best Concentrator I have ever known—(the concentrated stuff only containing 5 per cent. of sand).

3d. They are good amalgamators, light (featbery) particles of amalgam and particles of coated gold by attrition are brightened, and from their specific gravity and the action of the pan, fall to the bottom and adhere.

4th. They require but little power and attention to run them, and with ordinary care will last for years.

I have been familiar with the workings of your Concentrators for four years past; have run them myself in the North Star Mine, Grass Valley; am familiar with their practical workings on the Empire Mine, Grass Valley; St. Patrick, Placer Co.; St. Lawrence, El Dorado Co.; Oaks and Reese, Mariposa Co., and most cheerfully give you this testimonial. For further information you are at liberty to refer to,

Yours respectfully,

JAS. H. CROSSMAN, M. E.

409 California street, or Cosmopolitan Hotel.

SAN FRANCISCO, February 10, 1874.

Office Superintendent of Keystone Con. M. Co., Amador, Amador County.

MR. J. HENDY—*Dear Sir:*—In answer to your inquiries as to your Concentrators furnished our company last July, I would say that I am more than pleased with them; and the saving to the company has been over $3,500 per month more than with the blankets and huddles formerly in use.

C. C. HEWITT, Supt.

OFFICE SUMNER MINE, Kernville, April 27, 1874.

J. HENDY, Esq.—*Dear Sir:* Having four of your Concentrators in use at our Mills for four or five months, which for saving Amalgam and for concentrating Sulphurets, are a success, beyond a doubt, I feel it a duty due you and those interested in Quartz Mills, to recommend them.

As further evidence of their worth, I now order TWELVE more of your Machines for our new Mill, now in course of erection.

E. R. BURKE, Superintendent.

For description send for Circular.

JOSHUA HENDY, San Francisco.

Office and Works, 32 Fremont street. 9v28-1m-tf

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Mining and Other Companies.

Gover Mining and Milling Company—Principal place of business, San Francisco, Cal. Location of works, Drytown, Amador county, Cal.

Notice is hereby given, that at a meeting of the Board of Directors, held on the 4th day of August, 1875, an assessment of 20 cents per share was levied upon the capital stock of the corporation, payable immediately, in United States gold and silver coin, to the Secretary, at the office of the company, No. 402 Front street, room 8, San Francisco, Cal.

Any stock upon which this assessment shall remain unpaid on the 10th day of September, 1875, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Thursday, the 30th day of September, 1875, to pay the delinquent assessment, together with costs of advertising and expenses of sale.

W. O. WILSON, Secretary.

Office, No. 402 Front street, room 8, San Francisco, Cal.

Hope Quicksilver Mining Company—Location of principal place of business, San Francisco, California. Location of works, Cinnabar Mining District, Sonoma County, State of California.

Notice is hereby given, that at a regular meeting of the Board of Directors, held on the 2d day of August, 1875, an assessment (No. 2) of Five cents per share was levied upon the capital stock of the corporation, payable immediately, in United States gold coin, to the Secretary, at the office of the company, Room 2, No. 408 California street, San Francisco, Cal.

Any stock upon which this assessment shall remain unpaid on the 8th day of September, 1875, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Thursday, the 30th day of September, 1875, to pay the delinquent assessment, together with costs of advertising and expenses of sale.

JACOB HARDY, Secretary.

Office, Room 2, No. [illegible] California street, San Francisco, California.

Manhattan Marble Company of California. Location of principal place of business, San Francisco, California. Location of works, Oakland, Alameda county, State of California.

Notice is hereby given, that at a meeting of the Directors, held on the 6th day of August, 1875, an assessment (No. 8) of five dollars per share was levied upon the capital stock of the corporation, payable immediately, in United States gold coin, to the Secretary of the company, at his office, Nos. 13 and 15 Fremont street, San Francisco, California.

Any stock upon which this assessment shall remain unpaid on the 15th day of September, 1875, will be deemed delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Monday, the 4th day of October, 1875, at 12 o'clock M., to pay the delinquent assessment, together with costs of advertising and expenses of sale.

L. L. ALEXANDER, Secretary.

Office, Nos. 13 and 15 Fremont street, San Francisco, California.

Mount Auburn Gold Quartz Mining Company. Location of principal place of business, San Francisco, Cal.

Notice is hereby given, that at a meeting of the directors, held on the 25th day of August, 1875, an assessment (No. 1) of twenty-five cents per share was levied upon the capital stock of the corporation, payable immediately, in United States gold coin, to the Secretary, at the office of the company, No. 402 Montgomery street, room 9, second floor.

Any stock upon which this assessment shall remain unpaid on the 27th day of September, 1875, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Thursday, the 28th of October, 1875, to pay the delinquent assessment, together with costs of advertising and expenses of sale.

U. A. JAMES, Secretary.

Office, 402 Montgomery street, room 9, San Francisco California.

Silver Wave Mining Company—Location of principal place of business, San Francisco, California. Location of works, White Pine Mining District, Nevada.

Notice is hereby given, that at a meeting of the Board of Directors, held on the 31st day of July, A. D., 1875, an assessment, No. 12, of twenty-five cents (25 cts) per share was levied upon the capital stock of the corporation, payable immediately, in United States gold coin, to the Secretary, at the office of the company, No. 418 California street, San Francisco, California.

Any stock upon which this assessment shall remain unpaid on the 10th day of September, 1875, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Friday, the 8th day of October, 1875, to pay the delinquent assessment, together with costs of advertising and expenses of sale. By order of the Board of Directors.

J. W. CLARK Secretary.

Office, room 2, No. 418 California street, San Francisco, California.

Tolman and Miller Mill and Mining Company.—Location of works, West Point, Calaveras county, California.

NOTICE.—There is delinquent upon the following described stock, on account of assessment (No. 2) levied on the fourteenth day of July, 1875, the several amounts set opposite the names of the respective shareholders, as follows:

Names.	No. Certificate.	No. Shares.	Amount.
D A Miller	19	100	30 00
D A Miller	20	100	30 00
Jas L Trask, Trustee	35	50	15 00
S H Heacock	38	500	150 00
S H Heacock	39	500	150 00
S H Heacock	40	500	150 00
Marcia A Sharp	46	100	30 00
Marcia A Sharp	47	100	30 00
Marcia A Sharp	48	100	30 00
Marcia A Sharp	49	100	30 00
Marcia A Sharp	50	100	30 00
E H Heacock	57	100	30 00
E H Heacock	58	100	30 00
E H Heacock	59	100	30 00
E H Heacock	60	100	30 00
E H Heacock	61	100	30 00
Chas Kellett	71	100	30 00
C Desmond	101	10000	3000 00
C Dcamond	103	500	150 00
D A McDonald	107	500	150 00
J H McDonald	108	500	150 00
J W Hamilton	109	500	150 00
J W Farren	110	500	150 00
Geo Clahough	111	500	150 00
E F Preston	112	500	150 00
J W Harrold	113	500	150 00
Dennis Jordan	114	500	150 00
A Cameron	115	500	150 00
J M Roach	116	500	150 00
F I Curry	117	500	150 00
John O'Brien	118	500	150 00
Joshua Hendy	119	500	150 00
J H McDonald	120	333	99 90
C Desmond	122	334	120 00
Edmund Morris	123	1000	300 00
Edmund Morris	124	1000	300 00
Edmund Morris	125	1000	300 00
W T Chalmer	126	1000	300 00
W T Chalmer	127	1000	300 00
W T Chalmer	128	1000	300 00
John W Eagan	129	833	249 90
John O'Donnell	130	500	150 00
D A McDonald	131	500	150 00
D A McDonald	132	500	150 00
D A McDonald	133	500	150 00
D A McDonald	134	500	150 00
A Craig	5	100	30 00

And in accordance with law, and an order of the Board of Directors made on the 14th day of July, 1875, so many shares of each parcel of such stock as may be necessary, will be sold at public auction, at the office of the company, room 1, No. 402 Montgomery street, San Francisco, Cal., on Monday, the 6th day of September, 1875, at the hour of one o'clock P. M., of said day, to pay said delinquent assessment thereon, together with costs of advertising and expenses of the sale.

O. H. BOGART, Secretary.

Office, Room 1, No. 402 Montgomery street, San Francisco, Cal.

Yosemite Mining Company—Location of principal place of business, San Francisco, Cal. Location of works, Humboldt county, Nevada.

Notice is hereby given, that at a meeting of the Board of Directors, held on the 29th day of July, 1875, an assessment of twenty-five cents per share was levied upon the capital stock of the corporation, payable immediately, in United States gold coin, to the Secretary, at his office, No. 210 Battery street, San Francisco.

Any stock upon which this assessment shall remain unpaid on the 29th day of September, 1875, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on the 23d day of October, 1875, to pay the delinquent assessment, together with costs of advertising and expenses of sale. By order of the Directors.

S. O. PUTNAM, Secretary, pro tem.

Office—No. 210 Battery street, San Francisco, Cal.

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San Francisco Boiler Works,

N. W. Cor. Harrison and Main.
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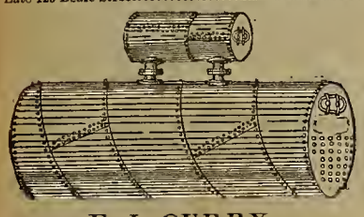

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MANUFACTURERS OF
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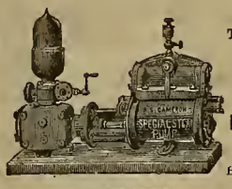

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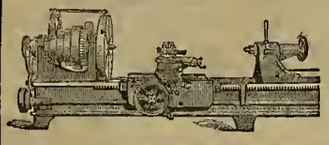

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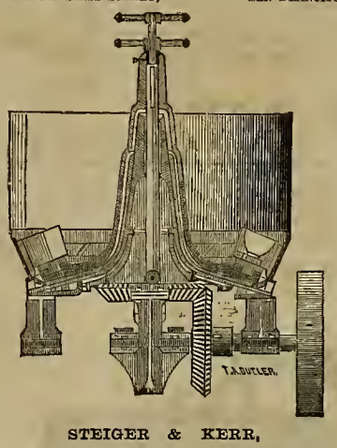

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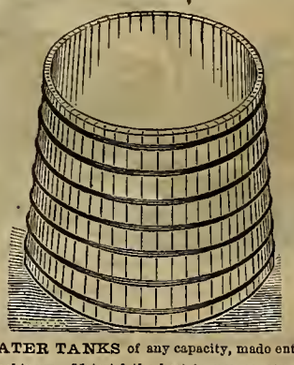

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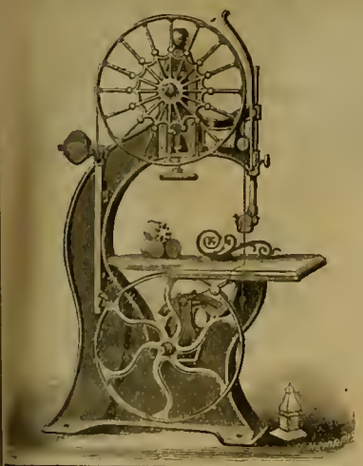

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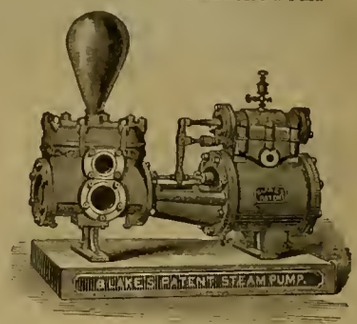

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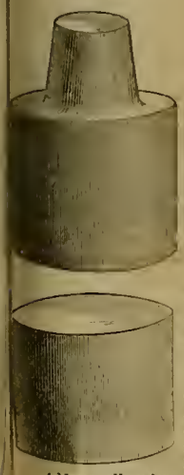

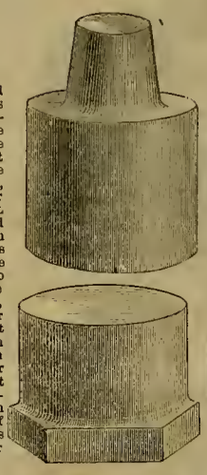

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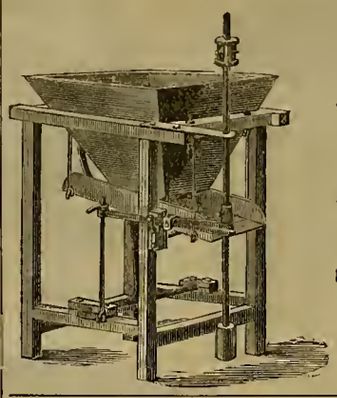

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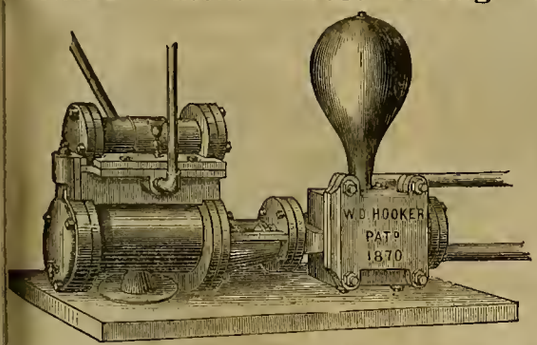

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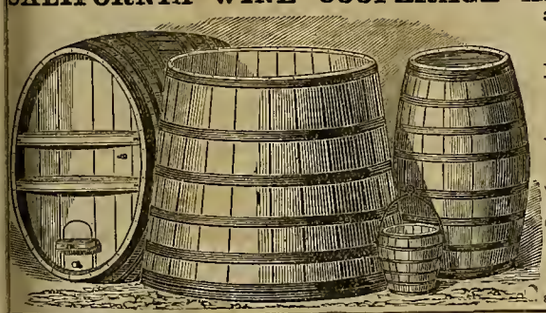

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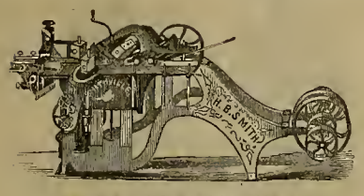

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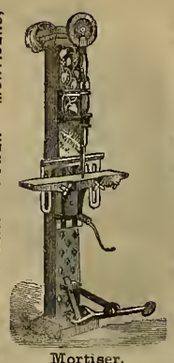

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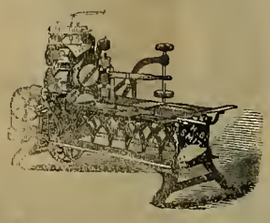

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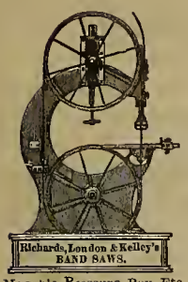

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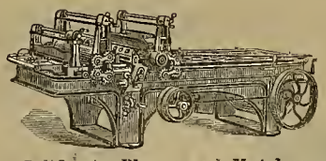

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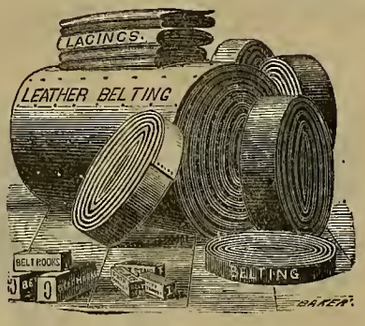

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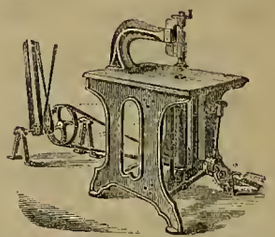

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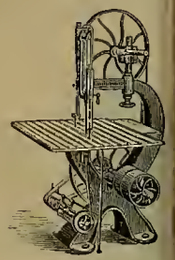

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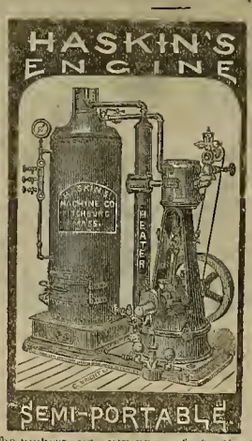

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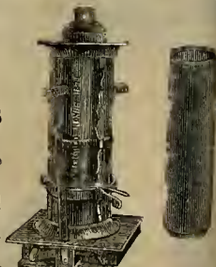

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MINING AND SCIENTIFIC PRESS.

An Illustrated Journal of Mining, Popular Science and General News.

BY DEWEY & CO., Patent Solicitors.

SAN FRANCISCO, SATURDAY, SEPTEMBER 11, 1875.

VOLUME XXX Number 11.

Hydraulic Gold Mining.

[No. 3.—Written for the MINING AND SCIENTIFIC PRESS, By C. J. BROWN.]

Before proceeding to discuss the individual status of any single mining enterprise upon the section of mineral lands described in article No. 2, I will dwell more minutely upon its topography. I have asserted that the South Blue ran north to this place. The town of Dutch Flat is situated on, so to speak, the east bank of that ancient river, and on the south bank of its Dutch Flat tributary, which united with the South Blue on the southwest side of the town, and flowed thence southwest, Bear river having cut across it one half a mile below this junction. This point, standing far above and facing Bear river, is known as Thompson's hill; this hill was extensively worked as drift ground, by the Yankee, Potosi, Why Not, Badger and Ohio companies, from 1856 to 1863, and proved immensely rich in heavy gold of a very fine quality. This is at the lower or southwest extremity of what is known as the Dutch Flat mines proper, which extend from thence, about one and a fourth miles northeast to where the old channel has been cut off and destroyed by a tributary of Bear river, known as Little Bear river.

This Dutch Flat gravel bed was formerly located and claimed by many different mining companies under different individual names, and the claims they so located still retain their distinctive appellations, though now owned by but few companies. Except at Thompson's hill, where the ground was drifted, the former owners and locators have washed by hydraulic process and mined away the top or red gravel, leaving a surface of gravel and debris one-fourth of mile wide, and a depth, over the center of the channel, of about 200 feet.

Two small streams cross the South Blue, on this section of mining land, known as the Dutch Flat canon and Squeir's canon, each about two miles in length and of equal capacity. The first runs along the southerly side of and near to the Dutch Flat gravel channel, crossing the South Blue a few feet south of its junction with said channel. Three-quarters of a mile south, Squeir's canon runs in the same direction and nearly parallel with the Dutch Flat canon. They both flow along the trap-rock and empty into Bear river. Neither of them have ever eroded to the bottom or bed of the South Blue. They originally crossed it on gravel eight hundred feet wide and forty feet deep, with sloping banks three hundred feet, and more in highth. These canons are now the repositories of large masses of tailings washed from the gravel banks on either side.

From the foregoing description, one may sketch a line of gravel a mile and one quarter in length, running from northeast to southwest, and one-quarter of a mile wide, and commencing half a mile back from the southwest terminus (Thompson's hill) strike a similar line of gravel south one mile; the first will represent a section of the Dutch Flat channel, and the latter a section of the South Blue, *i. e*, the exterior limits of their gravel banks, the beds or deepest channels of these old rivers cannot be correctly represented by such arbitrary lines; they wind and meander within these exterior boundaries, underneath the gravel deposits, as sinuously as the channels of our present rivers. Their exact local courses are definitely determined, only by shafts and tunnels, yet the studiously observant miner can plan his labor with almost unerring certainty by his familiarity with the strata of rock along which the old streams flowed; and, analogically reasoning from cause to effect he must conclude that it was as natural for the old streams of the earlier pliocene epoch to be unfractuous as for the present ones, and all know that our live streams are as crooked as a snake in motion.

As a general rule, if a stream, flowing in a rock canon diverges to the right, it is sure to be followed shortly by an equal divergence to the left, and *vice versa*. Upon this basis I assert that the deepest channel under the Dutch Flat gravel bed is along the southern side of it. The inlet of the channel is under the Buckeye claim, and runs in a manner to cross under the southern portion of the Franklin claim, and continues thus to the outlet. For numerous good reasons this, also, seems to have been the course of the stream over and upon the trap slide which came into the old channels here, as previously explained. Consequently, from being comparatively undisturbed, this slide still lies thick and massive upon the western rim. In the South Blue the current ran upon the west side of the trap slide and left a heavy and troublesome line of it on the eastern rim.

I write thus in detail concerning this trap slide, because upon a correct comprehension of its nature, true position, and mode of washing it away most cheaply, depends the success of our mining enterprises. It is a dead elephant in the menagerie, which requires study, indomitable perseverance, time, patience and much capital to remove, but it will pay largely to remove it for what lies beneath. It is about ninety feet deep on the western side of the outlet of the channel, and extends in a wedge shape across to the opposite rim, where it is comparatively shallow. Here is located the Yankee claims, the main hydraulic works of Cedar Creek gold mining and water company, an English corporation, which purchased from the Dutch Flat water company, in the spring of 1872, extensive ditch property and large tracts of mining ground, paying therefor about $400,000.

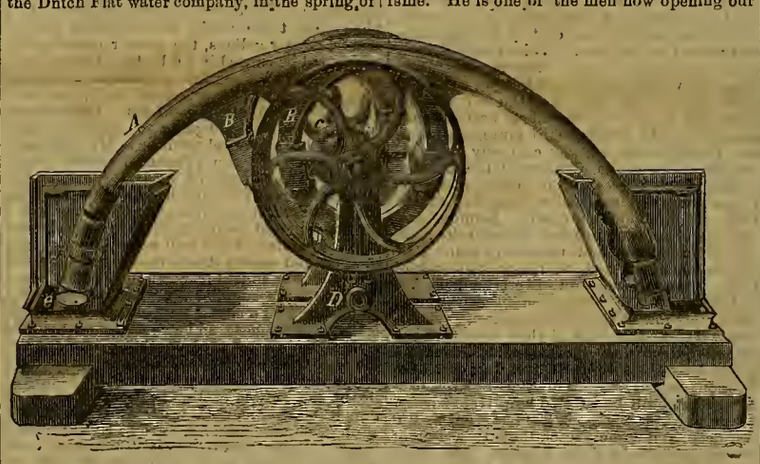
Of the mining claims in their original purchase, only the Yankee, the Deep Shaft and Iowa covered any portion of the deep channel on the north side of the Dutch Flat canon. On the channel of the South Blue, between the Dutch Flat and Squeir's canons, the Cedar Creek company owns the Carr, Waukegan, Flying Fish, and the Jehosbaphat claims, they are all, except the first upon the east side of the deepest bed of the channel. The Carr claim is situated right over it, and has never been worked; it is, no doubt, a rich piece of ground, and is besides, valuable for its position, but the company cannot avail itself of either its wealth or advantages except in prospective for two or three years.

At the time the Cedar Creek company took control of the property purchased, it was very fortunate indeed, in the selection of Col. T. B Ludlum as general superintendent. He had little or no practical knowledge of conducting a single hydraulic mine, much less the supervision of five or six at the same time in different localities, together with the care of sixty or seventy miles of ditch.

It is my opinion that could he have foreseen clearly, the obstacles in the way of his success, he would have repeated the language of Gen. Burnside upon accepting command of the army of the Potomac, and prayed fervently for larger expanse of brain and bravery enough to subdue his fear. He was wise enough to retain the old crew of men upon all his lines of ditches, and entered upon his duties with an evident intention to do his best. He early comprehended the true character of the different strata of rock on his line of works, the different and diverse strata of gravel in each of his claims, and the true positions of the bed of the old channels. He saw that most of the available red gravel and already been washed away from, not only the ground purchased by the company, but also from the surrounding country which had previously afforded a market for the water supplied by its ditches, and knew that nothing would save the company from ruin, but the opening up of the mines from the very bottom of the deep gravel deposits. This required long tunnels and heavy outlay, but nothing daunted him after he had become thoroughly enlisted for the combat. He selected his objective point for a tunnel at Thompson's hill, which should, when completed, tap the Dutch Flat channel for over half a mile, and also the South Blue to Squeir's canon and beyond. All his work is conducted with excellent judgment, but, of course, he has failed many times in minor details; it would have been a miracle if had not.

The company is deserving of all the praise for retaining him in its employ; but he has nothing to thank it for, for he has made the best interests of the company his constant study, and became so imbued with the spirit of the enterprise and the excitement of gold mining that the company's future prosperity seems to be his only ambition for acquired fame. He is one of the men now opening our mines in proper manner, and in my next I will give a detailed statement of his style and progress as well as his present needs and requirements.

Dutch Flat, September 2d, 1875.



KENDALL'S IMPROVED QUARTZ MILL.

MEETING OF THE REGENTS OF THE UNIVERSITY.—The University Regents met on Thursday afternoon, last, with closed doors. The Finance Committee made a report of the unsettled business between the University and the Bank of California and also the late Treasurer Mr. Ralston, which was found to be substantially in accordance with the statement published at the time of the suspension of the bank, viz., that the bonds of the Treasurer will secure the University against any possible loss. The Advisory Committee of the Board, consisting of Regents Stebbins, Haight, Martin and Moss, were re-elected, and Regent Hager was chosen a member of the same Committee, vice Dwinell, resigned. A Committee of three to draft resolutions in regard to the death of Regent Ralston was appointed, consisting of Regents Winans and Stebbins and President Le Conte.

ACADEMY OF SCIENCES.—The Academy of Sciences held a meeting on Monday evening—Vice President Edwards presiding. Thirty-four four members were present. A large number of donations to the museum and library were presented. Mr. Edwards spoke of his recent visit in the vicinity of Mount Shasta, and particularly with regard to the California pitcher plant, the *Darlingtonia*, which he found there in great abundance. Joseph O'Connor, J. P. Moore, and G. H. Saunders were elected resident members. The meeting then adjourned.

Kendall's Improved Quartz Mill.

Stephen Kendall exhibits, at the Mechanics' Fair, a novel quartz crushing machine, constructed on a principle different from anything now in use. The accompanying engraving will convey a clear idea of the details of the machine to those who have not examined it. The machine is a double acting quartz battery. Two ordinary mortars are placed in a frame, a short distance apart. Between these two mortars are suspended, by a journal on the rock shaft, swinging frames, *B. B.* The stamps, *A.* are joined to the swinging frame, *B*, as shown. The cams *C*, are arranged in the usual manner, in the cam shaft, the power being applied by the usual pulleys. The standards, *D*, support the whole arrangement, carrying with the rock and cam shafts, *f*. is the shoe and *e*. the die, as in an ordinary mortar.

Each end of the stamp, *A*, is supplied with a shoe, *f*. When the power is applied by steam, horse, water or hand power, the cam shaft rotates. The cams strike the tappets on the opposite sides alternately of the oval frames, *B*, throwing them back and forth, producing a swinging motion which causes the stamps to alternately strike in the mortars. Thus one rotation of the cam shaft makes the stamps strike a blow in each battery; so that the two stamps make really a four stamp mill. With four stamps an eight stamp battery is made and so on.

Any quartz miner can see at a glance how simply the machine operates and how little there is to get out of order. It takes very little to operate the contrivance and there is no extensive frame and complicated machinery about it. It is quite compact, and its weight and cost, as compared with the old style mill doing the same work, is much cheaper.

The four stamp mill of this pattern could be put on a wagon, frame and all, and it could be set up in twenty-four hours. The main idea in this mill is to provide a practical, cheap quartz mill, which will answer the purposes of working miners with no capital. There are hundreds of mines in the mountains now lying idle which would be worked if cheap reduction works were available. A small four stamp mill of this pattern occupies a space of seven feet by three feet and a half and three feet high. It can be made in small pieces so as to be packed on mules. Mills of this pattern can be made in all sizes from a two stamp up to sixty or more. Frank Huntington, of this city, is now making some of these mills for Mr. Kendall, which will be sent up to the mines in different parts of the coast. A small, practical mill of this sort has long been needed.

Steatite.

I. S. Merrill exhibits at the Mechanics' Fair, infusible stentite felting and steatite paint—the felting and paint being composed of imperishable materials—principally steatite. The felt is for boilers and steam pipes, and, being a positive non-conductor, is naturally a fuel saver. It can be bought by the barrel, and any person with ordinary skill can apply it. Plaster from the mineral is used for stove lining. The fire-proof paint for roofing is made in every color, and readily applied.

This steatite is a hydrated nitrate of magnesia, with a smooth, greasy feeling, like that of soap, and so soft as to yield to the nail. It is a massive variety of talc, which, when pure and compact, is much used as a refractory material for lining furnaces, *being infusible in any furnace*. Heated, it is easily turned in a lathe, or cut with knives or saws, and is made into culinary vessels. When very strongly heated steatite loses the small portion of combined water which it contains, and becomes harder and susceptible of polish. In this state it is made into jets or gas burners, which have the advantage of not being liable to rust or corrode. When reduced to powder it is used like plumbago, as a lubricator and to diminish friction, as well as to give a smoother surface to some kinds of paper hangings. Steatite can be used for paints of all kinds, and is good for ship bottoms, as it prevents the formation of barnacles, and when applied to walls prevents dampness. Applied to roofs it will preserve the shingles and make them fire-proof. Tin roofs coated with it will not expand by heat, or contract by cold.

CORRESPONDENCE.

Resources of the Australian Colonies.

[From our Australian Correspondent.—Continued.]

FURTHER FROM TASMANIA.

MESSRS. EDITORS.—My last letter broke off somewhat abruptly, circumstances preventing my adding the few other remarks, it was perhaps needful to make, in order to give thorough comprehension of the general features of the colony of Tasmania, concerning which I was then writing. Certainly very little remains for me to add, but as that little refers to the mineral resources of the island, it is perhaps somewhat important. Coal, tin, iron and asb stoa have been found in various parts and several companies have been formsd for utilizing them, although up to the present it can scarcely be said that any of them have achieved a financial success. Nevertheless I know for a fact, that many of those concerned in these ventures, and these too, having practical knowledge of the business in hand, are sanguine of ultimate success. There is a mountain of asbestos, and the great difficulty concerning it up to the present time, is to know what to do with it. Here is an opportunity for some of your enterprising countrymen who have a wider experience than we have, and would know how to turn it to profitable account.

Concerning the colonies generally, Queensland and New Zealand seem to be making greatest progress. New South Wales then seems to come next, but inasmnch as thia is due to enormous sales of the public estate, and an equally enormous government expenditure, I am afraid that it is not so sonnd a progression as is being made by Victoria, where manufactnres flourish to a larger extent than anywhere else in Australia. We are now just on the eve of a political crisis. To-night there will be a parliamentary trial of strength between the present government and the protectionists. The government itself, it is whispered, is divided, and so no one can tell which way the battle will go. I should not be snrprised if the government were defeated, and a decided protectionist ministry installed into office. One of the salient points of the tariff as promulgatsd by the present occupants of the treasury benches, is with respect to the article of tobacco. The duties hitherto levied on this article have been on leaf one per cent., and on manufactured tobacco two per cent., the colonial grown leaf being duty free. The result o this has been that a large quantity of the colonial article has been grown, and several factories erected for its manufacture. The quality, which was at first execrable, has gradually improved until it bids fair to pnsh its American rival out of the market altogether in the conrse of a few years. You will learn also from the extract which I enclose you, that the neighboring colony of New South Wales is also growing large quantities of the "noxious weed." The Victoria government now propose to reduce the difference between American and colonial leaf to the extent of six pence per pound, not by reducing the duty on the foreign leaf, but hy adding six pence per pound to it, and imposing an excise duty of one per cent. per pound on the colonial article. The free-traders want the difference entirely done away with whilst the manufacturers desire the differential duties to remain as they are. Other articles of course enter into the discussion, but as this would probably interest many of your readers, I have given you the above particulars. Of the undignified way, in which the Chief Justice of New South Wales has challenged some statements of the governor of that colony, I dare say your newspaper files will inform you; suffice it to say that it has all arisen out of the release of the notorious bushrangsr, Gardnier, concerning whom I wrote you some time since. One important invention has been recently patented here for the care of fluke in sheep. All the experiments up to the present time have proved effectual in killing the paresite. Would this invention be of much importance in America? Another one is for a smelting furnace, more especially for antimony, by which I am assured that one-half the fuel is saved and more than half the time. This assurance I received from a gentleman who had a furnace erected and worked on this new principle.

E. W.

Melbourn, Australie, July 27th, 1875.

TO CLEAN GLASS.—As a rule, warm water and a soft cloth are all that are required to keep glass in good condition; but water bottles and wine decanters, in order to keep them bright, must be rinsed out with a little muriatic acid, which is the best substance for removing the "fur" which collects in them. The acid is far better than ashes, sand or shot; for the ashes and sand scratch the glass, and if shot is left in by accident, the lead is poisonous. Finely cut glass must be cleansed and polished with a soft brush, upon which a very little fine chalk or whiting is put; by this means the luster and brilliancy are preserved.

To Make Lead Pipe Safe to Use for Drinking Water.

It is very generally known that lead is more or less acted upon by drinking water, and thus rendered unsafe to use for conducting the same for any great distance. Tinning on the inside has been employed as a remedy for the evil; but on account of cost or for some other reason, such pipe has not come into very general use. What is supposed to be a better remedy has been patented by Dr. H. Schwartz, of Breslau. His device consists in treating lead pipe for ten or fifteen minutes with a two to five per cent. solution of sulphuret of potassium or sodium, at a temperature of 212°. A boiling solution of sulphur in caustic soda is found to answer the same purpose. This treatment causes the formation on the surface of the pipe of a thin coating of sulphuret of lead.

A strong proof of the insolubility of sulphuret of lead is the fact that water from mines never contains a trace of lead. Still, a doubt might arise as to the equal power of the artificial sulphuret to resist the action of water. Fortunately, here, too, we have experimental proof to rely upon.

The *Chemical Bulletin*, of Paris, refers to a series of experiments with pipe coated after the method of Dr. Schwartz. These pipes were exposed at the same time with other unprotected pipes, to the action of rain water, snow water, distilled water and the city water. On the following day he found a perceptible quantity of lead in the water ran through the unprotected pipes, except in the case of city water, where traces of lead were found after a few days. For three months, however, and in the presence of air, the coated pipes did not contaminate the water flowing through them.

For the benefit of those interested in Schwartz's process, we would say that the details are given in the specification of the patent, No. 1519, of the British Patent Reports for 1863.

Railways at the Centennial.

The managers of the Centennial Exhibition to be held next year at Philadelphia, have closed a contract with a passenger railway company, by which the latter is to construct within the exhibition grounds a double track, narrow gauge road, which will traverse the entire circle between the various buildings, some 3½ miles. The road will be equipped with five locomotives and forty palace cars, tendered the company free of cost by different locomotive and car builders. While this will be a great accommodation in affording means of transit to visitors, it will also be an advertisement to the shops furnishing the cars and engines, and a test experiment of narrow gauge operations. In reference to arrangements of the Pennsylvania railway company with respect to travel to the Centennial, the Ohicago *Railway Review* gives the following snmmary: Elm avenue is the southern boundary of the Park and Centennial grounds. Belmont avenue intersects it and passes between the main exhibition building and machinery hall. Parallel to machinery hall, on the opposite side of Elm avenue, the company will erect a depot 650 feet long hy 100 feet deep, containing no tracks, but simply for tho accommodation of passengers. The eastern end of this depot will not extend to the corner nf Elm and Belmont avenues, but will be about 200 feet west of it. On Belmont avenue, south of Elm, a large temporary hotel will he erected hy private parties, the grounds for which are 900 feet front by 240 feet deep, and do not reach the intersection of the two avenues by about 200 feet. The main tracks of the road cross Belmont avenue at its intersection with Girard avenue, and are below the grades of these streets. A short distance above their intersection they will branch off into the new yard to be constructed. They will be laid out in the form of a circle, about one thousand feet in diametsr, flattened on the Belmont avenne aide. Three tracks will be laid around this circle, and will be used respectively for arriving and departing trains from New York, Baltimore and Washington. The trains from Jersey City will run directly to the Centennial grounds. They will reach them on the north track, and then switch into the yard. In case of the three traine arriving at once, they will run from the main track and he switched one upon each of three tracks composing one circle, the trains stopping on the Belmont avenue side in auch a way as not to overlap each other.

Two passages through the hotsl, 50 fest wide each, loca ed about 200 feet from either end of the building, will allow the paseengers to reach Belmont avenue; and the corner of the two avenues, which will have no buildings upon it, will be floored over, making a wide passage to the intersection, where there will he a large concourse for the strest cars. The trains during the day will run on such time that arriving trains can be immediately reloaded, and for this purpose they will proceed around the circle until they are in the rear of the depot building, on Elm street. To prevent confusion and mistakes occuring in regard to the destination of trains, passage ways will he built from the depot to each of the three tracks, and passengere will thus be assorted before they reach the cars. Three sheds will he built at the sides of the three tracks, but not covering them, to shelter the arriving and departing multitude from the weather. These will he each 1,650 feet long. Trains from Lancaster, Harrisbnrg and the West will strike the circle at nearly the same point as trains coming from the Mantua side, and will go in upon the New York track, running around in the same direction. Trains which do not depart immsdiately after their arrival will go around the circle and be hacked upon some of the fonrtesn sidings which will he built just north of the main tracks. The engine will head east and will not leave its train, but at the proper time for departure will be again pnt upon the circle. Departing trains will always reach the main track from the circle headed in the direction they are to proceed, so there will be no danger for backing trains. West of Fiftieth street, several sidings will be built to carry ont empty boxes from the exhibition buildings, and the Commissioners will erect structnres at that point for storing them. There will be over seven miles of track in this yard.

Regarding the number of passengers for whose transportation provision must be made, there can only he conjecture. The Centennial Commissioners have named 5,000 daily from the New York division of the road. It is calculated that a train can be unloaded every three minntes. Trains of 15 to 20 cars can be run with one engine on the New York division, of abont 12 cars on the Western division, and probably from 15 to 25 cars from the South.

Mr. Stephen's Lifeboat.

Mr. F. Stephen's lifeboat is to start on a voyage to Sidney at two o'clock this afternoon, from the St. Kilda pier. The main features of the boat have already been described. The sides consist of rolls of cork covered with oiled and painted canvas, and the bottom is made of two layers of similar rolls, the outside or nndermost running longitudinally, and snpplementsd in the center to form a keel, and the inside rolls running across the boat. Above there is a deck of canvas to prevent the sea from breaking over the boat. Over all the boat measures fourteen by fifteen feet, and inside the beam is about three feet. It is pointed at both ends like a whaleboat, but is provided with a rudder at the stern, and is ketch-rigged, having a foremaat and a mizenmast, which will carry a jib, lug and mizen sails. A pair of sculls and rowlocks to match are also provided. The masts are of pine, and are stepped into two sheet-iron cases, built ao as to fit into the stern and the bows, and intended to be filled with provisions and water. The boat at starting will be supplied with three weeks' stock of fresh water, that is, twenty gallons, the greater quantity of which will be carried in tin bottles slung to the gunwales, and forty-five pounds of hiscuits, forty-five pounds of preserved meat, and tea and coffee and other comforts. The adventnrous men who are going to nndertake the voyage in this novel craft are Mr. Thomas Leggatt and his son (Thomas Leggatt), both sailors. The sopply of food is calculated to last a month, but as a means of supplementing their stores the men will have on board a breech-loading gun and fishing tackle, and they expect also to be able to catch rain water in the bunt of a sail and convey it by a funnel into the reservoir, if they should feer running short. Included in the supplies are charts, a compass, an anchor, and a cooking appsratus for boiling tea and fryiug meat, and also a spare hilly and frying pan to be used on shore should it be found advisable to land. Of course, only one nf the voyagers can sleep at a time, and he will lie in the bottom of the boat, wrapped in a double blanket, covered with American shiny cloth, such as is used for carriage covers. Mr. Stephen thinks that Sydney will he reached in ten days, or three weeks at the outside, and is sanguine of success. Mr. Leggatt also appears to have every faith in the ability of the boat to navigats the open ocean. He intends to telegraph to Melhonrne on reaching Queenscliff, and also to touch at Wilson's promontory, Cape Howe, or Gaho island and other points, and send messages to Melbourne reporting progress. The enterprise certainly seems a very hazardous one, and, if successful, will establish the capabilities of the invention beyond a doubt as a means of saving life in case of shipwreck. The thing which appears most likely to militate against the success of the expsriment, apart from the question whether the boat can contend with the sea and heavy weather to be experienced outside the Heads or not, is the fact that the voyagers, from the smallness of the boat and the lack of any sheltered "down below" to retire to, will he constantly exposed to the cold and wet, and without means of stretching their limbs except by rowing, unless they should manage to go ashore every now and then, and, of course, frequent landing would reduce the value of the experiment.—*Melbourne Argus.*

VARIEGATED FLOWERS.—A really pretty effect can be produced on any colored flower, peony, rose, fuchsia, etc., making them beautifully variegated, by holding the flower in the hollow of the inverted hands, and lighting a match underneath it, being careful not to let the flower get close enough to get scorched. It is the fume of the brimstone that does it, and the effect is sometimes so startling as to deceive a botanist into thinking he has discovered a new variety. To make a very pretty medley picture, cut flowers and sprays of buds and leaves from the colored plates in floral catalogues, and gum them tastily on white or deliostely tinted card board, in the form of a wreath or bouquet. A rustic frame makes a very satisfactory pictnre of it.—*Floral Cabinet.*

A New Source of Industry.

The New York *Times* tells of a discovery which promises to be of great value to both the producing and manufacturing interests of this country, and which is about to be utilized in India. More than seventy years ago attention was first directed to the properties of a fiber, which to many persons has since been made familiar as the material ont of which the fabric known as Chinese or Indian grass cloth is manufactured. Experiments were soon after made under the auspices of the British Admiralty to test the strength of this fiber, the result of which showed that in whatever way the test was applied, the grass is three times stronger than the best Russian hemp, while it is also much lighter. For all the purposes for which hemp is used, it was admitted to be very much superior. But in consequence of difficulties that arose in the process of preparation, the matter remained a long time in abeyance. It was not until the last Russian war that the subject received fresh notice. International strife has often been the stimulus to new discoveries. When French ports were blockaded, and French commerce was destroyed, in the days of the first Napoleon, French physicians found a good substitute for ipecacuanha, in the root of the violet. Our own civil war stimulated the production of cotton in Egpyt, India and Pacific islands. The Russian war, cutting off the supply of flax from Western Europe, led to the increased cultivation of jute in India, and to its extended use and application. At the same time it turned attention anew to the Indian grass as another substitute, and although it is only recently that any practical results has seemed likely, it promises now to develop into an important source of industry.

In addition to the great strength of the fiber, it has a remarkable power of resistance to the influence of moisture. Compared with other fibers it may almost be said to be indestructible. It is as fine as flax, and presents a glossy luster more nearly resembling silk. Manufacturers give it an intermediate position between animal and vegetable fibers, and those who have interested themselves about it appear to consider it as an equal, if not superior, substitute for flax, and very much superior in every respect to hemp. The chief reason why it has not been sooner brought into use lies in the difficulty that has hitherto been encountered in the preparation. Six years ago the Indian government offered a premium equal to $25,000 for the best machine for separating the fiber from the steme. This was, however, only partially successful. Only one machine was sent in, and that only partly met the requirements. At that time it was thought that only the green stems could be operated upon, but it has since been shown that this is a mistake. The dried stems afford a fiber equal in strength and durability, and only inferior in gloss, and for these the existing machinery for flax and hemp is found to be well adapted. So that while the best cloth will probably be made in India or wherever the plant is grown, the manufacture can be made to succeed wherever the stems are imported. It is the knowledge of this fact that has given a new impulse to the discovery. The Indian government is encouraging the cultivation on a large scale. Within the last few months a great deal of new machinery for the manufacture has been patented. Practical men are busily at work, and in a short time there is little doubt but that manufactured articles from this fiber will be placed upon the market. It is looked upon already as one of the most useful staples, and as likely to take the place either as a substitute for, or in combination with cotton, flax, hemp, jute, wool or silk, and to be valuable also in the manufacture of paper and for other minor uses.

The discovery cannot, however, be regarded as of much value to our people unless the plant can be produced here. If this cannot he done, it will he more likely to benefit the British manufacturer and Indian grower, at some cost to our own. This is, therefore, an important aspect of the question. It is not quite settled whether the Indian and Chinese fibers are produced by exactly the same plants. If they are, which is most probable, the Chinese product has a little the advantage ot the other in the market. This shows that either climate or cultivation has even there something to do with the quality of the fiber. The plant grows very freely, however, in India, and experiments on a small scale indicate that it can be made equally successful in Australia. It also flourishes wherever it has been tried on the coast of the Mediterranean, and some very fair samples of fiber have been grown in the south of France. With care it has been grown in England, but it never can he produced there on any scale for commercial purposes.

It is reasonable from this to conclude that there are many parts of the United States where it could be cultivated on a large scale with advantage. Its production in the South might become a new source of wealth, second only, if not superior, to cotton. It would be necessary in the first instance to start upon practical information obtained in India in regard to the best methods of cultivation. But about this there can he no difficulty, and whether or not it he ultimately found that the soil and climate of this country are suitable, the subject is one which eminently deserves the careful consideration nf persons who are interested in the maintenance of our manufacturing interests.

SCIENTIFIC PROGRESS.

Transits of Venus Behind the Sun.

The observations of the traasit of Vsnus made ia variaas parts of the world last December have addnced, smnng other important data, one fact both novel aud unexpected. This is, that with the pnworful glasses with which the obaervers were provided, the diso of Venus appears clearly defined in black npon the chromoaphere which eurrouuds the sun before the fir.t contact aud after the last. Between the first and eecond contact and also between the third and foarth, whilo the edges of the snu aad planet were appareatly overlapped, the black disc of the latter uot merely atood nnt in stroag contrast on the white disc of the solar photosphore, but the onter portion of the planet was still plainly visible on the reddish backgronnd of the chromosphere. Moreover, when the black disc had entered to at least the distance of its radius on the solar surface, the exterior eegment became surronnded with a thin lamiuons halo, supposed to be dne to the rafraction of solar light in the atmosphere of Veuns.

Tho practical object iu which the observatiou of the phenomena may result is the rendering possible of observations of transite of Veuus *when the planet passes behind*, as well as when it crossss hefore, the suu. For if the very weak reddish light of the chromosphere, which forms the coroaa about the sun, contrasts aeusibly with the black of the planet in coajanctiou, the brilliaacy of the planet in opposition and iu full phaee, will afford even a greater contrast. It is true that the apparent diameter of Veuus is uearly six times less in oppositiou than in conjunction; bnt it is certainly sufficient to render the planet visible as it crosses the chromosphere, and this even when a portion of the solar disc oomes into the field of the telescope. The accuracy of the data obtaiued by these observatious would be about six times less than that of observationa similar to those of laat Decembsr, owing to the greatly iucreaaed distauce of the planet from the earth in the former case. But for the same reasou, the passages behiud would be more frequent, for they take place for oppositiona six times further from the orbital node. This freqnency, M. Philippe Bretou (to whom the oredit of the foregoiag euggestions ie due) thiaks would compensate for t be lack of accuracy; and he further points out that the comparisou of obaervations of transits before and traasita behind might add to the precision of the measures which we uow possess of the elemeuts nf both sun and planet.

The next transit behiud the sun will take place iu 1878, and will be followed by four othere at intervals of eight years, the last occurring in December, 1910. After that year, two centnriee will elapse before auother seriee of eight or uiue passagea will take plaoe, among which seriee two traneits will take place before the sun.

If therefore, there be auything nseful, which seems probable, to be gained by observing these back transits, prepuratione for the next oue ahould uot long he delayed. Four of the presaut series, those of 1846, 1854, 1862 aud 1870, have already passed. They might have beeu ntilized for perfectiug the observations for the trausit hefore the euu of 1874, just indeed as the one of 1878 may yet be with reference to the transit of 1882.—*Scientific American.*

More Applicationa of Salioylio Acid.—The followiug, which will be both new and iuterestiug to many, ia communicated to the *Pharmaceutische Zietung* by Niemer, a pharmaciat of Munster. It also afforde further proof of the valne and importance of this new eubatance. It is too well known that the preservation of recently expressed lime juice is a great diffioulty to pharmacists. According to two experiments, 0.25 of a gramme of salicylic acid will prevent the development of fungi in three ponnds of fresh lime juice, the latter being in a half-filled flask. A trial made under aimilar conditious, but without the salicylic acid, resulted in the formation of mould in ten dsys. It was also found that cream which refueed to churn could readily be made to do so by the addition of a vsry amall quantity of this acid.

Animal Phosphoresoence.—Mr. Phipson recsntly read a paper before the British Science Association, iu which he described the discovery of a luminous principle which he called "uoctilucine." He describee it as a fluid organic snbstance containing nitrogen, which in lnminons auimals is produced by a special organ as fast ae the animal requires it. Dr. Phipson has for many yeara made animal phoephoresoence a special study.

Government Aid to Medical Science.—By a vote of 138 to 27, the Englieh House of Commoua recently granted two thousand 'pounde sterling for medical researohee. Our own govsrnment, we believe, has uever yet contributed a dollar in aid of medioal science, the first and most important iu which muu ie engaged. Millions have been spent in other soientific reaearohes. Why is this so?

The Solar Atmosphere.

Prnf. S. P. Laugley rsad a paper at the late mseting of ths Americau Association for the Advancement of Science, in which he said that it had long been nbserved that the snn is not everywhere eqnally bright, and that especially the edge is less luminous than the centsr. It is evident that this diminution of light must be dnè to some absorbiug medinm, alace a self-lnminons globe would appear everywhers equally brilliant, so as to present to the eye the appearance of a flat disc. If the snn has an atmosphere exteraal to its lamiuous photosphere this atmosphero will presenl an obstaole to the emiesinn of the solar rays, eveu if they they are not directly visible. The obetacle will be greater in proportion to the iucreasing angle at which the raye leave the surface of the sua. The atmosphere, however, cannot be seen with the spectroscope. Laplace has calculated that only oae-twelfth of the solar emission of raya reach us. If true, this would be nf great importance.

But more recent astrouomers have made new observations without corroborating the atatement of the illustrions Fraohmau, aud without agreeing among themselves. M. Secchi, for instance, calculates that the absorption near the edgo is fifteen times greater than that stated by Arago. Tbe essayist made hnndreds of observations, and invented and explained a uew aud somewhat complicated instrumeut to assist him. The reeult was the discovery that tbe blackest part of the snu was only eo by contrast—in fact was fonnd to be very brilliaut, and from 5,000 to 10,000 times strouger than the light of the fnll moon. His conclusion is the approximate truth that the solar atmosphere absorbs abont one-half of the solar rays, aud that all auimal life on the earth must be extinguished should that absorption be increased or diminished in any respectable degree. We should be deetroyed either by heat or by cold. Ae we are not aware why this danger shonld occnr, aatrouomy is equally unaware why it should be bronght about. The easay and the essayiat'e instrameuts excited much interest.

Origin of the Diamonn.—The *Scientific American* speoulatea as to the origin of the diamond as follows: The diamond has probably proceeded, like mineral coal and oil, from the slow decomposition of vegetable material, or even from auimal matters, either soarce affording the reqnisite carbon; but it has beeu formed under those conditione as to heat that has produced the metamorphism of argillaceous aud arenaceous schists and auriferoue quartz veius, since it is found exclusively iu gold regions, or in the eands derived from gold-bearing rocka. The schists that were altered at the time may have previously beea shales impreguated with petroleum nr other carbonaceous substauces (hydrocarburets) of organic origin. Chancourtois obeervee that the formation from a hydrocarbnretted vapor or gas ie analogous to that of eulphnr from hydroanlphuretted emanations. In the oxidation of the latter by the hamid process, the hydrogen becomea oxidized, and ouly a part of the sulphurons acid, the rest remaining as sulphur. So in the humid oxidation of a carburetted hydrogen, the hydrogen is oxidized, part of the carbon becomes carbonic acid, and the rest remaine as carbon and may form crystallized diamoud.

Analyaia of a Human Body.—Dr. Laucaster, of Londou, recently analyzed a man, and presentsd the reeulte of his investigation in palpable form to his audience during a late obemical lectnre. The body operated npon weighed 158·4 lbs. The lecturer exhibited upon the platform 23·1 lbs. carbon, 2·2 lbs. lime, 22·3 ozs. phosphorus, and ubont 1 oz. each sodium, iron, potassinm, maguesium and silicon. He apologized for not exhibiting 5,595 cnbic feet of oxygon, weigbing 121 lbs., 105,900 cubic feet of hydrogen, weighing 15·4 lbs., and 52 cubio feet of nitrogen, likewise obtained from the body on account of their great bulk. All of these elements combine into the following: 121 lbs. water, 16·5 lbs. gelatin, 132 lbs. fat, 8·8 lbs. fibrin and albnmeu, 7·7 lbs. phosphate of lime and otber mineral substanoes.

Fallino of European River Levels.—Accurate observatione during the last fifty years have shown that the water level of the rivers Elbe and Oder has fallen aeventeeu inches, that of the Rhine twenty-four, of the Vietula twenty-six, and that of the Danube as much as fifty-five inchee at Orsova. And there is a similar decrease iu the water supply from aprings in Germany. The canee of this decline is attributable to the present reckleas cutting down of forests, as also to the artificial drainage now so gnerally adopted by farmers.

The Most Brilliant Artificial Light.—Fill a emall vessel of earthenware or metal with perfectly dry saltpeter or niter, press down a cavity into its eurface, and in this oavity place a piece of phosphorus; igaite thia, and the heat given off melts a sufficient quantity of the niter to evolve oxygen enough to combine with the phosphorna, and the effect is to produce the most magnificent whits light which chemistry can afford.—*Photographic News.*

New Observatory at Vienna.—A new observatory has lately been erected at Vienua, on a scale corresponding with the moderu requirements of astronomy, whioh are so different from what they were a century ago.

MECHANICAL PROGRESS.

Trial of the Walking Locomotive.

We have already alluded to the singularly devised French machine, termed a walking locomotive, designed for use on railroads iustead of ths original locomotive and also in place nf the ordinary road engine. Its propulsion is produced by the rising and falling of six articulated feet, which strike the ground nr rails something like the feet of a qnadrapod. These feet are arranged in two groups: three support the fore part of the machine aud the other three the after part. The two middle feet are connected together by a horizontal sbaft; tho four others are indspendent, and strike the ground succeesively in ench a manner that while the middle feet move at a moderate pace the others have a highly accelerated motion. Each of these groupe of three feet are affixsd to a siogle trnnk. The force of the steam is applied ia ench a way as to drive these feet toward the gronud.

Au exporimental trial of thie eiagular machiue made by the Eastern railway company, at Parie, has demouetrated that whsn the "feet" are shod with eoles of india rnbber weighing two and one-eighth pounds, an adherence to the rails or road is obtained eqaal to *three-fourths* of the weight of the machiue itself. In the ordinary locomotive thie adherence does not go beyond *one-fifth* of the weight of the machine; it may be added, that this adherence is, iu point of fact, variable; on wet or damp rails it ia uot more than one-half; but in the newly inveuted locomotive of M. Hermann, the state of the rails or ground will alwaye have au influeuce, as iu the case of the machinee in actual use, but it will always be greatly auperior. The experiments made thns far prove that this uew machine will drag ou ordinary roade or on rails a train four timee as heavy as the ordinary trains; the cost of this augmented train will not, it is said, vary materially from that of the ordinary machines with the usual trains wheu nsed ou eqnal grades, but the increased adhering power of the locomotive will permit of the omployment of a lighter built machiue for the usual traius as well as the power to surmount steeper gradea than are usual ou the railways of the present construction.

Thie new syetem eularges very greatly the capacitiee of all locomotives for ordiuary reads, and will allow of passing through grounds where roads have not been conetructed, and up grades of one foot in ten, which are by any of the actual inventions imposeible to surmouut.

It ia expected, saye the *Ironmonger*, an English journal, that a committee of the French Academy will soon report fully upon the practical value of this inventiou, and if it hae iu point of fact all the above-mentioned advantagee in their opinion, also if its constructiou, which is it appears rather complicated, is easy to keep in good order, and also if the cost of the machines and repaire are not too excessive to prevent ite coming into geueral uee, it would aeem, at least, that there is a very remarkable progrese about to be realized in the application of eteam power to small local railwaye, and those paaeing throngh hilly and mountainous districts of the great main routes of travel and traffic.

Tempered Steel Brushes.—M. Dumas-Gardeux, of Paris, has introduced a novelty into the metal trade, bruehes formed of tempered steel wire. They are made in numerous forma—for cleaning tubes, sheathing of ships, iron bridges, slnice gates aud all kinds of iron conetruction; they are also made, like the old metallio brushes, circular for polishing and scratching metals, for stoue aud marble, for smoothing flooriug and decks of ships, and for an infiuite variety of purposes. The same maker has produced a new scraper, for the special purpose of cleaning locomotive tube boilera; it is a spiral brush, but in which the steel wire is replaced by pieces of steel spring; it is said to be very effective, and, at the same timo, durable.

Hardening Fine Tools.—It is said that the engravere aud watch makers of Germany hardeu their toole in sealing wax. The tool is heated to whitsness and plunged into the wax, withdrawn after au instaut, and pluuged in again, the process being repeated uatil the eteel is too cold to enter the wax. The steel ia said to become, after this process, almost ae hard aa the diamond, and when tonched with u little oil or turpentine the tools are excellent for engraving, and also for piercing the hardest metals. Englieh engravere often use soap or white wax for the same purpose.

New Application of Tin—Steam Boilers.—Messrs. Barret & Rawlings have patented an improved method or means for preserving the interior parts of steam boilers. This iuvention consiste in substituting a special kind of metal—pure tin—for condenser tubes, tube plates, air-pump buckets, foot and head valves, guarde, and all internal construotioue of marine and other boilers, which will entirely destroy the action that now takes place thereiu by reason of the feed water comiug in contact with the preseut metal surfaces of suoh boilers. And the special kind of metal uow proposed to be used as aforesaid in the conetruction of snch boilers will, by destroying the galvanic action, prevent the destruction of such boilers.

Wooden Rails.

The superlutendent of the Muacy Crsek railroad, Penn., is about to try the experimsnt of laying wooden rails nn that portiou of the road betweeu Hnghesville and Tivoli, or two miles beyond. With a view to testiug the feaibility of woodsn rails, the saperinteadsnt recently had sevsn hnadred feet of track laid on a curve jnst beyond Muucy creek, and to the surprise of all it has besn found to answer the purpose much bettar thsu was anticipated. The rails are of sugar maple, 7x4 inchea, and about 12 feet in length. The tios are laid down in the ordinary way, notched, and tbe raile "let iatn them" about four inches. They are then keyed firmly with wooden wedges driven nn the sides, whioh makes the track very solid and firm. The locomotive aud heavy cara have been paseed over this experimeutal track at different rates of epeed, and it has been fouud to work admirably, and gives every assurance of success. The cost of laying wooden rails, manufactured out of thie hard material, that becomee almoat aa solid ae boue when aeasoned, is $450 psr mile, while iron costs $4,-000. No irou spikee are required, as the rails are secured by wooden wedges, and the cost of track-laying is about the same as puttiag down iron. Woodeu rails have alrsady beeu tried iu different localities, and, we believe, have been iuvariably fouud to work well.

Enamelen Ioon Ceilino.—A ceiling made of thin plates of irou, enameled, hae juet been put up in its place iu the central refreshment room of the South Keusiugton Museum, London, and is probably the first experimeut of the kind. The decorations of thia room were designed to reeist all dirt and impurities incident to a public room where food is eateu by an average of 10,000 persons a week. The walle aud columne are of majo.ica, the floor is paved, and the ceilinga are of irou enameled. The whole givee an impression of perfect cleauliness, and every part might be washed down by a fire engine weekly, if necessary. The enameled plates are painted with charming aud vigorous arabesques, the work is highly effective and the experimeat aucceesful. In cases where it ie necessary to keep a ceiling clean and to wash it frequently, this material promises to answer perfectly, aud the artistio work will last for centuries, as the design is burot into the enamel.

Bridges.—Bridges have absorbed an immense amount of capital within the last ten years, by the extension of railroade creating a direct demaud from the openiug up of new territories to immigrants. It ie estimated that the bridges built in the United States since the war have cost $150,000,000. The West has built the greater number of large and coetly bridges, those over tho Missouri alone at St. Charles, Booneville, Kansas City, Leaveuworth, Atchison, St. Joseph, and Omaha, costing $11,000,000. The Ohio is bridged eight times bslow Pittaburgh, at the cost of $16,000,000. The Mississippi is bridged at St. Lonis, Hannibal, Keokuk, Burliugton, Cliutou, Duhuqne, Winoua, La Crosse, St. Paul aud other places, at a cost of $25,000,000, the half of thie having been expended on the bridge at St. Louis. Philadelphia has during the same time built or completed bridges for mere local accommodutione alone, costing about $4,000,000.

Trial of the Russian Circular Iron Clad.—It will be interesting to many of onr readers to learn that the first of the Russian circular iron clads, the Novgord, has recently made pasaagee iu the Black sea, which, to say the least, fully jnstify the imperial goverument in having adoptsd this form of vessel as one well adapted for providing very powerful naval defenses for certain purposes. She makes a fair speed, and answers her helm perfectly. By her peculiar build she draws less water than any other ship which can be built of her size thickness of armor and armament. She is 100 feet in diameter, perfectly circular and measures 2,500 tons. As an experiment she is pronounced a psrfect success. It is claimed that her manner of build is far more perfect for fighting than the ordiuary shaped iron clads.

Petroleum in Tubning Harn Metals.—M. L. Bechstein reports that it was regnired to turu with the greatest posaible precision a piece of work twenty-six centimetres in diameter, composed of a very hard alloy of seven parts of copper, four parts of zinc, and one part of tin. Every ordinary mode was tried without success, wheu M. Bechstein had the idea of tryiog the effect of petroleum constantly applied to the cutting tools, and the alloy was then turned with abont the same ease as steel tempered to etraw oolor; the latter, says M. Bechstein, turns with the greatest ease when the cutters are kept moietened with a mixture of petroleum and turpsntiue.

New Inoxidzable White Metal.—According to M. Marlio, an inoxidizable white metal may be made of iron ten parts, nickel thirty-three parts, brass twenty-five parts, tin twenty parts, and zinc ten parts. The alloy is cast and cut in pieces, and the latter are tempersd at white hsat in a mixture of sulphuric acid sixty parts, oue nitric acid ten parts, muriatic acid five parts, and water twenty-five parts.

A Winn Turbine has been patented in Denmark. It is eaid to work in a much lighter breeze thau the ordinary style of wiud mill, aud to be well suited to a variety of iudustrial uses.

MINING SUMMARY.

THE following is mostly condensed from journals published in the interior, in proximity to the mines mentioned

California.

ALAMEDA

WORK AT THE LIVERMORE.—Livermore *Enterprise*, Sept. 4: Work upon the boilers, engine, and general machinery of the Livermore coal mine, is progressing finely and will perhaps be completed about the close of the coming week. The dressing up and preparatory work to opening the drifts from the main shaft east and west is about finished, and as soon as the hoisting works are in readiness we shall look for a busy scene in and about the mine. The coal is not to be questioned as regards its quantity or quality, and every man holding stock in the company should feel as though he had a valuable property in his possession. The workmen, from the superintendent down, are men of experience, and fully comprehend the situation, and as soon as the present work is completed shipments of coal will commence.

ALPINE.

THE ANVANCE.—Alpine *Chronicle*, Aug. 28: Inaugural operations commenced on this claim on Monday last. A place has been selected near the old Glance tunnel and east of the ledge for the sinking of a shatt, the sinking of which will be accelerated by a powerful diamond drill, which has been purchased at San Francisco and will shortly be on the ground. A shaft will be sunk to the depth of 300 ft, and as much deeper thereafter as may be required. Superintendent Coleman intends pushing this work with all possible dispatch.

THE SILVER CLOUD.—The president and treasurer of this company recently came up from San Francisco and gave the mine a thorough examination. We learned that they returned home well pleased with the appearance of the mine. They have a well defined ledge 20 ft wide. As the company contemplate sinking on the ledge, and the erection of buildings for hoisting works, work has been suspended until early next spring.

THE FLINT.—A fine grade is being made from the main road to the hoisting works of this company. The new shaft is to be sunk by a Crown Point miner, who will probably bring a number of Comstock miners to assist him.

INYO.

THE BRODER FURNACE.—Inyo *Independent*, Sept. 4: The gratifying news came Saturday last that the Broder furnace, at Pine mountain, was making a successful run, the difficulty of properly fluxing the ore so that it would run from the furnace having apparently been successfully overcome. This was the case for a short time, but we are sorry to say, ended by the time 5 or 6 bars of bullion were gotten out. Despite of everything that could be done, the furnace "hanked," and was shut down. But the thing didn't end at that by any means. The only obstacle to perfect success in every way is the seemingly but trifling difficulty of properly fluxing the ore in the cupola so that it will run out, and this difficulty Broder & Moffat will overcome before they quit it, or prove it an impossibility, which it certainly is not. The bullion produced is of high grade, assaying over $450 to the ton.

NEVADA.

COPPER AND SILVER.—Nevada *Transcript*, September 1: Mining matters are looking up around Spenceville, in this county. Several years ago copper was discovered, and it was thought in great abundance. The recorder was kept busy in recording claims; many companies were formed, and everybody who did not own an interest in the copper mines, was considered out of luck. The excitement ran high and a great deal of work was done, and quite a town was started up, when all at once it was found that the mines could not be worked with profit, and the copper mines went out of sight about as quick as they came in. Nothing was thought of that region until about a year ago, when Mr. D. F. Deetken, a good metallurgist, went there and erected a furnace to work the ore, in a way that he had confidence in, and has been successful. A quantity of the ore was sent to Europe for assay, and the returns have been received which proves that it is very rich in copper, and assays as high as $235 in silver to the ton. We presume the excitement will be started up there again, and the mines will be worked in a systematic manner. Many of our people have never lost confidence in the Spenceville copper mines, and they will now go it again and be successful in their investments.

FINE LEDGE.—Charley Moore, of the Union hotel, and Capt. Moore have for some months been engaged in prospecting an old quartz ledge, formerly owned by W. C Randolph and Capt. Day, located upon Deer creek. They procured the hoisting works of the old Manhattan, and under the superintendence of Capt. Moore, the work has been pushed through in the most systematic manner. A short time since they struck a fine ledge, between two and three feet thick which looks splendidly. In many places free gold could be seen, and the rock contains a great deal of sulphurets. A crushing of fifty tons of the rock is now being sent to the Oriental and Murchie mills. The owners are confident that it will pay well. As they go in on the ledge the better the rock looks. They will now drive the work ahead as fast as possible, and before long the rock they will take out will keep a mill running constantly.

KENTUCKY.—*Foothill Tidings*, Sept. 4: Report has it that this week has developed a decided improvement in the ledge opening along the drift in this mine, and stockholders are feeling quite cheerful over the prospect.

DEER CREEK MINE.—This is the name of a new mining enterprise which now looks very promising, situated on Deer creek, about a mile and a half from Rough and Ready, and owned by John Fippin, ——— Muchmore and John Single. Beginning work a few months ago on a mere seam of quartz they have sunk the incline to a depth of 78 ft, at which point, 50 ft perpendicular depth below the surface, they have a fine sixteen inch vein, which is widening as they go down. They have crushed in a hand mortar since they began work, specimens enough to turn ont $426 in gold, and have on the dump about 15 tons of rock taken out of the shaft as they have been sinking, which is estimated by good quartz men to be worth $36 per ton. The ledge has been traced 800 ft along its course, and its owners evidently have a good thing.

NEW QUARTZ LEDGE.—San Juan *Times*, Sept 4: Chas. Wellman brought to our office on Monday last a large piece of quartz filled with virgin gold and sulphurets, taken from a ledge situated near Pike city, in Sierra county. The ledge was discovered by Stephen Spencer and Capt. J. P. Brown of Camptonville, and is known by the name of the Spencer and Brown ledge. The owners are constructing a ten-stamp mill at the ledge, and will soon be realizing large sums of money therefrom. Messrs. Spencer and Brown have for several years past prospected this ledge, but until a few days ago they had struck nothing that would pay. The owners sunk a shaft some 200 or 300 ft in depth and struck a large vein of excellent quartz which will assay from $40 to $50 to the ton We congratulate the miners on their find, and hope they will realize more money out of their claim then they anticipate.

PLACER.

A RICH STRIKE.—Placer *Argus*, Sept. 4: They have struck it rich in Green's mine, having taken out within a few days some of the finest rock ever taken out of any mine in the Ophir district. One small rock was worth several thousand dollars.

SAN LUIS OBISPO.

MINING IN SAN LUIS OBISPO.—*Tribune*, Sept. 4: From present indications mining is to be one of the great sources of revenue in our county. At the present time there are two paying quicksilver mines, turning out large quantities of the liquid metal every week. These are the Oceanic and Lockhart. The San Jose mine is in a fine state of development and promises well. In the vicinity of the Oceanic mine are a large number of mines that give good prospects, but are as yet undeveloped. We recently had an interview with Eugene Gurley, who has given the upper end of the county a thorough prospecting, and reports important discoveries in the vicinity of Sanco Poho creek, about twelve miles from San Simeon. One lode called the Polar Star has been quite extensively prospected. The ore is of the sandstone class, similar to the Oceanic. The indications are that they will get a large body of ore. It has been cross-cut at a depth of 25 ft below the surface, at which point the vein is nine feet wide. Four miles northwest from the Polar Star Mr. Gurley discovered five other lodes, one of which, the Lishon, has been quite extensively prospected with good results. Mr. Gurley has associated with him Mr. P. L. Weimar, the discoverer of gold in California. They have gone to Los Angeles county in the vicinity of Elizabeth lake, at which point there are gold mines. It is their intention to follow the gold belt, hoping it may be found to extend into this county. They will spend two months in this labor, and then return to San Simeon to further develop their quicksilver mines, unless they find a gold mine that will pay better.

SONOMA.

THE OAKLAND.—Russian River *Flag*, Sept. 2: From Wm. B. Reynolds of this place we obtain the following: The Oakland mine, with one bench of retorts, is now filling four flasks of quicksilver daily. From the tunnel there is a drift each way, about 150 ft on a ledge of 17 per cent. ore. A shaft 15 ft by 20 is being sunk in the lower tunnel and is about 60 ft, from which an immense amount of rich ore is being taken. Three hundred tons are now on the dump. Several teams are hauling brick from Kellogg for a large "dry operating" furnace. The contract with Stuart & Co. for the brick is $20 per thousand laid down at the mine. A return load of ore is hauled to the Kellogg furnace, near Kellogg, for reduction. From the ore thus reduced, it is expected that returns will be obtained sufficient to build the Oakland furnace, thus saving stockholders an assessment. Teams are also hauling the fire brick intended for the furnace, together with other material, from the depot at Healdsburg.

VALUABLE DISCOVERY.—The Madeira Bros., of this place, have made a discovery in which they have confidence enough to embark their entire time and available means. About three weeks ago M. Laughlin, living seven miles southwest of town, brought to ther paint shop a small can of pulverized red substance and requested them to make an analysis of it. They found it to contain about 88 per cent. of iron, and to be that valuable substance, peroxide of iron, of which four high priced paints are made, Indian red, Royal red, Tuscan red and Prussian blue, costing at wholesale 15 to 25 cents per pound, which would make the substance worth from $300 to $500 per ton. The three gentlemen named own the entire ledge, which is inexhaustible, and propose to put up a mill on the mine, and prepare the paint for market. It is believed that this is the only mine of the kind on the continent, except one in Nova Scotia. Specimens of the rock and paint are now on exhibition at the Mechanics' fair in San Francisco, and attract much attention.

TUOLUMNE.

MINING ITEMS.—Tuolumne *Independent*, Sept. 4: Water in the Tuolumne water company's ditch, is expected to hold out until the middle of October. They are running a small stream and economizing the supply as much as possible.

THE new five-stamp mill, at Rock gulch, Columbia, commenced to run on Tuesday last. The mine prospects well, the lode being three feet wide at a depth of 75 ft in the shaft.

WATER in the Tuolumne hydraulic mining company's ditch, for all mining and irrigating purposes, will last until the middle or last of October. We state this on the authority of M. B. Harriman, Esq., water agent.

IN the Lady Washington mine they have developed a vein six feet wide, showing well in gold and sulphurets.

READ'S claim, above Columbia, still keep pouring out its golden wealth. Last week another pocket was struck which yielded $800. This was just below the one from which several thousands dollars was recently taken.

Nevada.

WASHOE DISTRICT.

CALIFORNIA.—Gold Hill *News*, Sept. 2: The east and west cross-cuts No. 3, on the 1550-ft level, have each penetrated to the walls of the ledge, which, at that point, is 200 ft in width, one-half or more of which is in fine ore. The north drift on this level is steadily advancing, the face still in ore, although not of near as rich a quality as that penetrated for some distance back. A winze has been started from cross-cut No. 4, on the 1500-ft level, to connect with the main north drift on the 1550, when it shall have reached a point under the cross-cut. The face of the main north drift on the 1400-ft level has reached to a point within 100 ft of the Ophir line, the face of the drift having passed entirely out of the ore into barren porphyry. Cross-cut No. 3 on this level is being extended westward, the face still in ore. Sinking the O. & C. shaft is making rapid progress. The new hoisting and pumping machinery will soon be completed and ready to be put in full working operation. The batteries and crushing machinery of the new mill are fast approaching completion.

CONS. VIRGINIA.—Daily yield, 600 tons of ore. The quality of the ore extracted is even better than it has been for some time past. The usual quota of $1,500,000, insuring the payment of the regular monthly dividend of $10 per share, has been made, with a surplus of two days' run of the mills to carry over to next month, notwithstanding a breakage of the French mill, causing a delay and loss of eight days' returns of twenty stamps. The mine exhibits no diminution whatever in either the character or quantity of ore extracted. There are no new developments or changes to chronicle for the week, as there is no prospecting of consequence being done on any of the levels now opened. The C. & C. shaft is being pressed downward with all the energy possible, so as to insure the prospecting and development of the lower levels of the mine at the very earliest day possible.

SILVER HILL.—The shaft is down 110 ft below the third station level, at which point preparations are being made for the opening of a new level. A large sump is being excavated below the new station, as it is expected that when the ledge is tapped on that level a considerable flow of water will follow. The east cross cut from the north drift, on the third station level, is showing some quartz and ore of a very favorable character. The bottom of the north winze being sunk near the Justice line, is also in quartz and ore that promises a valuable development.

HALE & NORCROSS.—The main west and north drifts on the 2200-ft level are each being driven rapidly ahead, without any valuable changes to record. The north drift from the bottom of the north winze has completed a connection with the south drift from the Savage mine, which furnishes a much needed current of air, and is fast cooling the drifts in that portion of the mine. A drift south from the winze has been started to connect with the north drift from the 2200-ft station. Nothing new of any other portion of the mine.

LADY WASHINGTON.—Work is progressing at this mine very systematically. The new wing to the building has been completed, and the painters are giving it the finishing touches. Inside of this wing the massive hewn granite blocks, upon which the new engines are to rest, are all in place, and being smoothed by the stone cutters preparatory to receiving the engine bed plates. The excavation in the shaft for the pump tank, at the 260-ft level, is well under way, and being pushed ahead as rapidly as three cbifts of men can do the work; this will probably be completed next week. The water in the shaft is meantime being held at its present level by the bailing tanks. The clack chambers and working barrels of the pomp, which were received yesterday, weigh 18,000 pounds, and are fine specimens of solid foundry work.

BELCHER.—Work was suspended during the most of the week, pending the putting in of a new gallows frame and the making of other necessary improvements. Yesterday work was resumed at all points in the mine, and as soon as the water in the Carson river will justify, the old amount of ore will be again extracted and milled. The ore breasts on the 1100, 1400 and 1500-ft levels still contain an abundance of ore ready for extraction. Prospecting the 1600-ft level is being prosecuted with all the energy possible.

CROWN POINT.—Owing to a scarcity of water in the Carson river, the yield of ore has been considerably decreased, as there was no more dump room, either at the mills or mine. As soon as the flow of water shall return to a sufficient extent, the extraction of the usual amount of ore will be resumed. Sinking the south winze below the 1600-ft level is progressing as usual, without change of importance to report. The main east drift on the 1700-ft level is steadily advancing toward the ledge.

OPHIR.—Daily yield, 150 tons of ore. This ore is mostly extracted from the 1500 and 1600-ft levels. The ore breasts are looking well and show no diminution in either the quality or quantity of the ore extracted. Work at all points on the 1400, 1500 and 1600-ft levels is progressing favorably. No work of consequence is being done on the 1700-ft level at present, if we except some repairs to the east and west cross drifts. The erection of the new pumping and incline hoisting machinery is progressing favorably.

GOULD & CURRY.—Some trouble is experienced by the giving way of partially decayed timbers in the main shaft, caused by the changing of the air current upward instead of downward, as before the completion of the 1700-ft drift with the Best & Belcher mine. About all the work now being done in the mine is the cleaning out and repairing of the north drift on the 1700-ft level. The drift was almost totally destroyed by the water slacking the sides at the time of the cave in the shaft a few weeks since.

LEO.—Development operations are steadily and vigorously carried on, resulting in very encouraging prospects. The drift north, from the bottom of the winze, is in 31 ft to-day; the ground is pretty hard, but quite dry, and blasts out well. The hanging wall is very smooth and well defined. The ledge matter shows improvement both in character and quality. The ledge is very large, and it is expected that when cross-cuts are run, good developments will be made.

UTAH.—Sinking the main shaft is being pressed ahead with all the vigor possible, the rock in the bottom blasting out quite easy, and the flow of water steadily increasing as greater depth is attained. The flow of water, however, is not so strong but that the pump still handles it with the most perfect ease. Cleaning out and repairing the main drifts on the 400-ft level, preparatory to resuming the developments of that portion of the mine, is making good progress.

IOWA.—The main west drift on the 400-ft level is rapidly advancing toward the main ledge, the face of the drift showing, during the past few days, streaks of quartz and ore of an excellent character. These streaks are undoubtedly but feeders of the main vein, and there is every indication when that is reached that some valuable developments will be made. The upper tunnel under the croppings is steadily advancing, without any change of value to record.

SAVAGE.—Sinking the main incline shaft is pushed steadily forward. Nothing new to report of the north drift on the 2200-ft level. The main south drift on the 2200-ft level has made a connection with the north drift from the Hale & Norcross, giving a fine circulation of pure air, and greatly facilitating the entire work of the lower levels of the mine. Sinking the south winze below the 2200-ft level is making good progress.

CHOLLAR-POTOSI.—Daily yield of ore, 80 tons. No change in the old upper portions of the mine. Prospecting the 1150, 1250 and 1350-ft levels is still vigorously prosecuted with no new or important developments to report. Sinking the new combination shaft is going steadily forward. The erection of the fine, commodious hoisting works building over the new shaft is also making rapid headway.

BALTIMORE AND AMERICAN FLAT.—Sinking the winze below the 400-ft level, has been stopped for the present; in fact, there is but little doing in the mines except the sinking of the main incline shaft, which is being pressed downward at a very rapid rate.

DAYTON.—The water is drained for 50 ft below the third station level in the shaft, at which point the first lift for the heavy Cornish pump is being put in. As soon as the lift is in good running condition the water will be completely drained and sinking the shaft resumed. Repairing the drifts on the upper levels will be commenced immediately, preparatory to a complete resumption of work at all points in the mine.

IMPERIAL EMPIRE.—Prospecting as usual on the 1850-ft level with no new features to report except the connection of the main south drift on the 2000-ft level with the north drift of the Yellow Jacket on the 1740-ft level. This is a very important matter to both of these mines as it furnishes a ventilation without which it was next to impossible to develop either of the mines as they should be.

CALEDONIA.—Sinking the main incline at the old shaft is making rapid progress, the work being pushed with all the energy possible. At the new shaft the speed at which it is being

sunk, is almost unprecedented and reflects great credit on Mr. Lambert, the efficient superintendent. The erection of the new pumping and hoisting machinery is fast approaching completion.

BEST & BELCHER.—The swelling of the ground in the connecting drift with the Gould & Curry mine, on the 1700-ft level, caused by the rise of water at the time of the recent cave in the Gould & Curry shaft, has proved much more disastrous than was at first supposed, and the entire force of the mine are yet employed in cleaning out and repairing that drift.

YELLOW JACKET.—Sinking the north and south winzes below the 1740 ft level progresses as usual. No changes of importance. The main north drift on the 1740-ft level has completed a connection with the south drift on the 2000-ft level of the Imperial, which gives a much needed ventilation of the level and must greatly facilitate future developments.

LADY BRYAN.—Sinking the main shaft is going steadily ahead, the bottom still in quartz and low grade ore. The north drift, on the 380-ft level, is still pushed forward, the face in low grade ore and quartz. The main south drift, on the same level, is advancing steadily along the east wall of the ledge and affords no new or important features.

OVERMAN.—Work driving ahead at the 900-ft level, with no new features to report. The breakage or disarrangement of the sinking pump in the shaft last Friday compelled a few hours' suspension of work in the drift from the 1100-ft station, but it being soon fixed, work at that point has since been pushed ahead as before.

BULLION.—Sinking the main incline is making excellent progress, the rock blasting out finely. Driving the main north drift on the 1700 ft level of the Imperial is making good progress, still following the foot-wall of the ledge. The joint drift on the 2000-ft level of the Imperial is also making fair headway.

SUTRO.—The main west tunnel is steadily advancing toward the vein, the rock in the face being much softer for the past few days. The flow of water is slightly on the increase, and the softness of the rock admits of much better progress than has been made for sometime past.

FLORIDA.—The main west drift at the 400-ft level is now in close proximity to the main ledge, and there has been a considerable increase in water in the last few days. The affairs of the company, as well as the mine itself, are in a very prosperous condition.

JULIA.—There is little or no change to report of the prospecting operations on the 1000-ft level, the face of the drift still being in clay quartz and porphyry. Opening the 1400-ft station is pushed ahead with all the energy possible.

WOODVILLE CONSOLIDATED.—Sinking the main shaft has been resumed, and is being prosecuted with great vigor. There is a considerable flow of water at the bottom of the shaft, but not enough to interfere with the progress.

PICTOU.—The main tunnel is being actively driven ahead as usual, the hank suspension not affecting Picton affairs. The material being passed through at present is easily worked, and no water coming in.

JUSTICE.—The material in the face of the main drift at the 800-ft level is somewhat harder than last week, and some little increase of water is noticeable. Nothing new to report of the old south mine.

MINT.—The shaft is down 805 ft, the bottom still in very encouraging ledge material. The ground is quite soft, and the work of sinking making good progress. No water to interfere.

PROSPECT.—Bottom of shaft in somewhat softer material than last week, with indications of water. Face of tunnel shows better looking streaks of soft, clayey quartz than those mentioned last week.

EUROPA.—Sinking the main shaft is being driven ahead with all the vigor possible, the rock in the bottom blasting out finely, the downward speed being at the rate of 5 ft per day.

GLOBE CONSOLIDATED.—Prospecting the upper portions of the mine, as usual, with no new features to report. Preparing for the erection of the new machinery is making fair headway.

UNION CONSOLIDATED.—Sinking the winze in the east cross-cut on the 1300-ft level is progressing favorably, the bottom still in very encouraging ledge material.

MEXICAN.—Sinking the winze in the ore vein below the 1400-ft level is making good progress. No change of interest to report.

SIERRA NEVADA.—Sinking the new shaft is being pressed with all the energy possible, and is making steady and favorable progress. Driving the south drift on the 700-ft level of the old shaft, has developed nothing of interest during the week. The north drift on the same level is steadily advancing along the ore vein toward the new works. The machinery is all in fine condition, and the development of the lower levels is progressing as rapidly as it is possible for such work to be accomplished.

SOUTH COMSTOCK.—The cross-cut at the 275 ft-level is in 123 ft to-day, and the face is in somewhat softer material than last week, with more quartz coming in. Water decreasing.

AMAZON AND GLASGOW.—Everything working finely. The shaft is going steadily downward, and the winze below the first station is still in quartz and ore of a fine character.

DANBY.—It is the expectation soon to resume sinking the shaft. The improvements and repairs to the machinery and hoisting works are about completed.

WEST BELCHER.—Work making very favorable progress, indications excellent, the ledge well defined, and the superintendent expects soon to be taking out ore.

NORTH CONSOLIDATED VIRGINIA.—Sinking the shaft progresses at the same energetic rate as heretofore, and the new machinery works splendidly.

PHIL. SHERIDAN.—Grading and preparing for the erection of the new steam hoisting machinery with all the vigor possible.

NORTH CARSON.—Fine indications in the face of the main west drift, and the main ledge itself must be close at hand.

ROCK ISLAND.—Sinking the main shaft and prospecting the 450-ft level as usual. No important changes to report.

ORIGINAL GOLD HILL.—The drifts and crosscuts in both the ore bodies, north and south, are showing well in good milling ore.

NEVADA.—Face of cross cut all in good milling ore. It is evidently getting into something very interesting.

NIAGARA & MONUMENTAL.—Sinking the main incline is going rapidly forward, the bottom still in favorable ledge material.

COSMOPOLITAN.—Face of main tunnel still in milling ore, and pushing ahead at a lively rate, following the vein.

NEW YORK CONSOLIDATED.—Placing the heavy new machinery and the other work at the surface makes very good progress.

OCCIDENTAL.—Still cross-cutting and prospecting the lower tunnel level, with nothing new to report.

Idaho.

BELLE PECK.—Owyhee *Avalanche*, Sept. 1: The ore taken out of this mine for the past few days has exhibited a degree of richness almost unequaled in the history of mining on this coast. A. J. Sands, a veteran in the business and one of the oldest miners in this section of the country, pronounces the development a most remarkable one. Samples have been examined by other experts, and all agree in the opinion that the vein is one of the richest ever encountered in the camp. Hitherto the operations of the mine have been somewhat limited. There has been but a small force of workmen engaged. For the past few days the ore taken out by four men only will figure up a daily product of ore valued at $2,000. There are now about twenty tons of ore on the dump, and we have the assurance of a gentleman thoroughly competent to judge that it will average $500 to the ton. Gold predominates largely in much of the rock, and many of the samples that have been brought to town seem like solid chunks of the precious metal itself.

ORO FINO.—The quality of the ore taken from this mine continues to be equal to the developments hitherto reported, and has a most promising appearance. The shaft is down a distance of 300 ft, and in a few days the Burleigh drill will be in operation, the battery and exploders, by some mistake, not having yet arrived. Some inconvenience has been experienced the past week by reason of a short supply of water, a defect that will be remedied next week. There are upwards of 70 men at work in and about the mine, and the operations are being pushed with the same energy that has characterized all the movements of superintendent Catalow in connection with the management of the Oro Fino. From 30 to 35 tons of ore are being daily hauled from the mine to the South Chariot mill, which is crushing at the rate of nearly 20 tons a day.

GOLDEN CHARIOT.—The extensive works in progress at this mine show that everything is being done with a view to a full development and enlarged operations in the future. We learn from superintendent Lennon that an extra force will be put at work next week, and ore will soon be extracted in large quantities. Some work is being done at present on the second level, the chutes are being made for a vigorous fall campaign in operating the mine. The foundation for the new works is nearly completed, an immense quantity of rock having been taken out in the accomplishment of this undertaking. The main building of the new works will be 55 ft wide and 90 ft long. The carpenters will be at work on it next week. Nearly all the machinery intended for the works is on the ground, having been brought over from Flint within the past four weeks. The boiler is 16 feet long and 50 inches in diameter, with an engine bed to correspond in dimensions. The fly wheel weighs nearly eight tons. Another boiler will arrive in a few days. The running gear required is on the way from San Francisco. The heavy timbers needed for the hoisting works are on the ground, and 50,000 ft additional to be used within the mine.

ILLINOIS CENTRAL.—In addition to the improvements already inaugurated at this mine, a new quartz house has been partly completed and will be pushed forward without delay. Its dimensions are 45x30 ft. The new tank used in connection with the works is fourteen feet long and six and a half feet in width. A new blacksmith shop and other improvements soon to be started will complete the external works at this mine, which will bear comparison with any outfit of the kind in camp. Twenty tons of ore are being daily shipped to the Cosmos mill, and the improved system of preparing the ore that comes from this mine, by means of the use of sluice boxes, seems to be attended with many advantages. Mr. Dixon, the acting superintendent, informs us that the developments of the past few days continue to be the most encouraging.

PAUPER.—The drifts north and south on the ledge in the 4th level, in 12 ft in one direction and 8 ft in the other are, so far, looking splendidly, the ore throughout being of the same rich quality as that which has characterized the developments of this mine for the past few months. Superintendent Crutcher states that the mine wears a more promising look than it has at any time previous, and is very sanguine as to the most favorable result of the operations in the near future.

SILVER CORD.—The ledge at the 4th level is rapidly improving in appearance and getting constantly larger towards the north and better as the work progresses. It has been opened up a distance of 100-ft and shows good ore all the way. Superintendent Corey regards the development as a most promising one and has greater faith than ever in the future of the mine. The new machinery is nearly all on the ground.

SOUTH CHARIOT.—The prospects of this mine are growing brighter daily. The completion of the winze from the 9th to the 10th levels shows a good ledge and good ore the entire distance. Drifts are being run both ways on the 11th level. In the north direction the indications are very favorable, affording the best evidence of the continuation of the rich ore shute from the 9th to the 10th. All the indications point to favorable results.

IDA ELLMORE.—Cross-cutting will commence next week on the 12th level. On the 13th level there are 25 ft yet to run prior to the commencement of cross-cutting in that direction. The ledge will be cut simultaneously from the 12th and 13th levels.

MAHOGANY.—The mine is looking well, especially in the south section, on what is known as the Dolphin ground. The 7th level drift in that direction is disclosing a splendid quality of ore while general indications are favorable.

The California Rock Drill.

This drill, exhibited at the Mechanics' Fair by Mr. L. W. Coe, is a new candidate for popular favor. It was invented, a short time since, by the gentleman mentioned, and is now exhibited for the first time at any fair. The working parts of the drill are few, and the valve and rotary motion novel. Mr. Coe makes these drills in different sizes, which are shown. The largest drill he has on exhibition is not working. The small drill is mounted on a column and is put at work on a 15-inch block of Rocklin granite. The power is furnished by a Delameter belt compressor, which we described in the PRESS of August 21. The usual pressure of air is 50 pounds to the square inch. The operation of this drill is watched with great attention by an interested but seemingly puzzled crowd, who have a very vague idea of what it is all about and what people want to bore those little holes in rocks for, even in mines. The suggestion that the holes are only bored for the purpose of putting powder to blast the rock down, may help some of the crowd out in their conjectures.

Mr. Coe has mounted on a small block of stone a handsome little brass drill, which he calls the "Lady's Drill." It is only a model, with a cylinder one inch in diameter and an inch and a half stroke, yet it works with most surprising speed and regularity, forcing its way through the stone. This little model was made by Moreau & Haggerty, on Commercial street, and is as perfect a piece of machinery as the large drills, and, of course, more finely finished. The large drills are made by the well known firm of Hawkins & Cantrell. Mr. Coe claims that he can do more work with the "California drill" than any other in the market can accomplish, and that its simplicity in construction and operation will recommend it to those posted on drilling machinery. Mr. Coe will show the internal construction of the drill to any one interested in such matters, and give them all desirable information.

Progress in the Sutro Tunnel.

The following is the report of progress in the Sutro tunnel, for week ending Sept. 1, 1875:

Number of feet in tunnel, August 22	10,563
Number of feet driven during week	103
Distance in, September 1	10,666

REMARKS.—Rock, solid quartz, hard drilling but good blasting. Delayed twenty-four hours laying track, timbering, etc. A quartz ledge was struck August 9th, at a point 10,437 feet from mouth, extending 65 feet in thickness, when 52 feet of porphyry was encountered. At this point another lode, having a width of 112 feet, extending to present face, where the drills have just developed another clay wall; whether more quartz or country rock will follow is not yet demonstrated. The lodes passed through thus far had no value at the point crossed; drifting and cross-cutting is highly desirable and may develop valuable ore. Total progress for August, 370 feet.

[Signed] A. SUTRO, Gen. Supt.

THE Ukiah *Dispatch* says: Some of our citizens are talking of getting up a water company, to bring water from Russian river, six miles from here, in a ditch. Something will have to be done before long, as our population is increasing, and our water privleges lessening each year.

THE FINE DRAWING represented on this page is published in chromo by L. Prang & Co., Boston, who stand at the head of their profession in the United States.

THE direct Atlantic cable is in working order again.

The Habits of the Trout.

The trout is, compared to every other English river fish, exceedingly swift and keen sighted, and this peculiarity is shown in its mode of seizing its prey. The so-called coarse fish, the dace, roach and chub, hang about in shoals in mid water, or nearer the top than the bottom of the river; and when they feed on flies, they lift themselves in a somewhat leisurely, and, as it were, meditative way to the surface, and sink in the insect in a particularly sure and deadly way. If that fly happens to be artificial and to conceal a barbed hook, the very determined manner in which it is seized, and in which the fish slowly turns and sinks below the surface, ensures its being firmly implanted in the leathery jaws of the dace, chub or roach. It is hardly necessary for the "angler" to strike—to give that slight turn of the wrist on which so much depends in fly-fishing for trout. Very different is it with the trout. He seldom disports himself in mid-water. He is serious, and not, like the so-called "coarse fish," a gregarious animal. He loves concealment, and he loves solitude. He lurks at the bottom, in the shelter of some tree root or great stone, or hides from the sun in the deep shadow of a hollow bank. He loves the rush and swirl of a strong current; and his strength will hold him poised with hardly a movement of his muscular tail fin in a rapid that would sweep the weaker fish down stream in a moment. In such haunts he waits and watches for his prey as it comes hurrying past him in the running water. He is not particular as to what it is, provided it be only animal food; he prefers it if it has life and movement in it; he finds his prey among the teeming insect life of the river itself, among the larvæ of the innumerable kinds of *Ephemeridæ* and *Phryganidæ*, the creepers and water crickets, and among the May flies and stone flies into which these creatures develop. He devours the loach, and the bullhead, and the minnow, the young of every fish that swims, the fresh water shrimps, and even the water beetles; nor does he neglect the waifs and strays of his native stream, its varied jetsam and flotsam, the caterpillars and tree insects that are shaken by the wind off the tree branches on the bank, and the worms and slugs that are swept down in flood time from the meadows. From his hiding place his keen glance catches sight of every insect swept past him in the eddy, of the tiniest minnow swimming through the broken water; and he darts with a rush too quick sometimes for the human eye to follow, out through several yards of water to seize his prey. His rush is impetuous, and his haste will sometimes cause him, when he has detected the artificial nature of the bait, to strike against it and, become pierced with the hook—to be "booked foul," as the anglers say. Other he stops in time, and refuses to take the bait. This keen sight of the trout, and the distance from which his rush is often made, are one of the first lessons the angler has to learn.—*The New Quarterly Magazine.*

THE CALIFORNIA PRISON COMMISSION.—The regular quarterly meeting of the Board of Trustees of California prison commission was held on Tuesday evening. Committees on nominations and amendments, for the annual meeting to be held in November, were appointed. Robert Beeching, the General Agent, read his report for the quarter, which shows that he had met 273 different prisoners, and had assisted 25 by supplying them with legal counsel, 43 with board and lodging, 86 with small sums of money, 6 with clothing, 59 with means to leave the city, 18 by securing their release, and 19 by procuring for them mitigation of punishment. He had received 148 visits from discharged prisoners, and has himself paid 78 visits to the City Prison, 31 to the County Jail, and 3 to the State Prison, and has written 50 letters for prisoners. He gave encouraging statements of his work and of its results, but remarked that he was much embarrassed by the want of money to operate with. Numerous cases were reported showing the necessity for continued efforts in behalf of discharged prisoners who wish to reform and become honest men. The condition of the City Prison, notwithstanding the efforts made to keep it decent, was severely commented upon; also the overcrowding at the jail and State Prison.

Industrial Items.

THE managers of the Santa Cruz and Watsonville railroad having negotiated a loan sufficient to complete the road and equip it fully, work will be prosecuted vigorously upon the line. A large force of graders, bridge-builders and track-layers will commence operations on Monday, as the intention is to have the road in operation prior to the setting in of the rainy season.

THE Butte *Record* of the 4th inst. says: Last Monday, chief engineer Ball, assisted by Messrs. Wetherbee and Arents, tested the the forcing capacity of our new water works. The trial was a very satisfactory one, the water being forced through a fifty-foot section of hose, a distance of about sixty feet.

THE Santa Cruz *Sentinel* says that the flume has reached Felton, and the transportation of lumber therein will soon commence.

A TELEGRAPH line is to be established from Chico to Big Meadows.

THE Santa Rosa Palace hotel will be completed by the 18th inst.

A NEW Roman Catholic church is being erected at Lompoc.

The Betts Spring Company.

The Betta spring company, of San Francisco, make a display at the Mechanics' Institute Fair, which is a credit to the State.

The company make all kinds and classes of carriage and wagon springs, samptes of which are shown in the Pavilion. Those exhibited strike the observer as bsing very highly and handsomely finished, and wsll made. The trade in these springs extends north to Victoria and across ths ocean to Japan, where springs from thia factory have been sent.

The springs are all mads of the hest refined English stesl. It is imported in long bars from one and a half to four inches wids, the edges being slightly rounded off, ready to make into springs. As some may be interested in knowing how these springs ars made, we will give, briefly, some idea of the processs: The steel hsrs are brought in at ths front door of the factory and placed in racks according to size. A workmsn takes these hars and a machine onts them into propsr lengths for the leaves. The leaf then passes to the furnace, where the ends are heated and drawn out by a machine, requiring very little finishing by the mechanic. Esch snd of the spring is thus drawu out thin, lsaving a taper from the center to the ends.

The ssme machine which draws ont tbese ends also puts the "lip" on the spring. This "lip" is an improvement of Mr. Betts', which is a very important one. Formerly, in placing one leaf above another it was necessary to keep them in position to cut two slots and punch two teats in each leaf, which, of conrse, weakened the spring. Each slot was about half an inch long, and, in making the two in each leaf, the pisoe of steel was frequently broken or weakened. These were necessary to keep the leaves in place. The teat or projection on each side of the center of the leaf fitted into corresponding slots in the leaf below it, thus preventing the leaves from getting out of position. The "lip" invented by Mr. Betts is much simpler, and answers the purpose just as well without weakening the leaf. It is nothing more than a slight projection formed on the side of the spring, a short distance from each end. This heing formed on each leaf, laps down beside each lower leaf, each one assisting tokesp the] other in position and preventing any lateral motion whatever. The bolt, which paases through the center of the spring, holds the lsaves together, and the "lips" and bolt combined give solidity to the atructure. Thus these "lips" do away with the slots and "teats." The experience of the factory ia that no spring has ever given away where the lip is, although, in the case of the slot, a large percentage was lost. The machine for forming this lip waa made from plans of Mr. Betts'.

After the lip is formed and the ends drawn out the leaf passes to the grinding room. Here are three huge grindstones rnn hy steam, the operators grinding np the ends to "point" them out, and taking off any ronghness. The leaves then go to the fitting shop, where they are aet and carefully tempered. They are then sent to the finishing room, where the parts that show are polished up and finished. Every spring, large or small, is carefully tested before it leaves the shop. A heavy beam is arranged as a lever, and the spring is squeezed together tight aeveral times, so if there is any defect it will be eeen. A flaw of any kind condemns the spring and the steel. If a slight crack is made in a bar it is condemned at once and discarded, beng sold as old scrape.

The operations of the shop are very systematio. Most of the machinery ia of their own construction and design. The furnacea are so arranged under the boilers that their waste heat goes far to furnish the steam reqnired for the 20-horse power engine, which serves the shops. In the fitting shop the tempering furnace is made in two parts, one step above another; sn arrangement which furnishsa work for two more men with very little more expenditure of fuel.

These works were eatablished seven yeara ago, with a man and a boy as employees. They now have $50,000 invested in the business and thirty men at work. The works are at No. 218 Fremont atreet, and cover a space 75x125 feot. The business hae beeu eatablished simply on the quality of tho work, as they have not gone outside for any help. They have succeeded in driving out imported springs, for wherever their work has gone it has taken the place of others on thia coast.

They now aupply the Kimball manufacturing oompany, Carvill manufacturing oompany, and in fact all the wagon and carriage makera of the city with their springs. They last week completed a $30,000 order of car springa for the Central Pacific railroad company. They are now kept so busy that little stock is held on hand, moet of it being order work. Some very heavy springs are made here for butcher wagons, etc. These springs are made in two elliptics of thirty-eight leaves, and made to carry from four to six tons. The long, peculiar aprings shown at the Fair are made by thia firm for Mr. Dolan, of Sacramento, who haa a patent on thia style. They are designed to take the placo of the Kimhall wooden C-spring and thorough brace, and are of similar shape, though made of steel alone. There are only threo leavea in the whole apring.

The company have succeeded so well in their entorprise that thoy are about eatablishing a factory for axles, which will require about $50,000 capital. These axles are all imported now. The industry will give employment to about as many hands as the spring making does, and will be a similar olass of bnsinsss. This inatitution is a flourishing home indnstry, which has hnilt itself up solely on the character of its work, and which is destined yet to assume larger proportions.

Railroad Tracks and Fires.

A correspondent writea ns a note, making a snggsstion as to an apparatus, by msans of which street railroads will not bs interrupted during fires by the hose lying across the track. He suggests an apparatus like the one shown in the accompanyiog out, and describes, in dstail, how it could be made, suggesting, at ths same time, that each car shonld carry a "bridge" of this kind, so as to have it handy to gst over hose which lies across the track.

We publish this as an illustration of how people are apt to think that because they have never seen a certsin device and happen to think of it, that it must, of necssity, he original with them. This "bridgs," spoksn of by our correspondent, is, to spsak fignratively, as "old as the hills," having been in use for the purposs specified for many years. Some of the hook and ladder companies carry them; some of the cars carry them. Thsy have them also at the car depots, fsrry landings and such places as conld be greatly inconvenienced by a "jam" of cars during a fire.

There is notbing new whatever in the suggestion; bnt it is snggested in good faith hy some person who has never asen the device in use. People often hother themselves for montha in perfecting some devioe which has already bsen patented and in nse for years, and then are unwilling to believe that some one is ahead of them, unless forced to by the most positive proof.

We remember once an old gentleman who oame to the patent agency conneoted with this office, who had an automatio switoh for railroads. He thought he had the invention of the age—something before nnheard of, and

"Bridge" for Street Cars to Pass Over Fire Hose.

very valnable. When told that many inventors were before him he was incrsdulons. He aaid they were not in uae in the street railroada in the city; he had examined them. It was with difficulty he was made to believe that there was such a thing as a patsntsd improvement which was not in nniversal nse, and that in many cases old methods were used in preference to an apparent improvement. Thia gentleman had made an expsnaive model, and spent considerable time and money in experimenting with a device that a patent agent oonld have told him was uasless. It is always better, therefore, before having models made and expensive experiments tried, to go to aome reliahle patent agent, explain the device, and see whether there is really anything new and worthy of a patent. A few dollars apent this way may save many which might be spent uselessly. Since tbe patent agency of Dewey & Co. was organized, many years ago, hundreda of men have come to it with inventions they thonght new, but which the experience of the managers enabled them to pronounce unpatentahle.

We have been led to these remarks by the circumstance of our having the ahove mentioned snggestion made; showing that people will often take up an old idea with the impreasion that they have something novel.

Art at the Mechanics' Fair.

The positiou of the fine arts in a community is a good indication of the degree of oulture attained by it. When real merit obtains patronage and bad work is frowned down there will be good artists. When there are good artists the taste of the public is sure to be improved, and more people become interested in Art matters. The opposite state of things will, of course, produce contrary results. The exhibition at the Fair is, therefore, of interest as a gauge of San Francisco's æsthetic status.—if it is just to take the collection as a standard.

If one haa made note of aimilar exhibitions on previous yesrs he will see at a glance that a great step forward has been made, bnt it ia still evident that, as a city, we are more anxious for the appesrance than for the real thing itself. Although much lesa conspicnous this year than formerly, the blanks on the walls and the space occupied by picturea, no doubt placed there to fill up, indicate that our galleries are yet, in the matter of size, somewhat ahead of necessity.

For a local exhibition our local artists are not sufficiently well represented. Thia may be an indication of prosperity or indifference on the part of the artists. They may have heen busy and sold all their pictures, or they may have neglected to prepare for the exhibition. If the former is the case there is an excuse; if the lattor, there is none. It may be that they prefer auhmitting their pictures to the public gaze at the rooms of the Art Association in preference to the Mechanics' Institute; hut they ahould remember that the taste of the multitudo mnst be educated, and no better chance ia offered than at a place like thia Fair. The Art Associstion rooms are freqnented by lovsra of art and people of cnltivated taates, hnt the general pnhlic, the great orowd, do not go there. It is diffsrsnt at the Pavilion, where people of all classes are, for the time, on a social equality, and whsre what ie exhibitsd is for the eye of the poor as well as the rich. We do not mean to infer that the Art Association is only for the rich, but it is, of course, understood that those who visit the rooms are those interested in art only. Here, at the Fair, everyhody comes, and our local artists maks a mistake when thsy ignore the multitude.

The number of good foreign works speaks wsll for the taste of our wealthy men, but we should have more of them. The people who can afford the luxnry of having fine paintings ahould also he liberal enough to give pleasure to the commnnity in which they live by letting thsir art treasures be seen, at least, by those who cannot afford to purchase. If only one good picture were loaned by each gentleman owning a number of them, a very excellent and select collection could be shown.

Some of our citizens have come forward nohly and assisted the committee having charge of the Art Gallery. Others who might be mentioned could have done so, without expense or trouble, had they heen so inclined.

Our local artists who do exhibit will most of them be recognized as worthy of praiss; and we find gratifying evidence that a gonuine advance has heen made, and that in several branches of Art we are worthily repressnted. For so young a city we have done remarkably well, and, as wealth and stability grow, there is no doubt but that San Francisco will fulfill her promise of becoming one of the principal Art centers of the oountry.

Cast Steel Shoes and Dies.

The Cast Steel Shoe and Die Company show, at the Mechanics' Fair, samples of their shoes and dies and alao those of the ordinary kind. The common iron shoes and dies were in the Pacific mill crnshing Belcher ore for 21 days. They sre much worn and broken. As a comparison are placed beside these, cast steel shoes and dios, the shoes of which were 112 daya and the diea 175 daya, on the Morgan mill, working on Crown Point ore. These latter are, of oourse, mnch rednced in size, hut have worn down nniformly, with no eigns of fracture on the edges. To mining men nnderstanding theee thiogs, the comparison ia very greatly in favor of the oast steel shoe and die.

It has heen only a fsw years since cast ateel was nsed for thia pnrpose, although it is strange it never was thought of hefore. In the old way each battery of five stamps nses np, it is stated, about one thousand pounds of cast iron every month. Another great disadvantage is, the small lumpa and pieces of iron which invariably break off the iron ahoes, and which are difficult to separate from the amalgam. The steel wears off so nniformly that the faces may be worn down to an inch in thicknees and still remain in efficient condition and safe from hreakage.

For about two years cast steel shosa and dies have been manufactnred and supplied to the mills. Experiments in the methods of oating, forging and tempering the steel reaulted in complete success, and shoes and dies are now made from ateel which will do the work of six sets of cast iron ones, and costing abont one-half the price. The gnarantee of the company is, that the steel ahoee and dies will, in every case, do four times the work of the cast iron ones and save ten per cent. The advantages of the new aystem are nnmeroua. In the first place there ia a saving of seventy-five per cent. in freight. Then there is large saving of labor and time consumed in changing the shoes and dies, and also of time and inconvenience resnlting from the frequent breakagea to which cast iron dies and shoss are snbject. The difference is best expresaed by stating that a five-stamp battery will crush one ton of rock moro each day when applied with ateel inatead of iron stamps. Thia ia mainly on acconnt of the nniform wearing of the steel, which always offers a trne striking surface, instead of wearing away irregularly as doea cast iron. In view of these many advantagea the stesl shoes and dies have been extensively sdopted in the mills of the Comstock and in the majority of the large gold quartz crushing mills of this State. Among the mills using the improved atamps are the Rhode Island, Douglas, Ramsdell, Pioneer, Petalnma, Brunswick, Woodville, Sunderland, Pacific, Santiago and Excelsior, of Gold Hill; the Sacramento, Eureka and Morgan, also on the Comatock; the Riverside and Knox and Boyle mills, of Sonora; the Greene and Indiana Hill mills, of Placer connty; in the aonthern part of the State, the new 80-stamp mill of the Sumner Co., the 40-stamp mill of the Gold Mountain Co., the two mills of the Surprise Valley Co., in Pansmint, the Chariot mill, of Julian district, and several others; at Grasa Valley, the Idaho and North Star mills; at Sutter Creek, the Phœnix and Lincoln mills; in Esstern Nevada, the Manhattan Co.'s mill, at Anatiu and the Bslmont and Mineral Hill milla are nsing thsm with great success; also, in Arizona, the Fredericks, Gresnwood and Mineral Park mills. The steel atampa are heing universslly adopted in Mexico whsre nnusually high freights prevail.

All the mills using the ateel atamps report thsm superior to iron, and bsfore long we expect to see them introduced into every mill on the ooast. It would be well for mill men and those who are intereeted in the snbject to osl at the office of the Cast Stsel Shoe and Die Co., Room 1, Academy Building, 330 Pine strest and see sample shoes and dies which have been used in wet crnshing for six months and still remain in serviceahle condition. The matter is a most important one to mining men; and those who hsve not alresdy adopted the improved stamps should examine their merits.

Hawkins & Cantrell's Steam Hoisting Engine.

Msssrs. Hawkins & Cantrell, 210 and 212 Beale street, exhibit at the Mechanics' Fair one of the hoisting engines which they maks a specialty of mannfacturing. Their engines are made for mining and wharf purposes or for any place where it is necessary to do hoisting. The engines are made heavisr and stronger than those of Eastern manufacture, it being neoessary in mining work to have them of the strongest and most dnrable character. The large double engines are made with locomotive boilers, and made to hoist from a depth of 1,000 feet. The smaller ones have vertical boilers with aingle engine and reel, like the one exhibited at the Fair.

Several of the largest sizes of this class of engine are in use on the Comstock. One of them, with 8x12 oylinders, ia at work on the Wells, Fargo mine, one on the Iowa and on one the Segregated Gold Hill. That shown at the Pavilion has a cylinder of 6x12.

Engines of thia kind are mainly nsed for prospecting purposes before large and heavy hoisting works are built np. They are made with a solid iron frame and so arranged that the engine can he pnt at work in an honr after arriving on the ground. It only needs a few timbers, upon which to bolt the frsme, and it is all ready. Being much less expensive than heavy large hoisting works, these enginea are in demand for opening minea.

One of the largest aize engines of thia kind haa recently been put at work by the Gold Hill company, at Quartzburg, Idaho. It is a portable, double hoiating engine, with link motion and double reels; is of forty-horse power, occupying a apace of only twenty by fonrteen feet; and one of ita advantages ia that the engiaeer can control the brakes and the hoiating from two separate shafts, and run his engine at ons and the same time. The great convenience of this new arrangement can be seen at a glance by all mill men. The hoisting druma are thirty-two inchea hy three feet. The engine, which is more especially intended for small mines, in so simple that it requires no skilled labor to set it up, aa the boiler and the engins are both within one frame. An engine of this kind can, for five years at least, from the opsning of the mine, keep a twenty-stamp mill at work at an expenae much less than any other pattern.

Hawkins & Cantrell built eight hoisting enginea which were nsed during the constrnctioa of the Palace hotel for hoisting purpoaes. During the year they were used, none of them ever stopped for half an hour for repairs, which speaks well for their construction.

A hoisting engine of this kind was recently arranged hy thia firm in a peculiar manner for McPherson & Wetherbee, for a specisl purpose. When the engine was completed it was bolted on a platform car and geared from the main shaft to the csr axle, so aa to make a locomotive as well as a hoisting engine. When thrown into gear on the cars it hauls a train up to the bank of the river where the bumpers meet heavy timbers, which keep the car in position. This is at the head of an incline leading down to the river on a grade of one foot in five. The gear is thrown off from the car axles and thrown on to the hoiating reel. The locomotive then becomes a hoisting engine. It lowers a car down the incline into the river and a log is floated on to it. The engine then hoists the car and log up the incline, a distance of about five hundred feet. The log is then removed from the car and the operation repeated. When the train is loaded, the gears are thrown from the hoisting reel on to the car axle and the engine becomes a locomotive. It haula the train of logs on the track abont three miles. The loga are then tranaferred into the Inyo river by another incline and floated to the mill. This engine givea complete satisfaotion, since it works well in both capacities for which it is used.

Messrs. Hawkins & Cantrell do a general machine shop bnsinees, bnt make a specialty of these engines. They have been established about seven years, and now give steady employment to twenty-eight or thirty men.

THE Petaluma woolen mill is in successful operatiou, weaving flannels and blankets and spinning knitting yarn. The manufaoture of fancy flannels will be commenced in a few days.

AN Englishman has invented a machine for making hay hy artifioial heat. The coat is seven or eight shillings per ton.

Useful Information.

The Straits of Gibraltar Widening and Deepening.

The straits of Gibraltar, aeweli ae the British ohaonel, are both, beyond a doubt, oceau conquests ovsr ths gradually sinking land. Ths advanoing progress of the ocean in ths former case is abundantly shown by authsntic history. We condense ths following from ths *Scientific American*:

Avienus on the authority of Daemon of Amphipolis, makes ths width of the straits of Gibraltar, at the narrowest poiot, only three miles wide. Then he quotee a subsequeot measurement, by Enotsmon of Athens, who found it four mil.s. Next we find that Scymmee of Chio measured it, in the ysar 143, before our era, and foond it thirteen milssat the Atlantio outlet,whioh now is twenty-six miles in width. Turanius Gracilie, about fifty years hefore our era, givss the width of the narrowsst place, from Mellaria in Spnin to Caps Blanco in Africa, as four and a half milss. Strabo gives the greatest breadth ae nearly seven miles, while Pliny, who had visited the strait, gives it at seven and a half miles for the narrowest part, and about ten miles for the widsst part. Bishop Victor measured the distanoe in the year of our sra 500, aod found it twelve miles; while ths prssent Spanish measursment is fourteen miles.

Avienue also epeaks of two wooded islee in mid channel, on which were built a templs and altars in honor of Hercules. These were the celebrated pillars of Hercoles of ths ancient suthors. The Carthagioiaos "wsre obliged to build flat-bottomed vesssls, so as to ho able to sail over the shnllow watsr of the straits," according to Avienus, who says that Haonibal had reported that theré was "a hottomless and boundless sea farther to the west," which, as it corresponds to ths Atlantio ocean, puts the locality intsnded to be deecribed bsyond douht.

Pliny visited ths straite, aud speaks of a low lying island, covsred with wild olives, and upon whioh were ths rsmains of the Temple of Hercules. Pomponius Mela, a Spaniard, living several centuries later, and to whom these regions were very familiar, describes the straits as a chaunel broken hy a number of small islands. At present they have all disappeared, and the largest shipe sail freely over every portion of these waters.

In 1728, ihere happened a very low tide, and on this occasion the remains of the famous Temple of Herculea were distinotly seen in the oceanio part of the strait, and some soovenirs were even obtained for preservation.

The gradual sinking in this neighborhood is balanced by unheavals in other regions, which are very marked, well established hy observation, and carefolly measured. The northern part of Sweden and Norway are rising steadily. So are the Azores rising, so is the island of Santorin, and ths island of Julia. The former sea port of Aiguee Mortes is now nine miles from the shore while the celebrated Temple of Serapis, at Pozzuoli, for many centuries eogulfed, ie now uncovered, aod is visited by travelers and tourists.

Useful Recipes for Home and the Shop.

Varnishes, Limpid and Flexible.—Anhydrous alumina stereate, dissolved in turpentine, is an artiole much recommended for this purpose, and it is said to he nnalterable et elevated temperatures.

Soldering Without Heat.—Take ¼ of an onnce fluoric aoid, 2 ounces of brass filings, and 1 ounce of steel filings. Put the filings ioto the acid, and apply the solution to the parts to he soldered, which dress together. Take oare to keep the fluoric acid in an earthen vessel.

Handy Soldering of Brass.—Cut a piece of tinfoil of the size of the surface to be soldered; then paint over the surface with a solution of eal-ammoniac; place the tinfoil between the pieces, and apply a hot iron until the foil is melted. Thie is a neat and handy way of soldering small brass-work.

Fire Lute.—Mix thoroughly 2 parts of good clay, 8 parts of sharo washed eand, and 1 part of short etraw or horee manure; temper like mortar. Another: mix linseed or almond meal to a paste with milk, lime water or starch paste. This, it is said, will make a lnte that will stand 500°.

To Give Iron Wiae a Silvery Look.—According to a German recipe, the iron wire is first placed into hydrochloric acid, in which is suspended a piece of zinc. It is afterwards placed in contact with a strip of ziuc, in a bath of 2 parts of tartaric acid diseolved in 100 parts of water, to which is added 3 parts of tin salts and 3 parts of soda. The wire should remain about two hours in the bath, and is then made bright hy polishing or drawing through a drawing-iron. The proce-se can also be nsed for whiteniug other forme of iron.

Black Stencil Ink.—Take shellac, 2 parte; borax, 1 part; soft water, 10 parts, and gum arabio, 1 part; then add lampblack and indigo in sufficient quantities. Boil the shellac and borax in the water nntil dissolved, then add the gum, and withdraw the mixture from the fire. Whsn cold, add the lamphlack to bring it to a suitable color, and lastly a vsry small quantity of finsly powdered indigo to givs it a real jet shsds. When made, keep io glaes or earthenware vessels.

The Earliest Self Rake.—Ths sarlisst instances of a self-scting raks on a reaper appsare in an English patent granted to Mr. Gladstons in 1806. The first acconnt of a machine to reap grain appears to bs given by Pliny ths Elder, who was horn. it is thooght, in A. D. 23. And the first patent for a rs-piog machine was grautsd in England to Joseph Boyce, July 4, 1799, nnd in the United States to Richard Freoch and J. T. Hawkins, May 17, 1803.

Alcohol foa Plant Insects.—The hortioultural journals recommend dilnts alcohol in spraying plants, as being deadly to insects, and convenient to uss, as it quickly svaporates, leaving no trace on ths plants, leaves, or flowers. Ordinary atomizers, are now freely used for spraying house plants, and are found to bs very convenient.

Common coal oil is an excellent mosquito bar. Drop a little on a piece of cotton, squesze as dry as possible, and rub over the exposed portions of ihs body. The smsll of the oil disappears in about five minutes, and no mosquito will alight upon the annointed placss. This is said to he better than pennyroyal essence for the eame purpose.

Varnish for White Woods. — Dissolve three pounds of hleached shellac in ons gallon of spirit of wine; strain, and add one and one-half more gallons of spirit. If the shellac is pure and white, thie will make a beautifully clear covering for whits wooden articles.

To Fasten Wood to Stone.—Melt together four parts hy weight of pitch and ons part wax, and add four parts of brick dust or chalk. It is to bs warmed, for use, and applied thinly to the surfaces to he joined.

An obdurats scrsw may sometimes be drawd by applying a piece of red hot iron to ths hean for a minute or two, and immediately using the scrsw driver.

For Sticking Leather Together.—Melt together in an iron pot equal parts of pitch and india rubber.

Good Health.

Seasonable Food.

The wholesomeness of food depeods nearly ae much on the time it is takeo as on the quantity. We have grown so luxurious in our physical as well as mentnl tastes, thnt we are constantly tempted to eat things out of season. Yielding to the temptation, as we often do,we pay the penalty, soon or late, in temporary or chrooio derangement of our health. Meat which ie excellent in cold, may not he desirahls in warm weather; fish is best during spring and early summer; vegetahlee and fruit are nutritioue when they are fully ripened by sun and season, and not artificially stimnlated. Nature knowe what she ie doing; she furniehes for every latitude. We need variety, not so much at one time, as from time to time. The delicacies of the season will not hurt us; but the delicacies out of season certainly will, if long continued. The appetite so jaded as to crave oysters in July, or strawberries in December, needs careful correction by the adoption of the simplest habits. The palate naturally relishes what nature has near at hend. As a rule, not only is the simplest food the best tood, but the most seasonable is in the long run, the most appetizing. There is no difficulty in determining what we should eat, since the producte of our climate show us plainly month by month. Fish, fleeh, and fruit, by their plumpness, tendernese and ripeness, themselves, denote when they are ready to be eaten. A eound stomach will profit by whatever an unspoiled palate enjoys.—*Scribner's Monthly.*

The Philosophy of Death by Sunstroke.—*Coup de soleil* or sunstroke is thns mentioned by Tanner: "Causaa: In its perfect form, it is met with only in the tropics. It has been noticed that those attacked have often been affected for a few daya previously with snppreesion of perspiration. The nights hnve been sleepless, while attscks of vertigo and a sense of weariness have heen complained of. Such men, too, may have heen irregular in their habits; while perhaps they have also been indulging freely in alcoholic drinks, and prowling ahont under exposure to an almost vertical sun for two or three days previous to the seizure. Symptoms: These are generally faintness, thiret, great heat, and drynese of the skin, with proetration. As the disease advances, the heart's action hecomes violent, the man can scarcely be roused, the face gets pallid and perhaps an attack of vomiting ushers in the stage of coma. The affection sometimes comes on very insidiously. A man will he seen to bs listless and stupid; but he makes no complaint beyond eaying that his head feels a little queer. Yet in twelve houre he may he dead. Dr. Morehead agrees with those observers who refer the phenomena of sunstroke to depressed fnnction of the cerebro-spinal and sympathetic nervons systems. The three most urgent thinge to he performed in treatment are: Cooling the body, removing listlessnese and oppression, increasing the reepirstory actiou.

Salicylic Acid.—Ths following information concerning its uees is furnished hy Dr. E. R. Squibb, of Brooklyn, N. Y.: "It ie used for medical and surgical purposes, either dry or in solution. When nsed dry, it is snrinkled on to wonnds, ulcers, or dreesinge in ths form of vsry fine powder, in very small quantities, sithsr simply powdered, or mixed in various proportions with soms diluent, such as staroh. Whsn nsed in simple solotion, sithsr for spraying surfacss, or for washes or gargles, it is used in tepid solution of ahont ons part to 300 parts of water. Whsre strongsr solutions ars required for washss, gargles, or to moistan drsssings, one part of the acid and three parts of phosphate of sodium to fifty parts of water have heen used. When applied to wonnds it immediately appears in ths urins. Its alleged advantagee over all antieeptics are: Firet, that it is far more powerful and effeotive in emaller quantities; and secondly, that it is, in all quantities necessary for complete effectiveness, entirely devoid of irritant action upon the living tissues. It is not oaustio or corrosive in any quantity, and never produces inflammntion. In large quantitise it may he irritant snd painful, hut yet rarely exceede a stimnlent effect. It appears to he quite neutral in very small quantities, and yet thoroughly effective.

New Burn Mixture.—Take the hest white glue (extra) fifteen ounoes. Break it into small pieces, add to it two pints cold water, and allow it to become soft Then melt it on a watsr hsth, add to it two floid ounoes glycerine and six drachms carbolio acid, and continue ths heat on the water bath until a glossy, tough skin begins to form ovsr ths surface in ths intervale of etirring. The mixture may be used at ouoe, after the glue is melted and ths glycerine and oarholic aoid ars added; bot when time allows, it ie advisahle to get rid of a little more of ths water, nntil the proper point is reaohed. On cooling, this mixtnrs hardene to an elastio mass, coversd with a shining parchment-like skin, and may he kept for any tims. When using it, it is placed for a few minutes on ths water bath, until sufficiently liquid for applicatiou (it should be quite fluid). Should it at sny time rsquirs too high a heat to bscome fluid, this may bs corrected by adding a little water. It is applied by means of a broad brush, and forme in about two minutss a shining, smooth, flexible and nearly traneparent skin. It may he kept for any time without spoiling, in delf or earthen dishes or pots turned upside down.—*American Journal of Pharmacy.*

Asparagus and Celery.—A medical correspondent of an Englisb journal says that the advantages of asparague are not properly appreciated. Those who suffer with rheumatism are cured by feediog a few days on this delicioue eeculent; and more ohronic cases are much relieved, especially if the patient avoids all acids, whether in food or heverage. The Jerusalem artichoke hae a similar effect in relieving rheumatism. It may he well to remark that most plants which grow naturally near the seacoast oont in more or less iodine, and in all rheumatic complaints, iodioe has long been a favorite remedy. One who has been in the drug business, told the writer, some years ago, that many of the patent nostrums which dieinterested people—"for the good of their fellow creatures"—sold at two dollars a hottle, coneisted of a few cents worth of iodine in solution. Iodine is dangerous, however in overdosee, effecting espscially the eye.—*Scientific American.*

The Sea Bath.—The invigorating and remedial effects of sea bathing, when not indulged into exoese, are everywhere recognized. But it is frequently the case that thoee who are in most need of, and most likely to be benefited by the salt hath, are too feeble to take it in the sea, and millions there are who cannot afford the necesaary travel to obtain it. Many so situated sometimes have recourse to a salt water bath, thinking to derive similar beoefits. But as sea water contains several other chemical salts in addition to chloride of sodinm the desired henefits from an ocean hath are not realized. To meet this want, however, a pure sea salt ie now prepared by the evaporation of sea water, containing all the saline metters of the ocean, from a solution of which something very near akin to an ocean bath may be obtained in one'e own bath room, wherever located.

Remedy foa Sea Sickness.—Voyagers, the world over, will remember M. Giraldes in their prayers, if what he claims for a recipe of his for sea sickness ie trne. Having occasion, he says, to frequently crose the English channel, and invariably falling a viotim to this horrid malady, he took a chloral compound with the happiest reeults. Here is the mixture: Chloral, three grammes (forty-five grains); distilled water and currant syrup, each sixty grammes; two drops of essence of mint. Of thie he takes one-half immediately on coming on board, and the rest on the return voyage, and invariably escapes sea sickness.

How to Remove Warts.—Wsrts are not only very troublesome, hnt disfigure the hands. Our readers will thank us for calling their attention to the following perfect cure, even of the largest, without leaving a scar: "Take a small piece of raw beef, steep it all night in vinegar, cut as much from it as will cover the wart, and tie it on, or, if the excrescence is on the forehead, fasten it on with strips of plaster. It may be removed during the day and put on every night. In one fortnight the wart will die and peel off." The same prescription will cure corns.

Domestic Economy.

How to Eat a Muskmelon.—Ao exchange has thie, which comes in play at the present time in our locality: Our readers will probably exclaim, "only give us the melon, and you need not instruct us how to eat it." Yes, but there is a "good, better, best" way of doing things, and we propose to tell you the best way of doing it. Ae Mrs. Glass says in her cookery book, first catch your hare; so ths day before eating your melon, select one, the stem of which is cracking away from the fruit, and which ie also giving out that delicioue aroma peculiar to it. Put it in ths refrigerator until the next day at breakfaet or dinner; cut it in two, lengthwiss, take out all ths seeds, into each half put a tablespoonful of strained honey, and scoop it out with a spoon, dipping each spoonful into the honey, and eat. If, after sating *quantum sufficit*, you do not wish your throat was a mile long, and every inch of it a palate, then we can only say that you are wanting in gustatory taste and our advice is wastsd. Whil we are giving advice, let us add that all fruit is the bsttsr of heing very cold when eaten, ae it brings out the delicate flavor and aroma, and makes it much more refreshing. We do not know of any fruit which is an exception to the rule.

Ham and Eggs.—There is a great difference in the manner of cooking this popular dish. To get it as nice se posoible requiree time and care. The following is suggested as something extra nice: Cut ths ham quite thick—sey one-third of an inch at least. Boil it in plenty of water till harely cooked through, pour off the water, and put the pan in a place just hot enough to brown the fat part of the ham slightly, but not hot enough to make a smoke, or to brown the lean meat much. When this is finished remove the frying pan from the fire, taks off the ham, pour off the fat into a cup, and wips the pan till it shines liks a mirror, without a single speok to mar the polish. Then put in a spoonful of ths clear part of the fat, break in the sggs, and set the pan in a place scarcely hotter than boiling water, cover it and let ihs eggs cook as slowly as posoibls for four or five miuutes, taking them up ae soon as they can ue lifted out. Place them around the the ham, and do not pour any of the fat on the dish. Eet with mashed potatoes.

Baked Peaches—Something Nice.—Cut the peaches in two, remove the stones, having first wiped the fruit well. With a paste cutter (if you want something fanoiful; otherwiee simple squares will do) cut some slices of bread. On each piece place half a peach, skin down; duet well with sugar; put a tiny piece of hutter on each, and bake slowly. When done, dish them and turn the juice over, if any; otherwise add syrup of peare and serve warm. Apricots and prones may he served likewise. The *American Rural Home* gives a method of preparing peaches which will be well to try: Take goodsized freestone peaches, wipe them with a towel, halve them and place them flat side down in hot butter or lard. Let them fry to a nice hrown, then turn and fill the eesd cup with sugar, which, by the time the fruit is properly cooked, will he melted and form with the juice of the peach a rich syrup. Serve up hot, and if you don't like them you need not repeat the experiment. Most persons think the dish a soperb one.

How to Detect Poisonous Mushrooms.—There are several ways of distinguishing mushrooms from poisonous fongi: 1. Sprinkle a little salt on the spongy part, or gille, of the sample to be tried. If they turn yellow they are poisonons; if hlack, they are wholesome. Allow the salt to act hefore you decide the queetion. 2. False mushrooms have a warty oap, or elee fragmente of membrane, adhering to the upper surface, are heavy, and emerge from a vulva or bag; they grow in tufts or clusters in woode, on the stumps of trees, etc., whereas the true mushrooms grow in pasturss. 3. False mushroome have an astringent, styptic and disagreeahle taste. 4. When cut they turn hlue. 5. They are moist on the surface, and generally of a rose or orange color. 6. The gills of a trno mushroom are of a pinky red, changing to a liver color. 7. The flesh ie white. 8. The stem is white, solid and cylindrical.

Fowl Stewed with Oysters—A Nice Dish.—Fill the inside of a young fowl with oystere; put it into a jar or tin pail, tightly closed, and put it in a kettle of water. Boil an hour and a half; there will be a quentity of gravy from the fowl and oysters; add to it a little flour made smooth in a small quantity of water, some butter, seasoning to taste, and more oysters with their liquor. Serve this with the fowl, which will be very white and tender. All the fine flavor lost in ordinary boiling will be preeerved.

Chicken Cheese.—Thie is so nice that every one who eats it once, likes it again. Boil two chickens till tender; take out all the hones and chop the meat fine; season to taste with salt, pepper and hutter; pour in enough liquor they are boiled in to make moiet. Mould it in any shape you choose, and, when cold, turn out and cut into slices. It is an excellent traveling or picnic lunch.

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San Francisco:

Saturday Morning, Sept. 11, 1875.

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CALIFORNIA AND AUSTRALIA.—A. S. Hallidie, President of the Mechanics' Institute, has received a communication from the Agricultural Society of New South Wales, Sydney, which is of great interest to producers and manufacturers. The letter states that the Council of the Society received Mr. Hellidie's letter, in which he expressed his readiness to forward their views relative to a display of farm produce of California for the next exhibition to be held in Sydney, on the 25th of April, 1876. The society returns Mr. Hallidie thanks for the assistance he gave Mr. Westgarth on a former occasion. Mr. Westgarth is about returning to California, accompanied by Mr. Want, a member of the society. Both come here with a view to further increase the friendly intercourse already existing between the Agricultural Society of New South Wales and the Mechanics' Institute. During their stay in San Francisco they will endeavor, by a personal canvass amongst our producers and manufacturers, to cause a fresh and more extensive exhibit to be sent to the next annual show. The letter states that the Council will feel grateful for any assistance Mr. Hallidie may give Messrs. Westgarth and Want in furtherance of the object of their voyage.

MEETING OF THE FRIENDS OF WM. C. RALSTON.—There was a monster mass meeting of the citizens of San Francisco, last Wednesday evening, to adopt resolutions conveying the sentiments in which the late Wm. C. Ralston was held by his fellow citizens. Speeches were made and resolutions, highly eulogistic of the deceased, were unanimously adopted.

THE mail service by steamboats in the Ohio river between Cincinnati and Louisville has been discontinued.

Tin in Australia.

Australia bids fair to become an important tin producing region. The product of that region in 1874, was 11,331 tons of stream tin, which yielded 7,012 tons of commercial tin, the ore having averaged sixty-five per cent. This amount was an increase of seventy-one per cent. over the yield of 1873, which was 4,100 tons. The bulk of this ore was shipped to London for smelting. It was derived from several localities in New South Wales, Tasmania and Queenstown. The latest tin discoveries have been made on the island of Tasmania or Van Diemen's Land, located about 100 miles south of Australia, and directly over against Melbourne. This discovery was made in the alluvial washings from Mount Bischoff, the tin being derived from the disintegration of the granitic deposite of that mountain. Similiar discoveries have also been made in other parts of this island. Up to a late date about 500 tons of ore had been dressed at Mount Bischoff.

Quite recently smelting furnaces have been put up at Launceston, a port near by the Bischoff workings, at which about twenty tons of a very superior quality of tin are turned out every week. The discoveries at Tasmania bid fair to add materially to the yield of tin in Australia. Some of the tin smelted at Lennceston has been received in London, and the quality turns out exceptionally rich. The color is described as bright and pure, and proves by assay to be as high as 99.96 per cent. of fineness. The shipments are expected to be regular, and it is thought that its superior quality will attract the attention of buyers. The sales, so far, are reported at about the price of Strait's tin.

There has been a large increase in the tin product of the world during the five years last past, and a consequent diminution in price, say, in the New York market, thirty-two cents per pound in 1871, to eighteen cents in July last. During the past year, however, there has been an increased demand for this metal, both in Europe and America, and an early advance in prices is confidently predicted.

The consumption of tin in Europe in 1872, was 27,000 tons; in 1873 it was 26,000 tons, and in 1874, 28 500. The consumption in the United States in 1874, 4 629 tons, against 4,313, 5,044, 5,076, 4,118, 3,640 and 3,937, during the preceding six years; making a general average of 4,368 tons per annum for the last seven years.

Railway Repairs and Management.

While much is said and written about the large amount of money employed in constructing new railways in the United States, very little reference is made to the immense amount of money expended, and the skilled labor required to keep in order the railways, which now exist. It by no means follows that when a railroad has been constructed and put in operation that the occupation of the railway mechanic on that road is gone. As long as a mile of railway track remains, just so long will the rail layer, the railway, the locomotive, the car and the bridge builder's services be required on a most extensive scale. The labor and expense of keeping up existing roads probably fully equals in amount the annual expenditures on new railway lines, even in prosperous years of railroad building. The following figures will probably surprise the most of our readers:

During 1873 the Pennsylvania railroad company expended in repairs upon track and rolling stock nearly three and a half millions of dollars. The Philadelphia and Erie company, with a length of track of only 287 miles, expended, during the same year, $796,332 on its rolling stock alone; and the Philadelphia and Reading railroad, for the same purpose and during the same time, $1,636,578.

It has been estimated that not less than three hundred millions of dollars are annually expended for repairs on all the railroads throughout the Union. Fully $20,000,000 of this amount is expended in the single State of Ohio. These amounts, it should be borne in mind, have nothing to do with running expenses. Hence it will appear that should we cease at once from any further extension of our railroad system, the amount of mechanical labor required to keep us just where we are amounts to three times as much as it did to run the entire machinery of the Federal Government before the civil war—the navy and army included. The figures and amounts involved in the railway system of the United States are perfectly astounding, and would have been thought utterly improbable if not impossible a quarter of a century ago.

In no way, perhaps, can an idea of the national progress and wealth of the country be better formed than by a consideration of the labor, machinery and capital involved in the railway system of the country. The question of the control and management of this immense and powerful interest, is becoming one of the very first importance. Its proper management is absolutely essential to national prosperity. The people cannot afford to allow an open antagonism between it and themselves. Railroad corporations are creatures of the government—the people. If they fail to give reasonable satisfaction the power that made must and will re-make, and re-adjust on principles of equity. If the right to do so is out of our reach, we are living under an oligarchy infinitely more dangerous than the most absolute autocracy which exists on earth.

Metallurgy of the Copper-Silver Ores of Inyo County—No. 2.

[Written for the PRESS by SAMUEL PURNELL.]

Hunt & Douglass Copper Process.

This process within the last few years has been profitably used to extract the copper from the pyritons ores at Ducktown, Tennessee; has been worked at Quebec, and has been operated on a large scale to extract copper, gold and silver from the complex ores of Colorado. That it is well adapted to the copper-silver ores of Inyo county, will appear from the description.

The ore is crushed coarsely and roasted till the silver and copper are converted into oxides. This may be done either in the cylinder, reverberatory or muffle furnace. The roasted oxides are next placed in a tank and dissolved in a hot solution of protochloride of iron and common salt. In the reaction which takes place the protochloride of iron is converted into peroxide (which is precipitated), while the oxides of copper are changed into protochlorides and subchlorides; the latter of which though insoluble in water is readily soluble in hot brine. From this solution metallic iron throws down the copper in a metallic state, regenerating the protochloride of iron, which is then ready for another charge of oxidized ore. In order to prevent a loss of chloriue, which would take place from the production of some basic iron salts during the reaction, a small amount of sulphurous acid fumes from the roast furnace is made to pass through the regenerated bath. The precipitated copper is next washed, and is then ready to be emelted into ingot. The manipulations in this process are substantially similar to those employed in the Monnier process, already described. The solutions are to be kept hot, which requires considerable fuel. The bath of protochloride of iron and salt has a constant tendency to become too dilute, and must be concentrated by evaporation, which may be done cheaply by blowing through it a blast of hot sulphurous fumes from the roast furnace. With proper precautions the bath maintains its solvent powers indefinitely. No fuel is required for the production of cement copper except to roast the ores and maintain a temperature of about 150° in the bath while the reactions are in progress. A leading advantage that this process has over all others where iron is employed for precipitation, is that owing to the large amount of dichloride of copper present, two equivalents of copper are precipitated for each equivalent of iron consumed, while all other processes require about two tons of iron for each ton of copper secured. This, and the fact that there is no waste of chemicals, except a little salt to supply unavoidable losses, and that all the products are evolved in a state of purity, mark the Hunt & Douglass as pre-eminently the iron process of the future. The cement copper being precipitated from neutral solutions holding no persalts of iron is unusually pure.

The extraction of silver and gold from copper ores by this process is thoroughly accomplished. The bath of protochloride of iron and common salt effects the chlorination and solution of any silver and gold compound present in the ore. The dissolved silver may, before the copper is precipitated, be deposited in the usual way by metallic copper. Any defects in the roasting of the copper and silver are supplied by the bath, as it will seize upon any sulphates and sulphides remaining and convert them into chlorides, while all the silver and gold passes into the solution with the copper, from the well known action of protochloride of copper. The gold remaining may be removed in the way usually practiced in chlorination. Nickle gradually accumulates in the bath, and when in sufficient quantity may be extracted by peroxidizing and precipitating the iron. This may be effected by forcing a current of air through the liquid, and mingling with the solution pulverized carbonate of lime. The various dissolvings and precipitations require about eight hours, and the process generally is so rapid that the same bath may be used once every twenty-four hours. From the large amount of oxide of iron obtained during the operation, it might be profitable to erect a small shaft furnace to reduce the oxide to metallic iron. Thus there would be little occasion to purchase fresh supplies of iron for the precipitation of copper.

That the Hunt & Douglass will extract copper and silver to a very close percentage is apparent. In a comparison between it and the Monnier process to determine which would be preferable for a certain ore, the result would depend altogether on the character of the ore itself. Probably a comparatively poor ore, not very complex, could be more satisfactorily worked by the Monnier process; while for richer ores, containing a considerable amount of base metals, it might be that the Hunt & Douglass would give the best results. Both processes, however, are superior, and in extraction by either method one could not be far from the better. It is not probable that with our present knowledge of chemistry any better than, or as practical processes as, these can be discovered, as they are each founded on the simplest chemical reactions. It is not denied that among those skilled in working copper ores by fusion there is a considerable prejudice against wet processes. This arises from a want of proper scientific education, and thorough study of the subject. There is also a strong disinclination in many minds to learn anything new.

Throughout the State of California there are many rich mines of copper-silver ores. If these are to remain unworked till some fusion process can be economically applied they will lie unworked for a century to come. But by the use of wet processes these mines can be made productive at once, and would prove to be among the best paying investments on the coast.

A copper process has been patented by M. L. du Matay, of Paris; but, as no details have come to hand, its description is omitted. It appears, however, to be complicated and delicate, and on this ground may not be practically useful.

Treatment of Silver-Copper Ores.

Having in the foregoing treated of the beneficiation of copper-silver ores, attention is now invited to the economical treatment of complex silver-copper ores, or those containing small amounts of copper and other base metals chemically combined with the silver. The treatment of such ores, for well known reasons, is not practicable and economical by the amalgamation process.

The reduction of complex silver-copper ores must of necessity be always preceded by a proper calcination or roasting. They generally require chloridizing, whereby the silver and other compounds are converted into soluble chlorides. This was first introduced by Augustin, an officer of the Mansfield copper mining company. He roasted the ores with common salt, and dissolved the chloride of silver in a hot and concentrated solution of common salt. From this solution the silver was precipitated by metallic copper, which in its turn was thrown down by metallic iron. This process was found to be less applicable to the direct treatment of ores than to such products as speisse and matte, because raw ores frequently contain substances which interfere with complete chloridization as performed by Augustin, the operations are very delicate, and other products beside silver are dissolved by the brine, notably chloride of copper and lead. All other processes, however, have now been superceded by what is designated as the Salving process, which is, at present, without a rival in its particular field.

Shall California be Represented?

If California is to be properly represented at the Centennial Exposition, it is time to begin to talk business. This putting off things until the eleventh hour, may do in local fairs and exhibitions, but it will not do in this case and is altogether inexcusable. Ample notice has been given to allow the most elaborate preparation. But there is always too much beating about the bush in these matters, and everybody waits for somebody else to take hold and do something; the result is a damaging delay, at the end of which something in the makeshift line is done which is divested of all responsibility, and which is not likely to receive the consideration allowance to which it is supposed to be entitled.

There are at present reasons for apprehending that our exposition at the Centenniel will parteke somewhat of this character. When the eleventh hour comes—and it is not far distant—the excitement attending it will no doubt stimulate some one to take hold of certain points and make an unsatisfactory exhibit of the resources of California. It would be better for us to not be represented there at all than to be misrepresented. The people of California ought to take this matter in hand, and not leave it with irresponsible adventurers, who assume the position of representative men in various matters; and though their acts are not endored, they are allowed to pass because they are allowed to remain uncensured; and are too generally tolerated on the generous supposition that they are honest enthusiasts.

This matter, of properly representing the condition and resources of California, should be divided and subdivided into districts and neighborhoods. Here is where we should give special consideration to the great diversity of the country.

The products and peculiar characteristics of any locality will not be appreciated or receive due consideration in this matter except by the residents thereof. We hope the *true* representatives of these localities will at once make a selection of what will best represent them at Philadelphia, and take hold of the matter in a business-like way; availing themselves, to the fullest extent, of the services of the appointed officials and of all the rights and privilegee which the Exposition affords.

After making a judicious selection of exhibits and exhibitors, the plans of operation should not be allowed to lag or be diverted from their proper course, from want of public interest and good advice, or cramped and crippled for want of pecuniary support. It will take some money; and this burden should not be shouldered on a few who are liberal in these matters; and when "the needful" is provided, it should not be left at the disposal of those who might be tempted to use the Exposition for their own gain or glory.

This matter of California's representation at the Centennial Exposition is really an important one. If we have within our State objects that, according to the somewhat hackneyed term, "must be seen to be appreciated," let us, as far possible, place them at the great Philadelphia Exposition, where they may be seen by all the world, as it were, and they will not fail to be appreciated.

The "Devil Fish."

Those of our readers whose school daye date back fifty or eixty years ago, when school etlasce showed many an "unexplored region," and when natnral history was made np largely of the statements and wouderfnl talee of travelere and eea captaina, will donbtlesa recall the ancient lookiag pictnres in the echool books of thoee days, ench ae a ship being engulfed in the Norwsy Maelstrom, aud of the still more dreadful accounts of the hnge kraken, which wae portrayed with its long arms spread acroee the deoks and twined around the maste of an old time Dntch ehip that was juet being drawn beneath the eea hy tho power of tbis hideous moneter of the ocean.

As time wore on, and the wonderful tales of nnlearned travelers began to be qaestioned in the light of oloser and more intelligent obeorvere, the pnblic came to place bnt little credence in the etorica of eea captaine and eailors with regard to the existence of this kraken. In time, however, pnblic curiosity wae onoe more aroneed by the pnblioation, in Victor Hugo'e "Toilere of the Sea," wherein he placed hie hero in a dismel pool on a rocky ieland, where he wae eiezed by a monster eimilar to the kraken, hut called by our author a "devil fish," and from whose elimy embreces and cepacioua atomach he wae eaved only as by a miracle. Notwithstanding thie revival of an old story in a new and more reasonable dress, it ie prohable that at the time the French novelist gave hie book to the world, not one in a thousand of his reeders regarded hie devil fish in any other light than a creatnre of the aathor's fency. But as time wore on, and the sea hecame more aad more a common highway, so many well eub-stantiated facte ae to the verity of Hugo's eea monster were brought to pnblic notice, that a belief in its existence eoon became aa mnch a common place matter ae a recognition of any of the most ordinary facts in natural history.

The devil fieh ia classed by naturalieta as an *octopod*, from the nnmber of ite legs, or, more properly, tentacles, with which it reachea out and eiezee its prey. It eeema to he a habitat of nearly all portious of the ocean, aud occnrs iu aize from a weight of a few pounds to several thonsand. Small specimena are very often taken by San Fraacisco fishermen, near the Golden Gate, and bronght to the city aa cnrioa-ities. There have heen two on exhibition at the fish market, corner of Leideedorff and Clay etreets, in thia city, daring the paat week. They each meaenred about twelve feet from end to end of their arma—that ia, each arm was abont aix feet in length. The epecimene taken in thia vicinity, althongh they made a great epread, are of emall weight, and probably of little etrength. Age, no donht, increaeee tbe compaee of the body and tentaclea, aa well ae the etrength of the same, more rapidly than it doee the epread or length of the arme. With three or fonr only of the long slimy arme of veu the small epecimens eo often exhibited in this city, twined around one'a body or limba, the etrongest ewimmer would he likely to give np in despair. Small apecimens of the octopus have lately heea shown alive at the Brighton aqnariam, near London, England, where their habits bave heen carefnlly watched and studied. A live devil fiah would form qaite an attractive featnre at Woodward's, and we wonder our fish-ermen here never had the good lnck or thought-fulneaa to secure one alive for such exhihition. Mr. Woodward would, no doubt, pay amply for such a prize.

The engraving given herewith ie a very fair representation of this curioue fish, with its arme epread out open as it appeara upon the aand at the bottom of the water in an aquarium. Ite aubstance is very soft and pliable, like the jelly-like snbetsnce which is so often picked up aloug the aea shore, almoet anywhere, and eepecially on tbe beach juat helow the Cliff Houee, near this city.

That theee monetere eometimee reach huge proportione, there can be little doubt in the light of recent and accumulated evidence. It is but lately that a well authentioated etory came from Japan, that a company of native fishermen had killed an octopue, while the monster wae attempting to overtura their boat. In eeveral recent numbers of the *American Naturalist*, we find detailed deecriptions of octopi, which, ae given on anch high authority, cannot be regarded as otherwise than truthful.

One wae lately found on the beach of one of the Bahama ielands, which weighed some 250 ponnde, and yet its tentacles were not much longer than those upon the specimena ao often seen in thie city, weighing hut fifteen or twenty pounde.

Captain Campbell, a Glonceeter fisherman, reporta that on the 20th of October, 1871, he diecovered a mass of jelly, which proved to he the dead carcass of an ootopua floating upon the sea, near hia veeael; a hoat was lowered aud provided with hooka by which the mass was towed alongside hia schooner, and an attempt waa made to haul it on board with block aud tackle, but it waa too far gone in decomposition to admit of being removed from the water. Carefnl meaeurements found the hody to be four feet eight inchee in circumference, and the arma, which were about nine feet in length, were nearly two feet aronnd at their junction to the hody. The entire weight of the monster was estimated at 2,000 ponnds, with bnlk snfficient to fill eight or ten barrola.

During the past week or two, onr English exchanges have been alluding to a singalar and terrific encounter with one of these monsters by divers, while engaged in their work in the depths of the sea. It seems that in Mnrch last the French packet, *La Normandie*, wsa wrecked npon a line of rocks knowu as the *Roucas*, fringing the eonthern shore of the island of St. Honorat, on the French coast. For two months past, divers hava heen et work bringing np the machinory and part of the hall of the vessel. A short time since, two men went down as nsual to carry on their work, when one of them immediately felt hia legs caaght as if in a vice, and perceived hefore him the hody of an enormons octopne. Eadeavoring to free himself, he laid on vigorously with a crowbar, hut the iron slipped off tho ekiu of the moneter without making any impression; his comrade now came to his aseietance, but wae immedietely aeized hy the spare limbs of the octopus, and found a leg aud one arm firmly enlaced. Fortunately, hie other arm wae free, and on his ringing the

THE DEVIL FISH.

alarm bell the divere descendod in force, but could only deliver their comradee by cutting off the tentaclee one by one. The pictoriala, of course, could not let auch an opportunity pass, and have accordingly ehown np thie eubterranean combat in euch a manaer ae might he nsturally be expected from the fertile imagination of the engraver'a art.

Combined Mop.

Rubard C. May, of Sacramento, ie the inventor of a combined mop and ecrubbing brush, whioh ia exbibited at the Mechanice' Fair.

MAY'S COMBINED MOP.

The engraving ehowe plainly the character of the device. It consists of a ecrubbing bruah and mop, arranged on a single handle in an adjnst able manner, so that either can be nsed ae deaired. With it the user can stand up and do her own scrnbbing, moppiag aad wringing, without atopping to pick up a brueh, and there ia a cloth on the handle to dry the floor with.

The floor can be scrubbed cleaner, ae both hands can be used on the handle, giving more weight on the brush. Tho operator also has more control over the mop and it can be placed under the hrush to dry the floor thoroughly.

The cloth can he wrnng out easily without wetting the handa or having the water rnn down the arms. And if one is called away from her ecrubbing she can go with dry hands. Fig. 1, shows the procese employed for wringiag out the mop, and Fig. 2 ehowa the manner of drying with the cloth.

The New York *Herald* speaks in glowing terms of the recuperative energy of our people, aa evidenced in the proposed re-eetablishment of the Bank of California.

Cars are running over the Brooklyn and Fruit Vale railroad.

Resources of Yesso, Japan.

A few monthe sinca we promieed onr readers eome extracts from the very valaahle Reports of General Horace Capron of hie Commiasiou nuder the Government of Japau, for the agricultural improvement of the Island of Yeeso. We hereby give our first instaallment, beginning with the opening chapter, which oontaine an abstract of the plan and object of tho aiseion, with a geueral view of the reeources and present condition of the island of Yoeeo, which is probably destined to become to Japan what California ie to the United Stetee:

In a preliminary letter to General Capron, dated at Salt Lake City, Utah, U. S. A., Augnst 15th, 1871, Professor Blake gives a general account of the natnre aud extent of hie explorations in Yesso, and of the reeulte thereof. Together with Mr. Pumpelly, he was eugaged by the Japanese governmout, through ite Commercisl Agent at San Francisco, C. W. Brooks, Esq., to aot as mining engineer and geologist. Tbis propoeition emanated from the Cabinet of Tycoon, the island of Yesso being designated as the field of operatione. Profeaaor Blake aud Mr. Pumpelly arrived in Yokohama after a passage of ninety daya on the eailing ahip *Carrington*. Owing to uncertainty ae to the nature and acope of their proposed work, tbe Japanese government having formed no definite plane for their future operations, they remained in Yokohama three montba hefore proceeding to Yeseo. At leagth it waa definitely settled thst the aim of their investigatione ehonld he the development of the mineral resources of Yesso, esp cially of those portions helonging to the central government, as diatinguished from the domain of independent princes. Hakodate waa made their base of operations, and they were given full discretion ae to the method and extent of their work. Several Japanese atudents accompsnied them in their explorations, and in winter they gsve instruction in mining engineering and geology to classes of native sndents at Hakodate. It wae discovered that the government had made aome attempts at working mines in Yesao, and was even then conducting lead mining and eulphur industry npon a considerahle scale, efforts having also been msde to mine and manntacture iron. It was impossible, however, Profeseor Blake discovered, to ohtain sny satisfactory information ae to the mineral wealth of the island; and he determined that only actual inveatigation wonld enable him to ascertain with what minerala he had to deal, and how Japanese labor could he best utilized for their development according to the most approved modern methode. The summer monthe were spent in explorations of the mining localitiea within 125 to 150 milea of Hakodate, extending over the groster part of the country lying to the north and weet of Volcano Bay. Professor Blake made eeveral expeditione of thie character, returning each time to Hakodate and reporting progress to the gavernor. The party travelled npon horeeback, and were kindly and hoepitably treated at the varions Japaneee inns where they stopped. They enhsisted in great part npon Japanese food, beiug able to obtain good fish in almost every locality. Salmoa and other fine varieties abound in the rivere, and are canght in large nnmhers by the Ainoe. Trout aleo are pleutiful, eepecially in the npper parts of the river and in their hranches; great quantities are canght and dried, forming an important article of export. Among the many mariue prodacts ntilized by the inhabitents and made artiolee of commerce, are the coarear varieties of -eaweed. The hotter kinde are fonnd on the western coast, ae also a great many other see products, ench as hôche-de-mer, echini, haliotie and cuttle fish. Game abounde in the interior, deer horns heiug an importent article of export.

The population of Yesso is over estimated. Hakodate and Matemai are the principal cities. There are a number of Japanese trading and fishing villagee along the coest each way from Hakodate, bat ae one goes farther north the number of Ainos, or "hairy men" increasee. They penetrate the furthest receeses of the mountains in the interior, hanting and fishing, and from them is gained the beet knowledge of the interior. They pay tribute in many waye to the Japanese, aad are, apparently, very docile and gentle. Physically they are well formed, mnscular and active. Under proper guidance they wonld, nndoubtedly, he of great use as lahorers. Their habitation extends even to Sagalin and the Knril islande, and all namee of rivers, mountains, etc., north of Volcano bey are Aino. The interior of Yesso ie mountaiaons and rugged, hut covered with a fine growth of decidnone treee, the oak and ohestnnt, particularly, ahounding. A considerable quantity of hard timber is exported, and a remunerative hnsinese could, undoubtedly, he eatahliehed by the erection of eaw mills. Some of the monntain slopes, especially those of volcanic origin, are covered with a thick growth of small hamhoo, "*take*," almost inpenetrable, and a great obstacle to travel ae well ae to cultivation.

Nearly all the varietiee of the whole range of geological formstion are represented in the eoil and rocke of the island. There are a greet many imposing volcanic peaks and groups of extinct volcanoe. The neareat to Hakodate, Comangadake, ie especially interesting from the fact that it has been in violent eruption aince Commodore Perry'a visit. The traces of that ernption were freah and distinct in 1862. A village hed been awept away, and an extensive area of forest had been deetroyed hy an overflow of hot water accompanied by great volumee of snlphnrone eteam. The treee, etripped of their limha and hark, were atill atandiag in many placee, thongh half huried by a deposit of scoriæ and ashes, chiefly small fragmente of pumice. The orater of this volcano ie an extensive depreseion with almost vertical walle. It can be descended, however, and traveraed to the inner crater where fire waa (in 1862) still vieible, accompanied by jets of steam and vapors of anlphur. Another volcanic conie, Esan, risee ae a landmark at the end of the land aontheast of Volcano hay. Thie is aleo eolfateric, and hse very valuable depoeite of ealphnr. There ie a remarkahle group of eimilar conee to the northward of the bay, which yield large qnantities of aulphur of good qnslity.

Perhaps the most important alope, agriculturally, of Southern Yesso, ia that extending southward from the mountaine toward the peninsnla of Hekodate. It faces the etraits, has a southern exposnre, a rich, deep soil, and a climate which nearly corresponds to thst of Philadelphia and Baltimore. It ie, in general, free from forest growth and is well adapted to the cultivation of corn, potatoea and the cereale. The hroad bottom lands of the Toshibeta will also afford a superior soil and wide, level terraces, adapted to cultivation npon a large scale snd with modern lahor-saving appliancee. Thia great valley, however, is comparatively unknown, even to the Japanese themselvee. Indeed the whole of Yesso ie practicelly a *terra incognita* to tbe inhabitaate of Nippon. The conditione of life aad labor in the former are very differeat from those in the latter. Tbe people of the southern island are inclined to regard their neighbore of the north as a rude, illiterate and inferior race.

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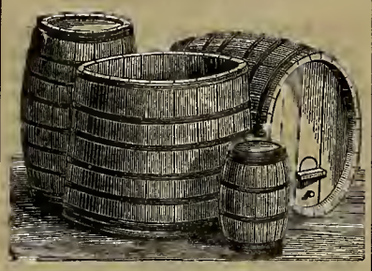

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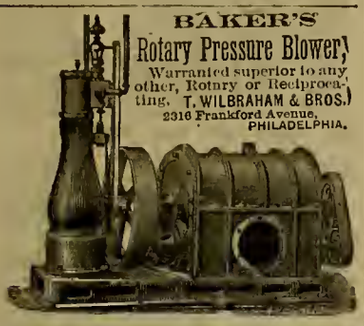

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PLANING AND MATCHING MACHINES

UNIVERSAL WOOD WORKERS

TRADE MARK

WOOD WORKING MACHINERY.

BENTEL, MARGEDANT & CO.
HAMILTON, OHIO.
Send for Catalogue and Price List.

LEHIGH
Emery Wheels

Are the best. Try them.

Emery Wheels under a new patent. Send for circular to TREADWELL & CO.

LANE & BODLEY,
John and Water Sts., Cincinnati.
Manufacturers of
PORTABLE & STATIONARY STEAM
ENGINES,
From two to two hundred Horse Power. Send for illustrated catalogue.

Improved Cast and Forged Steel Shoes and Dies for Quartz Mills.

[PATENTED MAY 26TH, 1874.]
Price Reduced to 16 Cents Per Pound.

SAN FRANCISCO, November 10th, 1874.

To Supts. of Quartz Mills and Mining Men generally:

We take pleasure in stating that owing to the rapid increase in our orders, our Pittsburg Manufactrors have been compelled to add largely to their works—a new gas furnace and heavier trip hammer—and are thus enabled to reduce the cost of steel and at the same time produce SHOES AND DIES superior to any yet manufactured. We have consequently reduced the price to 16 cents per pound and solicit a trial order, guaranteeing that you will find them at least 10 per cent. cheaper than the best iron. There are no STEEL SHOES AND DIES made excepting under our patent and sold at this office, or by our authorized agents, though certain Eastern manufacturers advertise STEEL SHOES AND DIES which are only cast iron hardened by the addition of a composition. They will not out-wear two sets of common iron, though called steel. They are very brittle and are not capable of being tempered, flying from under the hammer like cast iron. Our STEEL SHOES AND DIES are in use in many of the largest mills on the Pacific Coast, and all who have tried them pronounce them cheaper and far superior to iron in every respect, even at the old price of 20 cents per pound. Their advantages over iron are cheapness on first cost, increased crushing capacity, time saved in changing and in setting tappets, increased value of amalgam by absence of iron dust and chippings, and a saving of 75 per cent. in freight. It takes 50 days to fill orders from the manufactory East. Price 16 cents per pound shipped at San Francisco. Terms liberal.

Address all orders, with dimensions, to W. A. Townsend, Secretary.

1v29-3m CAST STEEL SHOE & DIE CO., Room 4, Academy Building, S. F

1845. The Harrison Portable Mill Machinery. 1875.
FAST GRINDING. SMALL POWER.
Thirty Years' Experience in this Specialty, covered by Twenty Patents.

French Burr Stone Mills, run by hand, horse, wind, water or steam power. **Flouring Mills** and **Bolters**, combined or separate; **Vertical** and **Horizontal Corn Mills, Feed Mills** and **Universal Pulverizers**—will grind all Grains and Mineral and Vegetable substances.

Send stamp for Illustrated Catalogue containing cut of each design and price-list.

EDWARD HARRISON, Manufacturer,
No. 135 Howard Ave., New Haven, Conn.

ROOT'S "SAFETY" BOILER

MANUFACTURED BY THE

Abendroth & Root M'f'g Co.,
BROOKLYN, N. Y.

THE ROOT WROUGHT-IRON SECTIONAL SAFETY BOILER has been improved and perfected by Eight years experience, and the sale of

Over Twelve Hundred Boilers,

for all manner of use. Is perfectly safe from Destructive Explosion, all parts easily accessible for cleaning, **Utmost Durability, Highest Economy in Fuel, Reasonable Price.** Working portion composed of **Wrought-iron Boiler Tubes**, tested to a pressure of **500 pounds per square inch.** Steam from cold water in from *ten* to *twenty* minutes.

We refer to the following parties, among others, who are using the Root Safety Boilers:

H. F. Williame.....San Francisco, Cal
Humphrey & Mock.....Millerton, Cal.
Parke & Bowie.....Virginia City, Nevada.
Chollar-Potosi Mining Co.....Virginia City, Nevada.
Union Mill & Mining Co.....Gold Hill, Nevada.
Belcher Silver Mining Co.....Gold Hill, Nevada.
Imperial Mining Co. (170 h-p).....Gold Hill, Nevada.
J. B. Montgomery.....Portland, Oregon.

Send for Circular and Price List.

J. CURLE, Gen'l. Agent for Pacific Coast,
No. 513 Montgomery St., San Francisco.

The Ingersoll Rock Drill.

This Drill is used extensively in the Eastern States and all Foreign Countries.

IT CAN BE RUN WITH

LESS POWER, LABOR AND REPAIRS,

—AND—

DO MORE WORK

THAN ANY OTHER DRILL IN THE MARKET. THE

Automatic Feed

Is an important feature, as it saves labor. We ask for a trial against any competitor. For information regarding the same, send for circular to

JUDSON & SHEPARD, Agents,

Cor. Clay and Front streets, San Francisco.

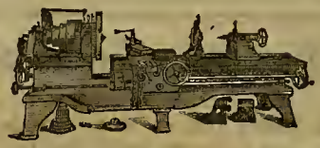
MACHINERY.

Iron and Wood-working Machinery, Wood Planers, Lathes, Mitre and Cutting-off Saws, Iron Turning and Screw Cutting Lathes, Planers, Shapers and Drilling Machines, Screw and Scroll Chucks, from the best makers, always on hand and for sale cheap by

NYLAN & YOUNG,

mar27eow 18 & 20 Spear Street, S. F.

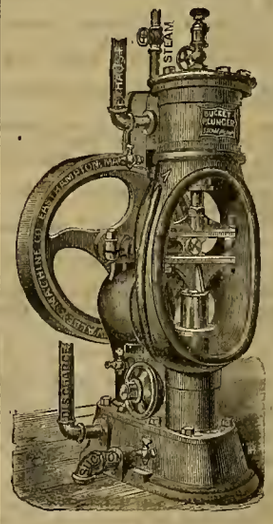
EDWIN HARRINGTON & SON,



Manufacturers of ENGINE LATHES, 48 inches swing and smaller; VERTICAL BORING MACHINES, suitable for jobbing and boring Car Wheels; UPRIGHT DRILLS, 36 inches and smaller, and other Machinists' Tools.

COR. NORTH FIFTEENTH ST.
AND PENNSYLVANIA AVENUE,
Philadelphia, Pennsylvania.

PARKE & LACY,
310 California street, San Francisco



BUCKET-PLUNGER STEAM PUMP.
ALWAYS RELIABLE.
Sole Agents for WRIGHT'S

IRON AND STEEL.

VAN WINKLE & DAVENPORT,

Importers and Dealers in Iron and Steel. Norway and Sligo Iron, Heavy Hardware and Boiler Plate, Axles, Springs, Blacksmith's Tools, etc. Agents for Porkins' Horseshoe and Globe Horse Nails, Sheet-iron, Rivets and Cumberland Coal. All sold at the lowest rates Nos. 413 and 415 Market street, San Francisco, Cal.

San Francisco Cordage Company.

Established 1856.

We have just added a large amount of new machinery of the latest and most improved kind, and are again prepared to fill orders for Rope of any special lengths and sizes. Constantly on hand a large stock of Manila Rope, all sizes; Tarred Manila Rope; Hay Rope; Whale Line, etc., etc.

TUBBS & CO.,
e29 611 and 613 Front street, San Francisco

WIRE ROPE

For Mining, Shipping, and General Purposes.

All kinds and sizes on hand, or made to order; guaranteed of unsurpassed quality, and manufactured of any length. FLAT ROPES, ROUND ROPES and TAPER ROPES, of IRON OR STEEL.

Patent Endless Wire Ropeway

(WIRE TRAMWAY,)

FOR THE RAPID AND ECONOMICAL TRANSPORTATION OF ORES AND OTHER MATERIAL OVER MOUNTAINOUS AND DIFFICULT ROADS.

This system has been in use for over three years, and given thorough satisfaction.

PATENT GRIP PULLEY,

For transmission of power by means of wire ropes

WIRE.

Fencing Wire and Staples,
ALING WIRE,
SPRING WIRE,
GALVANIZED WIRE,
BROOM WIRE,
STEEL WIRE,
COPPER WIRE,
BRASS WIRE,

And Wire of all kinds, on hand or made to order.

SOLE AGENT FOR

Richard Johnson and Nephews' Celebrated Telegraph Wire.

Full stock on hand in bond, or duty paid.

Wire Cloth and Wire Netting.

FULL ASSORTMENT ON HAND FOR ALL PURPOSES, AND

All Kinds of Goods in the Wire Line.

Send for Circulars, Etc., to

A. S. HALLIDIE,
2am 113 and 115 Pine Street, S. F.

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14 GMG OZ.

STEARIC ACID CANDLES
GEO. M. GRANT & CO.
PHILADELPHIA.

The Candles sold under the above well known "brand" are made only of Pure Stearic Acid, twice hydraulic pressed, are not cheapened by adulterstion with crude material, and upon burning, give a large and brilliant flame, without running. 13v9-2ambp

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FRANCIS SMITH & CO.,

MANUFACTURERS OF

Hydraulic Pipe,

AND

ARTESIAN WELL PIPE.

Having the Latest Improved Machinery, we can make it an object to

Mining & Water Companies

OR

WATER WORKS,

To Contract with us for

SHEET-IRON PIPE.

All Sizes Made and all Work Guaranteed

30 Beale Street,

JOHN THOMSON. JOHN B. PARKER.

THOMSON & PARKER,

(Formerly with David Stoddart,)

112 Beale Street, San Francisco, Cal.,

ENGINEERS and MACHINISTS,

MANUFACTURERS OF

STEAM PUMPS, STEAM ENGINES,
And all kinds of Machinery.

REPAIRING PROMPTLY ATTENDED TO.

Thursday Noon our last forme go to press. Communications should be received a week in advance and advertisements as early in the week as possible.

California Industries.

There are in the Mechanics' Inetitnte Pavilion many marked proofe that our home manufactures excel articlee of a similar neture which are imported. In eome inetances the articlee made here are mnch enperior to those we receive from abroed. It should be a jnet ceuse of pride to California that euch is the case, in view of the fact that labor aud fnel is high here and the market comparatively limited. We are away off on one eide of the continent by onrselves, with a ecant popnlation when we take into consideration the size of our State. We heve only half a dozen cities of any eize ae yet, and even they are emall compared with the great cities of the Eastern States.

True, we heve the trene-continental railways to connect us with older centers of commerce on one hand, and the ocean for a highway in the other direction, but we have eo mnch competition from older eetabliehed and richer factoriee that we have to etruggle hard to compete with them. In the Eest they have large factoriee which work on a single article, of which they turn ont immenee nnmbere, far cheaper than any competitors can who only make them on a smell ecale. Here we have as yet no snch thing. our fonndries do general work, ae do our carriege ehope, furnitnre factoriee, and in fact all our indnstrial institutions. None of them make a epecialty of one particular article or class of articlee and stick to thet alone.

The conntry ie toô yonng for anything of thie eort yet and it will probably he several yeare before anything of the kind referred to will be inangurated in California. Still, with all the drawhacke, we now meke a very good ehowing in the way of indnetrial operatione. We can in a walk throngh the Fair enumerate the following home manufactnree now in operation, many of them on a large ecale:

Several carriege factories, a nnmber of wire factories, wire rope, wagons, glne, pnmps, pottery and terra cotta ware, glaesware, eaws, chocolate, yeast powder, carpete, engines, rnetic frniture, pianos, mnsicel instrnmente, agricultural implemente, pictnre frames, furniture, silk, ink, plowe, harrowe, belle, braes goode, tiles, cigare, tobacco, cigarettes, watchee, plumbers' goods, hilliard tahlee, car, wagon and carriage springs, etoves, mathematical and optical instrnmente, baby carriagee, clothiog ealt, mettresses, ramie, woolen goods, candles. rope, cutlery, peints, safee, eilverware, machinists' tools, edge toole, eoap, wood work, etc. In many of the ahove instancee there are eeverel factories in the same bneiness, and some on quite an exteneive scale.

Mysterious Clocks.

A cnrioue clock ie ehown at the Mechanice' Fair, which attracte conaiderable attention, and excitee eome cnriosity. It is a disk of glase with the honre marked thereon and heavy plated hande to mark them. There are apparently no works to operate it, nor any wiree or mechanism connected with the hande to make them move. These clocks are not driven by electricity, but are wonnd np in the hands, which are looeely attached to a pivot in the center of the glase plete carrying the figuree of the honre.

An exemination of a clock of the same kind, showed that the arrow-pointed long end of the hand was connterhalanced by a disk-shaped hox at the other ehort end; in thie box were worke like those of a watch, which revolved a connterpoiee around itself (but aleo hidden in the hox) once in twelve honre, and in this way caused the center of gravity of the hand to lift, eo that it took enccecsively different positions; tbns, when the counterpoise wee at the extreme end, the arrow-pointed end of the band would indicate 12 o'clock; when the connterpoise moved to the right, it wonld succesively point to 1, 2, 3, 4, and 5, nntil the connterpoise was as near as possible to the axis of the clock dial, when the center of gravity of the hand ae a whole would be thrown to the other side of the axie, and the hand would indicate 6 o'clock. When a minnte hand is on the clock of conrse the watch work inside causes the counterpoise to work a revolution every hour; it movee independently of the hour hand, both being loosely elipped over the pivot in the center of the dial. The clock is so nicely gotten up that it appeare to move without mechanism. Aluminnm, one of the lightest of metals, ie need for parte which ought to be light, aud the nearly nine times heavier platinnm for the connterpoiee, which, of course, ought to be heavy and at the same time occupy as little room as possible. The clock on exhibition at the Pavilion was made by A. Eisenberg, at Andrews' Diamond Palace.

Capital pnnishment is not "played out" in Arkansas. Six men were hanged at Fort Smith yesterday.

An accurate meaeurement of the American Fall, at Niagara, has placed the hight at 158 feet.

Herbert E. Hall hae been appointed U. S. Ganger of the First California District.

A Conetitutional Convention ie hsing held in Alabama.

The Mining Share Market.

The "little" Boerd of Brokere opened their doore on Monday last, but the San Francieco and Pacific Exchange have not as yet signified their intended day of reenming bnsinese. It is reported on apparently good anthority that the Bank of California will reopen its doore for the transaction of hneiness under the control of the Syndicate on the 16th inet. If this ie the case the Gold Bank and Trnet Company will probably reenme at the eame time and there will be a general unlocking of money bags end a lively distribution of the circulating medium. A large snm, varionely estimated from $5,000,000 to $15,000,000, ie said to have been recently eent here from the Eaet to be in vested in the stock merket. How much of truth there is in tbese reporte we cannot vouch, but it is certain that Eastern capitalists feel a growing interest in the mining intereets of the Pacific coaet, and eome of the most far eeeing ones are taking advantage of the present low etate of the market to make enhstantial in vestments.

The Consolidated Virginia has declared its uenal monthly dividend of $10 per share, payable after the 7th inst.

The aseesements come thick and fast ahout thece times. All hands seem to take advantage of the ecercity of money to get what they can out of hard np stockholdere. Since our last, assesments have been made in the following companies: Imperial, Knickerhocker, Caledonia, Golden Chariot, Mint, Crown Point, Victor, West Point, Little Panoche, Morse & Evans, Star King, Phœnix, Empire, Oakland, Constitution, Leo, Panther, and Tiger. The reporte from the Comstock continnes most enconraging. A good report comes from the Idaho mines also, as will be seen by conenlting our snmmary.

Smart thieves they have np the San Joaquin valley. A perty of them carried off the coroer etone of a new conrt house the other day, and stole the contente.

Mr. George N. Cornell of Nepa is einking an artesian well on his premisee and is now down 250 feet without water.

Patents & Inventions.

A Weekly List of U. S. Patents Issued to Pacific Coast Inventors.

From Official Reports for the Mining and Scientific Press, Dewey & Co., Publishers and U. S. and Foreign Patent Agents.]

By Spscial Dispatch, Datsd Washington, D. C., Sept. 7th, 1875.

For Week Ending August 24th, 1875.*

Horse Shoeing Tool.—Carls R. Donner, S. F., Cal.

Device for Propelling Care.—Wm. Eppelsheimer, S. F., Cal.

Means for Tuening Cabe on Short Curves.—Wm. Eppelsheimer, S. F., Cel.

Fluxing Composition.—Alfred Paraf, S. F., Cal.

Stamp Mill Feeder.—John Welker, Sonoma, Cal.

Distributing Quicksilver in Quartz Mills, Martin P. Boss, Virginia City, Nev.

Watch Case Spring.—Ansel S. Buckelew, Colnsa, Cal.

Device for Operating Throttle Valves.—Philip Hinkle, S. F., Cal.

Air and Water Heater.—Wm. H. Richardson, S. F., Cal.

Lift Pump Valve.—Fred A. Ruhl, Stockton, Cal.

Wagon Wheel.—John Steiner, Mendon, Cal.

Ore Washer.—Lorenzo D. Stephens, Gold Run Cel.

TRADE MARK.

For Tea.—Kwong on Cheong, S. F., Cal.

*The patents are not ready for delivery by the Patent Office nntil eome 14 days after the date of issue.

Note.—Copies of U. S. and Foreign Patents furnished by Dewey & Co., in the shortest time possible (by telegraph or otherwise) at the lowest rates. All patent business for Pacific coast inventors tranected with perfect security and in the shortest possible time.

Dr. Pierce's Componnd Extract of Smartweed, or Water Pepper, ie not recommended as a cure-all. It ehould not be classed with the patent nostrume of the day. No patent has been obtained or asked for npon it. It ie not a eecret medicine, the chief ingredient being made known in the name chosen to designate it. But it ie claimed to he a *superior* Extract, made in a scientific menner, from fresh plante and roots, by a cold process; heat, which is nesed in making all otLer Extracts of Smart-Weed, being objectionable, ae it destroye most of the medical virtues that reside in the plant, as stated in the American Diepensatory and hy other meet excellent anthorities. In the modeet looking little weed, fonnd growing by the roaeside, is found in a more efficacious remedy, when combined with Jamaica Ginger and other modifying agents, for Diarr œa, Dysentery, Summer Complaint, Paiu and Colic, than has heretofore been known to the medical profeeeion. Dr. Pierce's Extract is sold hy druggiets.—Com.

MINING SHAREHOLDERS' DIRECTORY.

Compiled every Thursday from Advertisements in the Mining and Scientific Press and othsr S. F. Journals.]

ASSESSMENTS.—STOCKS ON THE LIST OF THE BOARDS.

Company.	*Location.*	*No.*	*Amt. Levied.*	*Deling'nt.*	*Sale.*	*Secretary.*	*Place of Business.*
Alpha Cons M Co	Washoe	7	1 00	Aug 12	Sept 17	Oct 7	Wm Willis	419 California st
Alta S M Co	Washoe	2	50	Aug 23	Sept 27	Oct 18	Wm H Watson	302 Montgomery st
Arizona S M Co	Nevada	2	1 00	Aug 20	Sept 24	Oct 15	Wm Willis	419 California st
Ba tic Cons M Co	Washoe	2	25	Aug 13	Sept 16	Oct 6	Theo O Kibbe	419 California st
Cherry Creek M & M Co	Nev da	4	50	July 15	Aug 19	Sept 14	D F Verdenal	409 Cal fornia st
Caledonia S M Co	Washoe	14	3 00	Sept 3	Oct 8	Oct 28	R Wesener	414 California st
Cosmopolitan M Co	Washoe	2	25	Aug 11	Sept 15	Oct 1	** Landers	507 Montgomery st
Crown Point G & S M Co	Washoe	23	50	Sept 4	Oct 8	Oct 28	G as E Elliott	419 California st
Empire M & M Co	Washoe	20	50	Sept 4	Oct 6	Oct 26	,, F Dean	419 California st
Europa M Co	Washoe	4	25	July 23	Aug 27	Sept 14	R B Noyes	419 Cali ornia st
Globe Cons M Co	Washoe	5	75	July 20	Sept 3	Sept 29	Joseph Maguire	419 California st
Hale & Norcross S M Co	Washoe	47	5 00	Aug 21	Sept 24	Oct 15	Joel F Lightner	438 California st
Ida Ellmore M Co	Idaho	18	1 00	July 20	Aug 27	Sept 18	O B Higgins	402 Montgomery st
Imperial S M Co	Washoe	24	1 00	Sept 4	Oct 8	Oct 28	W E Dean	419 California st
Knickerbocker M Co	Nevada	13	1 00	Sept 7	Oct 16	Nov 5	J H Sayre	Stevenson's Build'g
Lady Washington M Co	Washoe	5	50	Sept 9	Sept 22	Oct 12	H Theo Kibbe	419 California st
Leo M Co	Washoe	4	50	Sept 6	Oct 8	Nov 5	W R Townsend	355 Pine st
Mahogany G & S M Co	Idaho	16	2 00	July 15	Aug 21	Sept 11	C B Higgins	402 Montgomery st
Mammoth S M Co	Nevada	19	15	Aug 18	Sept 29	Oct 26	D A Jennings	4 1 California st
Mint G & S M Co	Washoe	11	20	Sept 7	Oct 12	Nov 4	D A Jennings	401 California st
New York Cons M Co	Washoe	15	83½	Aug 31	Oct 4	Oct 23	H O Kibbe	419 California st
New York M Co	Washoe	6	50	Aug 31	Oct 4	Oct 23	H C Kibbe	419 California st
Omega Tahle Mt M Co	Cal	7	5	July 27	Aug 31	Sept 20	David Wilder	Merchants' Ex
Original Gold Hill G & S M Co	Washoe	4	50	Aug 26	Sept 30	Oct 18	W M Helman	309 California st
Pauper M Co	Idaho	5	30	July 24	Aug 30	Sept 23	W F Sogart	402 Montgomery st
Phil Sheridan G & S M Co	Washoe	3	50	Sept 8	Sept 28	Nov 8	W R Townsend	330 Pine st
Phœnix G M Co	California	3	3 00	Sept 8	Oct 16	Nov 8	Chas E Elliott	419 California st
Ploche S M Co	Ely District	10	1 00	Aug 13	Sept 21	Oct 12	Chas E Elliott	419 California st
Poorman G & S M Co	Idaho	3	1 00	Aug 25	Sept 30	Oct 21	Wm Willis	419 California st
Rocky Bar M Co	Washoe	3	10	Aug 6	Sept 16	Oct 6	J P Chevallier	513 California st
Rye Patch Cons M & M Co	Nevada	4	50	July 30	Sept 6	Sept 29	D F Verdenal	404 California st
Senator S M Co	Washoe	12	50	Aug 27	Oct 2	Oct 21	J H Sayre	331 Montgomery st
Silver Central Cons M Co	Nevada	2	10	Aug 3	Sept 8	Sept 29	Lucien Hermann	330 Pine st
Silver Cord M Co	Idaho	10	1 00	July 20	Aug 28	Sept 20	C B Higgins	402 Montgomery st
South Mountain Cons M Co	Idaho	1	2 00	Aug 9	Sept 14	Oct 4	Wm Willis	419 California st
S Overman S M Co	Washoe	3	1 00	Aug 31	Sept 27	Oct 16	David Wilder	Merchants' Ex
Starr King S M Co	Nevada	12	15	Sept 6	Oct 6	Oct 23	Louis Kaplan	Merchants' Ex
St Patrick G M Co	Cal	11	50	Aug 12	S pt 15	Oct 7	D F Verdenal	409 California st
Succor Mill & M Co	Washoe	12	50	Aug 18	Sept 22	Oct 13	Wm H Watson	302 Montgomery st
Surprise Valley M & M Co	Inyo Co	1	20 00	Aug 30	Oct 4	Oct 23	W R Townsend	330 Pine st
Victor G M Co	California	1	25	Sept 2	Oct 5	Oct 26	John F Wilde	Merchants' Ex
Ward Beecher Cons M & M Co	Nevada	5	50	July 14	Aug 25	Sept 22	D A Jennings	401 C lifornia st
Woodville Cons S M Co	Washoe	3	1 00	Aug 21	Sept 23	Oct 11	W M Helman	309 Californ a st
Woodville G & S M Co	Washoe	11	1 00	Aug 21	Sept 23	Oct 11	W M Helmen	309 California st

OTHER COMPANIES—NOT ON THE LISTS OF THE BOARDS.

Annie Belcher Q M Co	Cal	2	25	Aug 17	Sept 20	Oct 7	J M Buffington	311 California st
Blue Jacket M Co		2	1 00	July 30	Aug 31	Sept 18	O J Faton	724½ Market st
Cascade Blue Gravel M Co	Cal	3	10	July 20	Aug 25	Sept 13	J M Buffington	311 C lifornia st
Cole S M Co	Washoe	27	5 00	Aug 21	Sept 27	Oct 19	Joel F Lichtner	438 California st
Cone Poe M Co	W shoe	8	25	July 24	Aug 24	Sept 24	Jas H Kinrad	Reno Nevada
Constitution M Co	Nevada	1	15	Aug 31	Oct 4	Oct 22	Frank Swift	419 California st
Corralle Black Sand G M Co	Oregon	1	10	June 8	Sept 15	Oct 23	F F Reynolds	111½ Leidesdorff st
El Dora o State Co	Cal	1	40	Aug 19	Sept 21	Oct 8	Hugh Elias	416 Montgomery st
El Dorado W & D G M Co	Cal	10	10	Aug 5	Sept 6	Sept 21	Hugh Elias	416 Montgomery st
Enterprise Cone M Co	Cal	4	10	July 29	Sept 6	Sept 24	F J Hermann	418 Kearny st
Georgia S M Co	Washoe	1	10	July 29	Oct 2	Oct 22	B Wegener	414 Ca ifornia st
Golden Chariot M Co	Idaho	14	75	Sept 2	Oct 7	Oct 26	Louis Kaplan	Merchants' Ex
Hayes G & S M Co	Nevada	7	20	Aug 18	Sept 28	Oct 25	Geo W Spinney	320 California st
Howard Hill G M Co		3	35	July 28	Sept 6	Sept 24	F J He mann	418 Kearny st
Little Panoche Q M Co	California	2	10	Sept 3	Oct 7	Oct 23	Geo R Spinney	320 California st
Morse & Evans G M Co	California	2	10	Sept 6	Oct 15	Nov 12	Daniel Buck	331 Montgomery st
North Bloomfield G M Co	Cal		1 00	Aug 14	Sept 22	Oct 12	Thos Darby	320 California st
Oakland G & S M Co	Nevada	2	50	Sept 2	Oct 7	Oct 29	Wm H Watson	302 Montgomery st
Omega Table Mt M Co	Cal	7	5	July 27	Aug 31	Sept 20	D Wilder	Merchants' Ex
Orleans M Co	Cal	6	1 00	July 23	Aug 28	Sept 13	Ge P Thurston	315 California st
Oro Fino M Co	Idaho	1	1 00	Aug 17	Sept 17	Oct 8	Frank Swift	419 California st
Panther M Co	Nevada	1	20	Aug 31	Oct 1	Oct 19	Frank Swift	419 California st
Picacho M & M Co	Cal	1	10	Aug 2	Sept 13	Oct 18	Ford H Rogers	320 Pine st
Prussian G & S M Co	Nevada	5	50	Aug 19	Sept 27	Oct 20	R H Br wn	402 Montgom ry st
Rattlesnake Q M Co	Cal	3	25	Aug 24	Sept 28	Oct 8	Andr w Baird	310 California st
San Francisco Copper M Co	Nevada	2	10	Aug 4	Sept 6	Sept 30	R D Cl irmont	Front & Jackson st
St John G M Co	Kern Co	3	5 00	Aug 30	Oct 4	Oct 23	W R Townsend	330 Pine st
Tiger M Co	Nevada	1	15	Aug 31	Oct 1	Oct 20	F ank Swift	419 California st
Uni u Gravel M Co	Cal	11	1 00	July 16	Aug 23	Sept 14	T Derby	320 California st
Weaverville D & H M Co	Cal	7	2 25	Aug 19	Sept 20	Oct 18	Ford H Rogers	330 Pine st
West Point G & S M Co	California	1	25	Sept 6	Oct 8	Oct 25	Louis Kaplan	Merchants' Ex
West Point G & S M Co	Cal	1	10	Aug 23	Sept 13	Aug 24	O O'Connell	400 Montg mery st
Wm. Penn Cons G & S M Co	Washoe		6	Aug 7	Sept 11	Sept 30	John F Pope	424 Montgomery st

MEETINGS TO BE HELD.

Nams of Co.	Location.	Secretary.	Offics in S. F.	Meeting.	Dats.
Booth G M Co		Geo R Soinney	320 California st	Annual	Sept 21
Crown P int Ravine G & S M Co		J M Buffington	311 California st	Annual	S pt 20
Fresno Q M Co	Cal	R Wegner	414 California st	Annual	Sept 15
Hartford M Co	Wa hoe	Edward F Stone	419 California st	Annual	Sept 2
Little Panoche Q M Co	California	Geo R Spinney	320 California st	Annual	Sept 20
North ern Belle M & M Co	Nevada	Wm Willis	419 California st	Annual	Sept 18
Stanislaus River M Co	Cal	Called by Trustees	113 Leidesdorff st	Special	Sept 20

LATEST DIVIDENDS (within three months)—MINING INCORPORATIONS.

Nams of Co.	Location.	Secrstary.	Office in S. F.	Amount.	Payabls.
Black Bear Quartz	Cal	W L Oliver		25	July 18
Ocs Virginia M Co	Washoe	Obas H Fish	401 California st	10 00	Sept 7
Empire G M Co	Sierre Co	O Coolishon		5 00	Aug 17
Empire M Co	Nevada Co	D A Jennings	401 California st	50	Aug 16
Eureka Consolidated M Co	Nev	W W Taylor	419 California st	1 00	Aug 6
Excelsior M & M Co		Frank Swift	419 California st	1 00	April 0
Gila S M Co	Nevada	W Aug Knapp	116 Leidesdorff st	25	Aug 16
Jeffer on S M Co		O A Sankey	331 Montgomery st	50	May 15
Leopard M Co		R H Brown		80	July 15
Lyon Hill & Mining Co	Washoe	E F Stone	Hayward's Bldg	50	Aug 18
Manhattan S MCo	Nevada	Chas S Neal	419 California st	1 00	Jnne 15
Northern Belle M & M Co		W Willis	419 California st	1 00	Aug 16
Oneida M Co		L Kaplan	Merchants' Ex	50	Aug 21

METALS.

[WHOLESALE.]

Wednesday M., September 8, 1875.

American Pig Iron, ₱ ton		38 00	@ 39 00
Scotch Pig Iron, ₱ ton		40 00	@ 44 00
White Pig, ₱ ton		— —	@ 38 00
Oregon Pig, ₱ ton		— —	@ 38 00
Refined Bar, bad assortment, ₱ lb		— —	@ — 3½
Refined Bar, good assortment, ₱ lb		— —	@ — —
Boiler, No. 1 to 4		— —	@ — 5½
Plate, No. 5 to 9		— —	@ — 5½
Sheet, No. 10 to 14		— —	@ — 5¾
Sheet, No. 16 to 20		5½	@ — —
Sheet, No. 22 to 24		6	@ — —
Sheet, No. 26 to 28		6½	@ — —
Horse Shoes, per keg		7 50	@ 8 00
Nail Rod		10	@ — —
Norway Iron		9	@ — —
Rolled Iron		6	@ — —
Other Irons for Blacksmiths, Miners, etc.		— —	@ — 4½
COPPER.—			
Braziers'		35	@ — —
Copper Tin'd		37½	@ — —
O'Niel's Pat		37½	@ — 40
Sheathing, ₱ lb		24	@ — 40
Sheathing, Yellow		— —	@ — 25
Sheating, Old Yellow		— —	@ — 12½
Composition Nails		24	@ — —
Composition Bolts		24	@ — —
STEEL.—English Cast, ₱ lb		20	@ — 25
Anderson & Woode' American Cast		— —	@ — 16½
Drill		— —	@ — 16½
Flat Bar		18	@ — 22
Plow Steel		— 9	@ — 10
TIN PLATES.—			
10x14 I C Oharcoal		11 50	@ 12 00
10x14 I X Charcoal		13 50	@ 14 00
Roofing Plate I O Oharcoal		10 50	@ 11 00
Banca Tin		— 25	@ — 30
Anstralian		— 25	@ — 30
ZINC.—By the Cask		— —	@ — 11
Zinc, Sheet 7x3 ft, No 7 to 10 ₱ lb		— —	@ — 11
do do 7x3 ft, No 11 to 14		— —	@ — 11½
do do 8x4 ft, No 8 to 10		— —	@ — 11½
do do 8x4 ft, No 11 to 10		— —	@ — 12
NAILS Assorted sizes		— —	@ 4 10
QUICKSILVER, per lb		— —	@ — 70

Gold, Legal Tenders, Exchange, Etc

[Corrected Weekly by Charles Sutro & Co.]

San Francisco, September 8, 3 P. M.

Legal Tenders in S. F., 11 A. M., 87 to 87½

Gold in N. Y. 115¼

Gold Bars, 890. Silver Bars, 6½ and 7½ per cent. discount.

Exchange on N.Y., 60-100 per cent. premium for gold; on London bankers, 43; Commercial, 49½; Paris, five francs per dollar; Mexican dollars, three to five per cent. discount.

London — Consols, 93 to 93⅛; Bonds, 102⅛ ‡

Quicksilver in S. F., by the flask, per lb, 65c.

LEATHER.

[WHOLESALE.]

Wednesday M., September 8, 1875.

City Tanned Leather, ₱ lb	26@29
Santa Cruz Leather, ₱ lb	26@28
Country Leather, ₱ lb	24@28
Stockton Leather, ₱ lb	25@29
Jodot, 8 Kil., per doz	$50 00@ 54 00
Jodot, 11 to 13 Kil., per doz	68 00@ 72 00
Jodot 14 to 19 Kil., per doz	82 00@ 84 00
Jodot, second choice, 11 to 16 Kil. ₱ doz	57 00@ 74 00
Cornellian, 12 to 16 Ko	57 00@ 67 00
Cornellian Femalee, 12 to 13	63 00@ 67 00
Cornellian Females, 14 to 16 Kil	71 00@ 76 50
Simon Ullmo Females, 12 to 13, Kil	60 00@ 63 00
Simon Ullmo Females, 14 to 15, Kil	70 00@ 72 00
Simon Ullmo Females, 16 to 17, Kil	73 00@75 00
Simon, 18 Kil., ₱ doz	61 00@ 63 00
Simon, 20 Kil., ₱ doz	65 00@ 67 00
Simon, 24 Kil., ₱ doz	72 00@74 00
Rubert Calf, 7 and 9 Kil	35 00@ 40 00
French Kips, ₱ lb	1 00@ 1 15
California Kip, ₱ doz	40 00@ 50 00
French Sheep, all colors, ₱ doz	8 00@ 15 00
Eastern Calf for Backs, ₱ lb	1 00@ 1 25
Sheep Roans for Topping, all colors, ₱ doz	9 00@ 13 00
Sheep Roans for Linings, ₱ doz	5 50@ 10 50
California Rneeett Sheep Linings	1 75@ 4 50
Best Jodot Calf Boot Legs, ₱ pair	5 00@ 5 25
Good French Calf Boot Legs, ₱ pair	4 00@ 4 75
French Calf Boot Legs, ₱ pair	4 00@ —
Harnese Leather, ₱ lb	30@ 37
Fair Bridle Leather, ₱ doz	48 00@ 72 —
Skirting Leather, ₱ lb	33@ 37½
Welt Leather, ₱ doz	30 00@ 50 00
Cuff Leather, ₱ foot	17@ ⅛
Wax Side Leather, ₱ foot	17@ —

LUMBER.

CARGO PRICES OF REDWOOD.		PUGET SOUND PINE —Retail Price.	
		Rough, ₱ M	22 50
Rough, ₱ M	$18 00	Fencing, ₱ M	22 50
Rough refuse, ₱ M	14 00	Flooring and Step, ₱ M	32 50
Rough clear, ₱ M	30 00	Flooring, narrow, ₱ M	35 00
Rough clear refuse, M	20 00	Flooring, 2d quality, M	25 00
Rustic, ₱ M	32 50	Laths, ₱ M	3 50
Rustic, refuse, ₱ M	24 00	Furring, ₱ lineal ft	—
Surfaced, ₱ M	30 00	REDWOOD—Retail.	
Surfaced refuse, ₱ M	20 00	Rough, ₱ M	22 50
Flooring, ₱ M	28 00	Rough refuse, ₱ M	18 00
Flooring, refuse, ₱ M	20 00	Rough Pickets, ₱ M	18 00
Beaded flooring, ₱ M	30 00	Rough Pickets, pt'd, M	20 00
Beaded floor, refuse, M	25 00	Fancy Pickets, ₱ M	30 00
Half-inch Siding, M	22 50	Siding, ₱ M	25 00
Half-inch siding, ref, M	16 00	Surfaced and Long Beaded	37 50
Half-inch, Surfaced, M	25 00	Flooring	35 00
Half-inch Surf. ref, M	18 00	Do do refnee, ₱ M	25 00
Half-inch Battens, M	22 50	Half-inch surfaced, M	32 50
Pickets, rough, ₱ M	13 00	Rustic, No. 1, ₱ M	40 00
Pickets, rough, p'ntd	16 00	Battens, ₱ lineal foot	½
Pickets, fancy, p'ntd	25 00	Shingles, ₱ M	—
Shingles, ₱ M	3 00		

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For further information, send a stamp for our illustrated circular, containing a digest of PATENT LAWS, 112 illustrated mechanical movements, and HINTS and INSTRUCTIONS regarding the RIGHTS and PRIVILEGES of inventors and patentees, which will be furnished post paid. Also a copy of NEW PATENT LAW of 1870.

When the invention consists of a new article of manufacture, a medicine, or a new composition, samples of the separated ingredients, sufficient to make the experiment (unless they are of a common and well-known character), and also of the manufactured article itself, must be furnished, with full description of the entire preparation.

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Austria & Hungary	35,943,592	Wurtemburg	1,778,470
Russia	77,268,8 8	Brazil	11,780,050
Spain	15,031,267	Chili	2,000,070
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Thanks for Prompt Attention.

STOCKTON, June 26, 1875.

Messrs. Dewey & Co., S. F.:—

I have received the patent for my invention in wagon brakes, which you prosecuted for me; patented May 11, 1875—No. 163,046. Thanks to you for your prompt attention to the case; you will hereafter be my attorneys in such cases. I recommend all inventors on the Pacific coast to give you a call, which I think they will never have any cause to regret. Very truly yours,

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UNITED STATES

Mineral Land Laws, Revised Statutes,

And Instructions and Forms Under the Same.

We have just issued a pamphlet containing the general mineral land laws of the United States, with instructions of the Commissioner of the Land Office The contents of this pamphlet comprise all of the Government laws with relation to mineral lands of interest to the mining community, as follows: Mining Statute of May 10th, 1872, with Instructions by the Commissioner of the Land Office; Mining Statute of July 26th, 1866; Mining Statute of July 9th, 1870 Forms required under Mining Act of May 10th, 1872, as follows: Notice of Location; Request for Survey; Application for Patent; Proof of Posting Notice and Diagram of the Claim; Proof that Plat and Notice remained Posted on Claim during Time of Publication; Register's Certificate of Posting Notice for Sixty Days; Agreement of Publisher; Proof of Publication; Affidavit of $500 Improvements; Statement and Charge of Fees; Proof of Ownership and Possession in Case of Loss or absence of Mining Records; Affidavit of Citizenship; Certificate that no Suit is Pending; Power of Attorney; Protest and Adverse Claim; Non-Mineral Affidavit; Proof that no Known Veins Exist in a Placer Claim, etc. There is also given the U. S. Coal Land Law and Regulations thereunder. The work comprises thirty pages, and will be sold, post-free, for 50 cents. It should be in the hands of every one having any mining interests. DEWEY & CO.,

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CAMPO, SAN DIEGO CO., CAL., July 3d, 1874.

MESSRS. DEWEY & Co.—*Gentlemen:* To-day I received the patent and other papers of my animal trap, that you so successfully worked through the patent office for me, for which please accept my best wishes. The chances are that I will have another application for you to make for me before long. I am well satisfied with your manner of doing business, and think inventors of this coast stand in their own light when they do not put their business into your hands.

I remain yours truly, A. M. GASS.

MINING AND SCIENTIFIC PRESS.—On the 3d inst. this paper, published by Dewey & Co., at 224 Sansome street, San Francisco, entered upon its thirty-first volume. It is, beyond a doubt, the best journal published on the Pacific coast for the scientist, mechanic and miner, and should receive the most liberal support. It costs much money, to say nothing of patience and endurance, to publish an ordinary paper; but the amount required of all these to publish such a paper as the PRESS can hardly be realized by amateurs or those not having had any experience in the publishing and printing business.—[Panamint News, July 14th.

THE MINING AND SCIENTIFIC PRESS, of San Francisco, entered upon its thirty-first semi-annual volume last Saturday. It is most appropriately named, and sustains well its name, containing more really useful information upon mining, scientific and kindred subjects, than any other paper on the Pacific coast. Dewey & Co., the publishers, are well known as agents for securing patents; in fact, most of the patents for inventions on this side of the continent are secured through them. The PRESS is deservedly prosperous. —[Gold Hill News.

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Mining and Other Companies.

Gover Mining and Milling Company—

Principal place of business, San Francisco, Cal. Location of works, Drytown, Amador county, Cal.

Notice is hereby given, that at a meeting of the Board of Directors, held on the 3d day of September, 1875, an assessment of ten cents per share was levied upon the capital stock of the corporation, payable immediately, in United States gold and silver coin, to the Secretary, at the office of the company, No. 402 Front street, room 8, San Francisco, Cal.

Any stock upon which this assessment shall remain unpaid on the 11th day of October, 1875, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Saturday, the 30th day of October, 1875, to pay the delinquent assessment, together with costs of advertising and expenses of sale.

W. O. WILSON, Secretary.

Office, No. 402 Front street, room 8, San Francisco, Cal.

Hope Quicksilver Mining Company—Lo-

cation of principal place of business, San Francisco, California. Location of works, Cinnabar Mining District, Sonoma County, State of California.

Notice is hereby given, that at a regular meeting of the Board of Directors, held on the 2d day of August, 1875, an assessment (No. 2) of Five cents per share was levied upon the capital stock of the corporation, payable immediately, in United States gold coin, to the Secretary, at the office of the company, Room 2, No. 408 California street, San Francisco, Cal.

Any stock upon which this assessment shall remain unpaid on the 9th day of September, 1875, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Thursday, the 30th day of September, 1875, to pay the delinquent assessment, together with costs of advertising and expenses of sale.

JACOB HARDY, Secretary.

Office, Room 2, No. 408 California street, San Francisco, California.

POSTPONEMENT.—The date of the delinquency of the above assessment is postponed to the 8th day of October, and the date of delinquent sales to November 1st, 1875. By order of the Trustees. J. HARDY, Secretary.

September 8, 1875.

Manhattan Marble Company of Californ-

ia. Location of principal place of business, San Francisco, California. Location of works, Oakland, Alameda county, State of California.

Notice is hereby given, that at a meeting of the Directors, held on he 6th day of August, 1875, an assessment (No. 8) of five dollars per share was levied upon the capital stock of the corporation, payable immediately, in United States gold coin, to the Secretary of the company, at his office, Nos. 13 and 15 Fremont street, San Francisco, California.

Any stock upon which this assessment shall remain unpaid on the 15th day of September, 1875, shall be deemed delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Monday, the 4th day of October, 1875, at 12 o'clock M., to pay the delinquent assessment, together with costs of advertising and expenses of sale.

L. L. ALEXANDER, Secretary.

Office, Nos. 13 and 15 Fremont street, San Francisco, California.

Mount Auburn Gold Quartz Mining Com-

pany. Location of principal place of business, San Francisco, Cal.

Notice is hereby given, that at a meeting of the directors, held on the 25th day of August, 1875, an assessment (No. 1) of twenty-five cents per share was levied upon the capital stock of the corporation, payable immediately, in United States gold coin, to the Secretary, at the office of the company, No. 402 Montgomery street, room 9, second floor.

Any stock upon which this assessment shall remain unpaid on the 27th day of September, 1875, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Thursday, the 28th of October, 1875, to pay the delinquent assessment, together with costs of advertising and expenses of sale.

O. A. JAMES, Secretary.

Office, 402 Montgomery street, room 9, San Francisco California.

Orleans Mining Company—Location of

principal place of business, San Francisco, Cal. Location of works, Grass Valley Mining District, Grass Valley, Nevada County, Cal.

Notice is hereby given, that at a meeting of the Board of Trustees of said company, held on the 6th day of September, 1875, an assessment, No. 7, of one dollar per share was levied upon the capital stock of said company, payable immediately in gold coin of the United States of America, to the Secretary, at the office of the company, room 8, No. 315 California street, in the city of San Francisco.

Any stock upon which said assessment shall remain unpaid on the 7th day of October, 1875, will be advertised on that day as delinquent, and unless payment shall be made before, will be sold on the 28th day of October, 1875, to pay the delinquent assessment, together with costs of advertising and expenses of sale.

GEO. P. THURSTON, Secretary.

Office, room 8, No. 315 California street, San Francisco, Cal.

Yosemite Mining Company—Location of

principal place of business, San Francisco, Cal. Location of works, Humboldt county, Nevada.

Notice is hereby given, that at a meeting of the Board of Directors, held on the 29th day of July, 1875, an assessment of twenty-five cents per share was levied upon the capital stock of the corporation, payable immediately, in United States gold coin, to the Secretary, at his office, No. 210 Battery street, San Francisco.

Any stock upon which this assessment shall remain unpaid on the 29th day of September, 1875, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on the 23d day of October, 1875, to pay the delinquent assessment, together with costs of advertising and expenses of sale. By order of the Directors.

S. O. PUTNAM, Secretary, pro tem.

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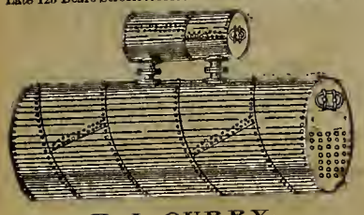

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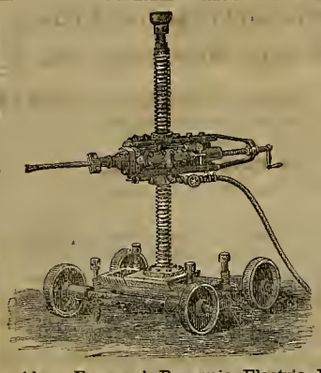

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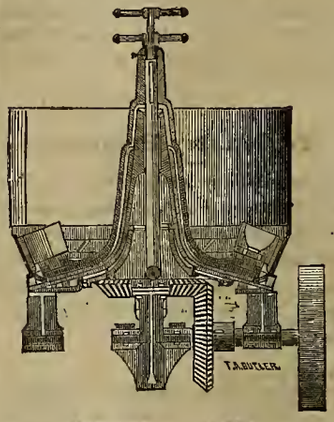

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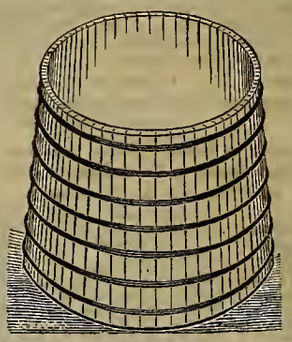

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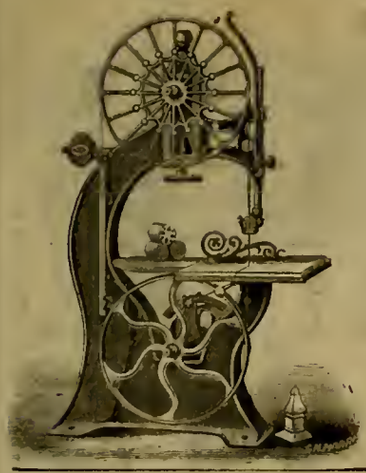

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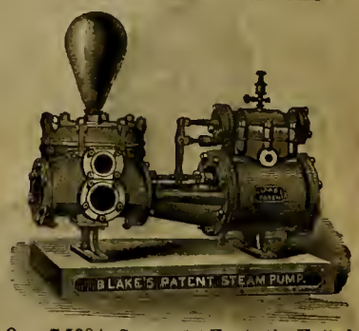

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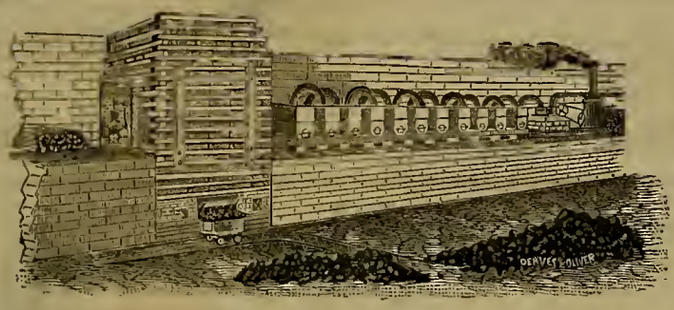

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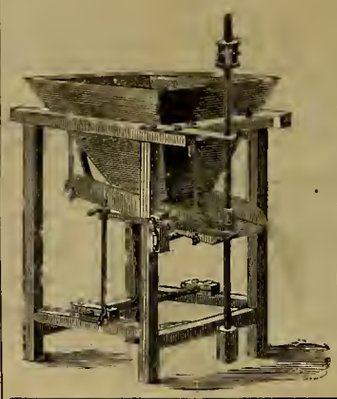

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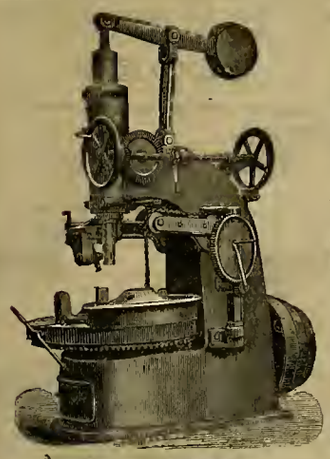

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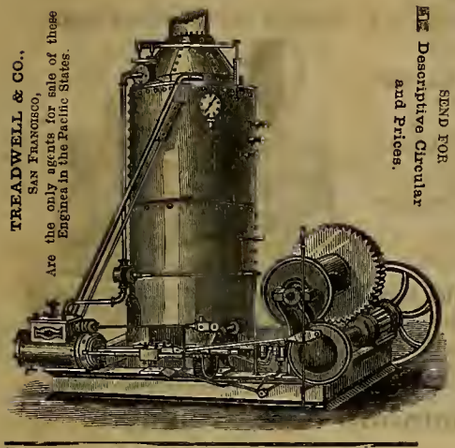

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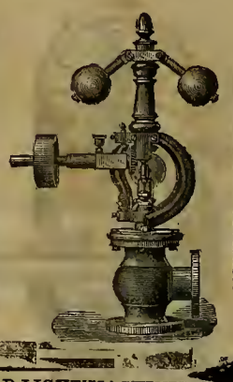

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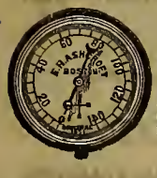

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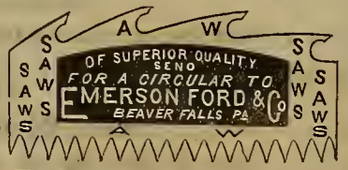

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SAN FRANCISCO, SATURDAY, SEPTEMBER 18, 1875.

VOLUME XXX Number 12.

The San Francisco Cordage Company.

The San Francisco cordage company make a fine display of their substantial merchandise at the Mechanics' Fair. They exhibit rope and cordage of all sizes, from ordinary bale rope and manila tarred yarn to a mammoth manila cable or mining rope, which seems long enough to reach to the bottom of the deepest mine on the Comstock, and strong enough to drag even the great bonanza itself bodily from its subterranean depths.

This display, and the extensive works at which it has been produced, is eminently illustrative of what can be accomplished by good management and indomitable energy. Starting, as did this company, in the early days of California manufacturing industry, when, to the ordinary mind, the success of such enterprises was considered extremely doubtful, this undertaking has been carried steadily forward, in the face of the most powerful combinations of importers and foreign manufacturers to break it down. It has grown from a small beginning to be one of the leading and most important manufacturing enterprises on the coast. Each step in its progress has evinced the presence of a master mind, which has taken in every possibility of its surroundings and economized to the utmost at every point, whether of purchase, manufacture, transport or sale.

The importance of this industry to this city and to the people of California can hardly be overrated. The consumption of rope on this coast, in the way of cordage for shipping, for ore in the mines, on the farm, in the warehouse, etc., is immense, and much larger then is found in any other community of equal population on the globe. Had it not been for the enterprise and determined perseverance of this company, we would have been to-day at the mercy of foreign manufacturers, who would have drawn immense fortunes from our trade by reason of the heavy tariffs they could and would have imposed.

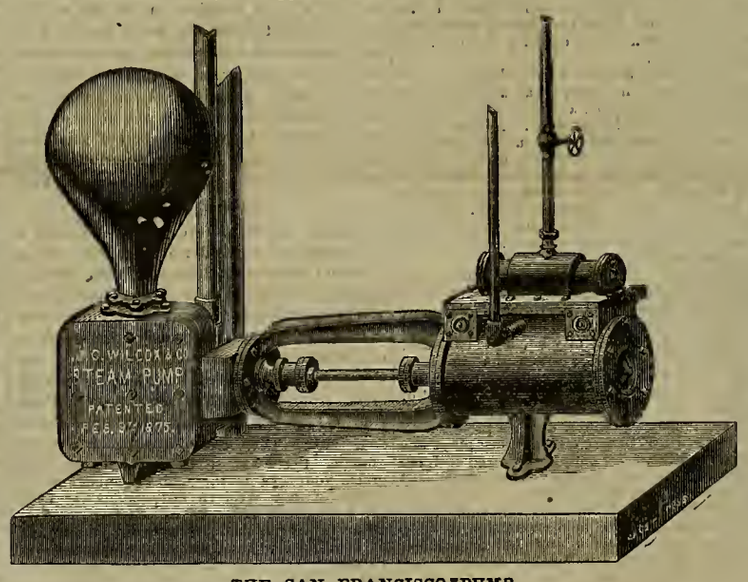
With a foresight entertained by only a few of our early business men, Messrs. Alfred M. and Hiram Tubbs, fully twenty years ago, foresaw the future of this city and State, and had sufficient confidence in the future to venture their money and business talent in what then appeared to most people the extremely venturesome experiment of establishing a cordage manufactory in San Francisco, and thus became the pioneer rope makers of the coast. They commenced in a small way, with temporary buildings, and very imperfect appliances, but the best then within their reach and means. Those temporary structures, and their imperfect machinery, has given place to greatly enlarged works of the most substantial character, and machinery equal to the best in the world.

Their factory is located on the Potrero, where they first commenced business. The main building is of brick and iron, the floor being laid on iron beams and girders, making the whole as thoroughly fire proof as possible. The rope walk is 1,800 feet long, and is situated directly upon deep water, and convenient for receiving and discharging cargo from any part of the world. The warehouse and office, at No. 611 and 613 Front street, is connected with the manufactory at the Potrero by a telegraph wire, affording all the advantages of immediate and close communication which could be derived from the same were it located in the immediate vicinity of their business headquarters. The company has recently added a large amount of new machinery of the latest and most approved patterns to their previous quite complete establishment. Their motive power is furnished by one of the most perfectly constructed engines on the coast, while their economical arrangements for producing steam are nowhere excelled. Mr. Tubbs was one of the first manufacturers on the coast who turned his attention particularly to economy in this direction. The same intelligent and progressive spirit which was manifested in that particular, at that time, has been carried all through every step and every department of this establishment from its very first inception. Take it all in all it affords a most notable example of what pluck and skill can accomplish when directed by sound judgment and an intelligent mind.

Steam Pumps.

A number of the "San Francisco steam pumps," of different sizes, are shown in the machinery department of the Mechanics' Institute, near the central stair case. This pump, a representation of which is shown on this page, is a California invention, patented by Mr. W. O. Wilcox. A large factory is now engaged in making these pumps, and, as the company have ample capital, they are about to commence their manufacture on a much more extended scale.

The principal claims for this pump are the simplicity of construction and operation and ease with which it does its work. The valves being free, and being of an extra size in diameter, give a very large suction and discharge. To get at the pump any one can take it apart and put it together again with little trouble. The cone valves, or supplemental



THE SAN FRANCISCO PUMP.

valves of the steam cylinder are made of steel or wrought iron, and are of such a nature as to prevent them wearing themselves down. The large pump valve, with no heavy cross bars on the seat to "punish" the water, will admit a solid and continuous stream, as it comes in the full size of the hole, the four small legs of the "spider" keeping the valves in place when open.

The pumps on exhibition are neatly bronzed and show great excellence in construction and operation. Only two of them are at work, one large and one of small size. The largest is eight inch steam cylinder, six inch water cylinder and sixteen inch stroke. Without going much into detail concerning the internal construction, it may be said that in a direct line above the main cylinder is the cyliuder of the usual supplementary piston. To admit steam for the purpose of driving this pieton, supplemental valves are used, which work in chambers at one side of the main valve chambers. These valvee are cylindrical conical in shape and rotate slightly upon their axes, so as to connect the steam and exhaust passages alternately, and by their shape and small amount of motion they can be run at a very high rate of speed with no wear of the parts. By running they fit themselves in seat, from their peculiar shape.

These pumps are made in a very strong and durable manner, and are inteuded specially for the needs of this coast where heavy pumping is done. No pains is spared in their construction to make them as efficient as possible, and the simplicity of their working parts makes it impossible for them to get out of order. The manufacturers claim unequaled simplicity, ability to perform the greatest amount of work with the least amount of power and strength of parts. The pump is really a good one, and well worth the examination of all interested in such matters. The manufacturers refer with confidence to those who have used their pumps, as to their general efficiency.

The San Francisco steam pump works are successors to David Stoddard, and they now occupy the three story building formerly used by him. The proprietors are B. F. Baker and W. C. Wilcox. They make a specialty of the "San Francisco steam pumps," but are prepared to do all kinds of machine work, either building or repairing. Mr. Wilcox thoroughly understands all the details of the different pattern pumps in the market; and the firm intends making a specialty of repairing those out of order. They have a good shop and first-class tools—most of them of either Seller or Putnam make. They have lathes, planers, drills and all tools adapted to building machinery. They have also a very large stock of patterns, to which they are continually adding, the upper story of the building being devoted to the pattern shop. They also own all the patterns of the Cameron or Stoddard pumps that were owned by David Stoddard. Among the tools is a large one for cutting threads on all sizes of pipes. They have abundant capitel to undertake contracts of any magnitude, and are ready to do so. In the matter of pumping particularly, they will carry out any desired plans for water works or similar enterprises on a large scale.

A company of capitalists, headed by Alvinza Hayward, have now a corps of engineers, reconnoitering a route from Susanville through Big Meadows, to Chico. A reconnoisance of the Feather river route via Oroville, is also contemplated. The Butte *Record* proposes that Chico move immediately in the matter of the road to Colusa, and thinks that of itself would be inducement enough for Mr. Hayward to join the roads with them at Chico.

The Butte *Record* says: Mr. Hardin Bale, who has been in Chico for the past ten days endeavoring to make arrangements to locate his woolen mill here, left on Monday last for Santa Rosa. Mr. Bale submitted the following proposition to our merchants. That he would furnish $15,000 worth of new and improved machinery, they to furnish lot and building. We don't know whether the propoaition will be accepted or not.

The Santa Cruz *Sentinel* says that the beet sugar factory has commenced operations, having been thoroughly overhauled and repaired during vacation. About fifty tons of beets are run through daily, and seventy men are employed in the works.

A "Chunk of Coal."

It is customary for coal dealers to place beside the door of their offices one or two of the largest size pieces of coal which they can procure from the mines which they represent; with the same intent and purposes that dry goods merchants display their "prints" and other goods beside *their* doors, and thereby tempt extravagant dames to enter therein and spread lots of—not money, but talk. But there is one coal dealer in this city who has a chunk of coal at the side of his office door, which he is not under the necessity of "taking in" at night, as there is no danger whatever of fuel-thieves running off with it. To move this piece of coal would require one of San Francisco's best dray teams, and these never run.

We had heard somewhat about this big black diemond, and were induced to make a special trip to the office of Mr. Anderson, near the foot of Market street, to obtain a view of it. We found it just where our enthusiastic guide had left a few days previous to our visit, by the side of Mr. Anderson's office door. It would take but six or eight of such blocks to make an office of themselves. It is five feet high, five and a half feet long, and two feet eight inches thick. Its weight is 6,000 pounds. It stands on edge; not on the "ragged edge," for it is nicely trimmed by the square, and looks as though it were but a chip of the old block.

It is Coos Bay coal, from the Newport mine, recently opened by Flanagan & Mann. There are no veins of slate or slag discernable in any part of it; the enormous block presenting a remarkably bright, marketable appearance.

On the whole we think Mr. Anderson's block of coal a pretty good one, "considering," for it must be borne in mind thet our coal "don't amount to much" for the reason that the veins are so very small.

The California Pitcher Plant.

In the Horticultural Department at the Pavilion is a California carnivorous pitcher plant (*Darlingtonia Californica*). The specimen referred to was brought to this city a short time since from Mount Shasta, by Mr. Henry Edwards, Vice President of the California Academy of Sciences, and is by him exhibited. The plant is somewhat of a curiosity, even to persons not interested in botanicel matters, from its peculiar habits. It is sometimes known as the "Fly Trap Plant."

It is a native of this State, and was first discovered at the foot of Mount Shasta, where the present specimen came from. It takes its popular name from its pitcher-shaped leaves, which are of a bright, mottled green color. The curious, wattle-like appendages, which drop from its leaves, are bright red, shaded with green. The flowers, which appear in early spring, are about two inches in diameter, and of a pale, purple color.

The *Darlingtonia* is a most singular and beautiful plant, and is a great study to botanists, from its inflated petiole, vaulted and armed alternately with hairs pointing downwards—the upper, hooded part of the petiole, a leaf stalk, secreting a saccharine substance, and the lower portion filled with water—the whole with "intent to deceive;" being a perfect fly trap.

Mr. Edwards stated at the Academy, the other evening, that in the specimen exhibited he had found thirty-eight flies, and several grasshoppers and dragon flies. The specimen shown at the Fair is well worth examining.

The bids for the construction of the tunnel near San Rafael, on the Sonoma and Marin railroad, have been given over to the chief engineer for decision.

They are talking of building a foundry and a factory in Fulton.

CORRESPONDENCE.

Hydraulic Gold Mining.

[No. 4.—Written for the MINING AND SCIENTIFIC PRESS, By C. J. BROWN.]

As the red stratum of gravel was being worked out rapidly by the numerous companies who own this mining section in claims of from five to twenty acres each, the Dutch Flat water company, witnessed the market for its water, grow year after year, more and more limited, and knew that unless some effective steps were taken at once to open the mines upon the lowest level, its property would soon greatly depreciate in value and its water run to waste.

Few, if any, of the mining companies could command capital to properly develop the ground they claimed, and few, if any, of their claims were extensive enough to justify the necessary outlay.

The water company was loth to enter upon a work which would require years to complete, at a probable outlay of a quarter of a million of dollars, for the joint benefit of itself and mine owners, nor did it feel able and willing to purchase the different mines at ruling prices and enter largely upon the business of mining instead of selling water for mining purposes; consequently, being offered, a fair compensation for its property, it sold out to the Cedar Creek company.

Col. Ludlum took the management of the business as the superintendent of the latter company. He came here a stranger among strangers, to conduct an extensive business in a—to him—entirely new locality, well recommended for strict integrity, probity and honor, and he has maintained the reputation he brought, untarnished. I am not intimately acquainted with him, his thoughts and his purposes, but a strict sense of duty compels one to accord this mede of praise.

A few weeks experience sufficed to teach him clearly the true condition of affairs, the future prospects of the Cedar Creek company, and the herculean task imposed upon him.

He saw bankruptcy staring the company in the face, and the event of a signal failure but a few months in the future, unless *mining* instead of water merchandising was made its principal object.

From all the evidences to be obtained—too numerous to specify here—he thoroughly posted himself as to the most probable location of the deepest—consequently the richest—bed of the Dutch Flat channel, and for the company purchased the claims situated along and on the same, viz: the Blue Cut, Potosi, Why-Not, Badger, Baker, Wisconsin, and half the Oak & Cedar.

In the purchase of these claims, Col. Ludlum exhibited excellent judgment because they undoubtedly cover the bed of the channel, and are situated in a direct line along the same, between the Yankee and the Deep Shaft, which two latter are the only claims (if we except a quarter interest in the Iowa, which bounds the Deep Shaft on the northeast) located upon it that the company took by its original purchase, and it now lacks only the Ohio, Rough and Ready, and the Michigan to complete its line of possession and these are destined eventually to its ownership; in truth, I have been informed that they were already bonded to the company This company has also purchased Union No. 2, which adjoins the Yankee on the west, and and covers the western rim of the outlet, thus acquiring possession of the the entire width of the mouth of the channel.

It also took by its original purchase of the Enterprise, one-fourth of the Grey Eagle, and a small share of the Boston; which, together with the Red Bank and Self Rising, subsequently purchased, are located off from the channel bed, upon the western side of the gravel deposits and are all "high-wash," and instead of containing a deep deposit of the rich, blue stratum of gravel, the trap slide takes its place, and rests close to and upon the bed rock.

The Deep Shaft claim covers the confluence of the old Pliocene rivers, before described, and is of great value to the company, both on account of its position and the gold it contains. Mr. Ludlum struck very rich prospects in this claim about two years ago, by sinking a shaft and drifting.

To the south of the Deep Shaft the Dutch Flat canon crosses the channel of the South Blue. This canon, has for years been claimed and flumed. The company have purchased all that portion of it lying across this channel; and to the south side of the canon it owns the Flying Fish, Waukegan, Jehoshaphat and Carr claims, of which, only the latter embraces the central channel, the balance are situated to the east and are "high-wash," resting upon high, sloping bed rock, clay and trap slide. The foregoing claims constitute all of the mining ground owned by the company in one compact continuous tract in this immediate vicinity and embrace an area of 229 acres.

The central or deep channel of the South Blue runs to the west of the Wankegan, through the Summerset claim, owned by J. Staples & Bros, who once bonded it to the company for about $14,000; but the company officials, governed by some motive best known to themselves, failed to perfect the purchase at that price. If it can be bought by the company at any reasonable figure it should not fail to take it, though it has no immediate use for the same, nor will it have for some years hence; but the present owners are scalping off all the top stratum of dirt and gravel, which, aside from the gold it contains, would be of incalculable value to the company in washing away the heavy bottom gravel through the long line of tunnel which has been projected by Mr. Ludlum for the complete development of its property.

I cannot pass this opportunity to enter my disapproval of the policy pursued by the company heretofore in washing away the top stratum of dirt and gravel from some of their claims; by so doing, it may obtain a good price for its water, when otherwise it would be allowed to run to waste; but it is a mistaken policy, and should be discontinued. The gold will still be in toe bank where the dirt is most needed, and this dirt and light gravel, in places where it still remains intact, is of more value to the company in working off the bottom stratum, than all the gold it contains, and once washed away it can never be replaced. If there is no market for the water, let it waste; each succeeding season will replenish the ditches with a fresh supply.

The Dutch Flat canon, after cutting a channel many feet below the outlet of the old channel at Thompson's hill, leaps over a perpendicular precipice of one hundred feet or more, just to the west of the Yankee, and debouches into Bear river. Below the head and a few yards to the north of this precipice, Col. Ludlum commenced a tunnel 8x9 ft. in dimensions. The projected line of this tunnel is nearly 3,000 feet long, and passes along under and lengthwise of the Dutch Flat channel and the claims owned by the company. It makes two slight angles southward from a straight line, to a point under the central portion of the channel of the South Blue, where it is crossed by the Dutch Flat canon.

The head of the tunnel at this point will be sixty feet below the surface of the rock and 120 feet below the surface of the ground.

A Burleigh drilling machine, run by compressed air, was placed in position nearly two years ago, since which time 1032 feet of the main tunnel and 62 feet of branch tunnel has been run at an average expense of about $34 per linear foot.

After running about 600 feet, a branch 36 feet long was run to the right, on an angle with the main line of about 45°, at the head of which a shaft was sunk 145 feet deep. A fine flume, six feet wide was laid in the tunnel (four feet only of which has as yet been used) and extended down from its mouth some distance; a side flume was also constructed, along the side of the canon, with undercurrents, five in all, and everything fixed and arranged in the most complete order to open up the Yankee claim from the bedrock.

This was necessarily a very slow and tedious undertaking, for, though the shaft was sunk wholly in bedrock, the gravel bank was close around it, bearing large trap boulders as thickly as they could conveniently lie, and constant, watchful care had to be taken that the shaft and tunnel did not become choked.

Washing was commenced about the 1st of August, 1874, with one little giant, carrying 500 inches of water, under a pressure of 500 feet. In February last another giant was added, and the water supply increased to 1,250 inches. Afterwards another giant was placed in position; only two of them, however, are brought into use at one and the same time The central one is to be used constantly while washing, and the right and left ones alternately as the work of washing is directed upon the right or left flank. These giants are ranged in line along the front of the bank, and the two streams in use are directed to one point and made to support each other in their thundering charge upon the obstinate object of their attack. Washing for an hour or two upon any quarter of the bank uncovers a mass of boulders, which must be blasted and broken with the sledge before they can be washed through the tunnel; and now, instead of shutting the water off as formerly, the streams are diverted to another quarter while the boulders are being reduced, or removed by means of a large derrick, which, by no means, is the least useful improvement upon this claim.

By this arrangement much time is saved, labor economized and water utilized, all of which should show vastly different results from the first years labor, during which time use of water averaged not more than twenty days of twelve hours each per month; while work, during the whole year, proceeded both night and day, the effect of which is seen within the limits of a space of bedrock not over 300 feet square, into the surface of which several cuts, leading to the shaft have been excavated, in some instances to a depth of twenty-five feet or more.

Bear in mind that this bedrock, as well as the rock on the whole line of the tunnel is very hard, fine trap, some of it exceptionally hard and tough; and then, unless you have formed an intimate acquaintance with it, you can entertain no proper estimate of its true character. For instance, I have witnessed the Burleigh machine drill a hole into some varieties of it four feet in twenty minutes, and again waste three excellent drills and an hour's time in penetrating one inch in another variety. Two hundred feet of tunnel was run at an expense of from $60 to $100 per foot, from which it can readily be imagined that the undertaking is no child's play.

In this prosecution of this work, Col. Ludlum has exhibited energy, pluck and that degree of perseverance usually ascribed to his satanic majesty; and, if the Cedar Creek company aids him as it should, he will soon gain a victory eminently satisfactory to every reasonable member thereof. My opinion of the extent of such required aid will be given hereafter.

Dutch Flat, Sept. 9th, 1875.

The Geysers—Their Wonders and Lessons.

MESSRS. EDITORS:—After visiting Cloverdale on Saturday, September 4th, as there was a little time to spare before going to Sanel, and this is the most convenient point from which to visit the

World Renowned Geysers,

I determined not to lose so good an opportunity to examine this great natural curiosity.

The smallest amount of staging to reach the mountain fastness, more than 2,000 feet above the sea, where the Geysers are found, is now from Cloverdale, by a very good road and grade, some seventeen miles. A safe driver and a good rig hurry one over this distance fast enough. On the route you pass the two celebrated quicksilver mines, known as the Livermore and the Colorado mines. In several places along the road you see signs of cinnabar cropping out, and, not far from the Geysers, a valuable deposit of chrome iron has lately been discovered. You continue to go up, up, up, along the narrow, picturesque canon through which Sulphur creek, heading near the Geysers, finds its tortuous way into Russian river.

We reached Mr. Hollingsworth's comfortable hotel an hour before sunset, and had ample time in the cool of the evening to examine each point of interest. Indeed, this hour, or early in the morning, is the only comfortable time to make a close examination, for the natural heat accumulated from the warm stream, boiling springs, and hot, seething, hissing rocks, emitting their numerous columns of sulphurous, suffocating vapor, makes the atmosphere almost insupportable under the rays of the midday sun. Leaving the hotel you pass through a gate, and, taking a descending trail to the left, you soon cross a rustic bridge over

Sulphur Creek,

A narrow stream, in every respect except a dark color and slight odor of brimstone, like a thousand other unnoted streams in the mountains of California. Your pathway then leads you by a steadily ascending trail through a very narrow canon, just like tens of thousands of others among the spurs of the Sierras and our Coast ranges. The trees, bushes and woods are green around you. Not many flowers cheer your way. A few yellow composite ones and an occasional aster peep out among the undergrowth. Besides these the only flower that greets your eye is the odd, brownish purple bloom of our Western *Calycanthus*, at least three times as large as its Eastern cousin. Beautiful laurels shade our pathway, and trunks of bending live oaks sometimes obstruct our passage. Wild grapevines, of luxurious growth, festoon the trees and shrubs. Nothing yet marks the locality as peculiar, except the inky blackness of the narrow, gurgling rivulet that rushes swiftly beside our pathway, and which we cross at times by stepping from rock to rock, or on a well worn plank used as a foot bridge.

But, as we press forward, eager to unfathom the mysteries of this deep gorge, how changed, all at once, is the scene that bursts upon your vision. Suddenly, all sign of vegetation near you disappears, except at very rare intervals a coarse, hardy grass. The rising columns of sulphurous steam, the bare, scalded, glaring, smoking rocks, and hot, black water rushing from them in places, alone meet your gaze far up the steep sided ravine. You are at once deeply impressed with the truth that you have been ushered without much ceremony into

The Devil's Canon,

With its wierd, sombre, impressive sights and sounds, and at certain points and times almost stifling fumes of sulphur.

The varied colors of the solid and pulverized rocks especially attract one's notice. Here is the pure white of the epsom salts, magnesia, lime and nitre, the yellow sulphur, the red cinnabar and oxide of iron, as well as the black sediment supposed to be caused by the action of sulphur on iron deposits. You find also the greenish streaks and spots which are always more or less associated with chrome iron. In quick succession you pass Beelzebub's Laboratory, Devil's Inkstand, Mephistopheles' Punch Bowl and other hissing, bubbling springs of water, with a temperature over 200 degrees Fah. It is undoubtedly true that if you put eggs in this hottest water they will be soft boiled in three minutes, and hard boiled in between four and five minutes. What lady's tidy cooking stove can perform this duty in better style than this Devil's Tea Kettle, so called? From many fissures hot vapor issues without any accompanying flow of water. The sound emitted is exactly like that of a locomotive letting off steam at a station.

You continue to ascend this heated, repulsive ravine, the altitude increasing quite rapidly, until about a quarter of a mile from where you enter it the entire scene is changed again. Laurels, oaks and undergrowth stand thick, green and thrifty.

Within 100 feet of this boiling, steaming caldron, these were browsing quietly, perfectly oblivious to the sight near by, which to our thinking race must ever be a vivid type of a threatening future.

A little gate invites your entrance to a lovely spot, carpeted with grass, and densely embowered with laurels. A refreshing stream of cool, clear water runs through this nicely shaded dell, and its small fish dart to their mossy hiding places as we come in sight. This all forms attractive picnic grounds, fit emblems of an earthly Paradise, with its bright, fragrant flowers and green sward; and that, too, so near the brink of

The Symbolic Hades,

through which we have just cautiously picked our way. The rapid transfer and wonderful contrast makes it luxurious. Leaving this secluded and truly refreshing spot, our path ascends and turns to the right towards our place of entrance, and soon we stand upon a prominent point, commanding a fine bird's eye view of the ghastly ravine we have been inspecting. We are now several hundred feet above the hotel, and enjoy a truly picturesque view of all its strange surroundings; though by no means so grand, it reminds one, in some degree, of the view from Inspiration Point, as you approach Yosemite.

But when the wind blows the vast columns of sulphurous vapor towards you, as it rises from below, sometimes to the hight of more than 200 feet, and you get a good whiff of it, you feel about as comfortable as if a gross of matches had been lit near your nose, and you are more inclined to call it Expiration that Inspiration Point. But when the columns blow from you you fully appreciate a remarkable scene. The path leads you back to the hotel by another route over a high and into a second very deep ravine, through which Sulphur creek runs. You pass several other deposits of sulphur and fissures hot and hissing. In one of the largest of these the heat is so intense as to blacken and char sticks thrust into it. Along Sulphur creek you find other columns of the same vapor, and bath houses, in which steam or water baths are furnished. Above these the water of the creek is cool, and the growth along it rank, although the water is strongly impregnated with sulphur and salts.

One is well repaid by a visit to the Geysers, and after seeing them does not wonder at the opinion of the kind-hearted, prudent, old Irish lady, who, while picking her way carefully among the rocks and grass, prayed carefully every where she stepped, as if looking for some creeping thing. A friend remarked to her that there was no danger of snakes in that canon. "Ooh!" said she, with a shudder, "it all looks and smills as if it might be the home of the

Ould Serpent Himsilf!"

We can echo her sentiment too, when she had lingered too long among the sulphur fumes, and was almost suffocated, and when sufficiently revived, said, "May I never get into it again, nor lay place the likes of it hereafter!"

Early in the morning we were off again for Cloverdale, while the huge white columns of vapor were rising high above the gorges in which their sources lie concealed; the cloudless sky was as blue as the purest of mountain air could make, and this great natural wonder of Sonoma county was fast receding behind us

No object of special interest beside those mentioned attracted attention, except Profile rock, two miles from Cloverdale, which bears an exact resemblance to the turbaned head of an effeminate Turk; and twelve miles from Cloverdale, Eagle rock, where for centuries the mountain eagles, undisturbed, reared their young; but a year ago, sheep raisers near by combined and killed them off, to save their lambs. Some measuring nine feet from tip to tip, were killed there. More anon.

J. W. A. W.

Cloverdale, Sonoma Co., Sept. 6, 1875.

TOO COSTLY A STYLE OF ARCHITECTURE.—Most American cities, for years past, have vied with each other in the lavishness of expenditure upon the magnitude and gorgeousness of the styles of constructions, both in buildings for public and private purposes. Such large expenditures of money upon many structures for commercial use, and particularly for hotels, have, in consequence, advanced rents, taxation and insurance so alarmingly that, as a natural result, thousands of tenantless stores and other buildings can be found in every city in the land.

Nothing is as easy to understand as the fact that if a store, hotel or dwelling is erected having thirty per cent. of its cost added through expenditures on elaborate style of construction, or excessively rich and expensive ornamentation that the rents charged will correspond with the outlay. This consideration, it is hoped, will have weight with those intending to build. Solidity and severe plainness will prove to be the best way to promote the commercial and domestic interests of any city or community, considering that low rents will retain as well as draw population.

MECHANICAL PROGRESS.

The Cold Metal Cutting Disc.

Considerable attention has lately been called to what is known as a saw for cutting iron and steel cold. It is not a saw but a disc. The disc is a circular plate of iron or soft steel forty-two inches in diameter and three-sixths of an inch in thickness, exactly like a circular saw of that size except that the disc has no teeth, and is left smooth on the outer edge, which is known as its periphery. The disc is mounted on a mandrel and provided with bearings, and a pulley for the belt to drive it. The disc and mandrel is turned up very accurately, and balanced on knife edges before it is put in place, so as to secure perfect accuracy in its operation.

Discs of this class have been used as experiments for many years. In 1854 Mr. Jacob Reese, of the Fort Pitt iron and steel works, of Pittsburg, then engaged as superintendent of the Clinton rail mill, built one twenty-four inches in diameter, quarter inch thick, for the purpose of slotting the ends of rails, but on trial found the disc to choke. In 1865, while engaged in manufacturing gas pipe, he put a disc in operation for cutting off the ends of the tubing, but found that in pressing the tube against the disc it burred the tube, and left a long fin on the side of the tube last cut, which was an objection and made it impractical. Some time afterward Mr. Kloman, of the firm of Carnegie, Kloman & Co., of this city, put a disc in operation for cutting iron girders and and beams, and although it made quite a fin still it proved profitable.

Soon after this Mr. Reese conceived the idea of cutting steel in this manner, and constructed a machine such as is described in this paper, adding a frame in front of the disc, on which is mounted a revolving chuck. This chuck is hollow, and the bar of steel is placed in it, and by suitable machinery made to revolve at the speed of two hundred revolutions per minute; while the bar to be cut revolves upward, the disc, at point of contract, revolves downward. The speed of the disc is equal to 25,000 feet of its periphery per minute. The machine is provided with a screw attachment by which the disc is drawn up to the revolving bar of steel. At the instant that the disc is drawn up to a delicate proximity to the bar, the steel bar melts away about as fast as a red hot table knife will melt a gutter into a piece of ice. The bar being turned 200 revolutions per minute it will be seen that the gutter is melted all around the bar, and when the disc gets to the center of the bar, it leaves but a small teat, thus really leaving a center mark. The ends of the bar when cut are as smooth as though polished. This improved disc being a success, and a profitable attachment to his works, he secured the improvement by letters patent, and is now building the machines as a matter of business.

Soon after Mr. Reese had secured his letters patent he invited the members of the American Institute to witness its operation. About 100 accepted the invitation, and expressed great astonishment at the same. Among the members who were present and witnessed the strange phenomenon was B. C. Lauth, Esq., of three-high-roll celebrity. On his return to England he described this machine to a friend who took out letters patent, and then built the machine, which the English papers have been claiming as an English invention. This is not the first time that Englishmen have appropriated to themselves honors due to the Americans.—*American Manufacturer.*

NOVEL MARINE ENGINE.—A new marine engine, designed to economize space, and to do away with all slides, eccentrics, link motions and other reversing gear, has recently been tried in a small steam yacht in England. It consists of three cylinders placed side by side and connected by a peculiar system of steam ports that open and close by movements from the three pistons that are made to act as slides. A three-throw crank joins the piston to the shaft and the three pistons; three connecting rods and the crank make the working parts. The ports all meet in a three-way cock, and by its movement the engine starts, stops and reverses at will and instantly. The cylinders and strokes are each seven inches, and under ninety pounds pressure and 380 revolutions, the engine indicated forty horse power, and the yacht made thirteen miles against a slack tide in seventy-five minutes. The engine is attracting much attention among engineers and boat owners. An engine having three cylinders grouped together has also been recently patented in this country, but, from the drawings published, it seems to be more complicated than the English engine.—*Ex.*

NEW METHOD OF JOINING IRON HOOPS.—It is claimed that the ends of the hoops on barrels may be securely joined with great economy of time and labor on the following plan, devised by Cattin: A small plate of sheet metal has two slits punched in it, in such a way that the hoops may be drawn through them readily in one direction, and are prevented from slipping out by the sharp edges of the plate cutting into them. The surface is rendered smooth by a blow with a hammer on the projected ends of the hoops.

CONDENSED AIR as a street car motor, has, it is said, been abandoned in New Haven, on the ground that horse power is more profitable.

An American Invention.

The (reported) new Austrian "Uchatius" cannon, the mode of the manufacture of which was described in these columns three weeks ago, turns out to be an American invention revived by Gen. Uchatius. According to the *Scientific American* his claims as to originality are opposed by those of Colonel Rosset of the Italian, and Colonel Naroff of the Russian army, both of whom state that they also separately conceived the idea of thus treating bronze guns as early as 1873.

The results which have been reached in testing guns of steel bronze, some of which have withstood the firing of 3,000 rounds without any diminution of accuracy of fire or deterioration in any other respect, prove the invention to be of more than ordinary importance. Consequently it is all the more gratifying to Americans that the invention is neither an Austrian, an Italian, nor a Russian invention, but one first devised by Samuel B. Dean, of Boston, Mass., and patented by him in this country and in England in 1869. Mr. Dean's claim is, "as a new manufacture, a bronze gun in which the metal immediately surrounding the bore is put in the condition by the process of condensation set forth," which process is identically the same as that employed by the Austrian general.

It appears further, and the fact may not be so gratifying to Americans as that just mentioned, that Mr. Dean patented his invention in Austria in 1869. Three years later Gen. Uchating of the Austrian army comes out with precisely the same idea, and is backed up in its ownership by Austrian authorities, who reward his alleged discovery by permitting him to sell out rights for certain countries, other than the great powers of Europe.

The records of the U. S. Ordnance Office show that an order was given in July, 1870, for a number of these guns, but that, through lack of funds, the same was countermanded. Colonel Laidly, of that office, expresses the hope that the next Congress will make a suitable appropriation for the introduction of Mr. Dean's invention into our service.

Baking Brick.

A brick manufacturer in Wales has invented and introduced a new mode of making bricks. After the grinding process has brought the clay and powdered stone and liquid compound into the condition of mortar, it is delivered to the moulder, who with much dexterity deposits the composition into a double mould, places it in a press which answers the purpose of pressing closely the bricks and of forcing them out of the mould. Then a lad carries them on a sheet of iron and places them in the oven for drying under the new process. This oven is constructed very much on the same principle as a baker's oven, only considerably larger, but in lieu of one floor there are several tiers constructed of upright and horizontal irons about five inches apart, upon which to lay the bricks, so that the oven can be filled from bottom to top, capable of storing about 10,000. When the oven is full, the iron doors are closed up air tight. A description of flues admit the hot air, and the bricks are thoroughly dried in from three to four hours. To show the advantage of the new process over the old, it is stated that, whereas under the old process it would take twelve hours, with the consumption of two tons of coal and the labor of several persons over a large area of ground, to dry 5,000 bricks, under the new system 10,000 bricks can be dried in three or four hours with two hundred weight of coal—a very small cost, with less than half the manual labor, and without the extreme exhaustion caused to the workmen from being hours in the old dry houses; for with the new process the oven is as comfortable as a workman's kitchen two minutes before it is heated, and can be entered two minutes after the doors are opened. This important novelty in the manufacture of brick has recently been tested with the most perfect success.—*American Builder.*

STEEL CASTINGS.—The use of steel castings for agricultural purposes, machinery, wagon skeins and boxes, etc., is one of the most important inventions of the past few years. Pittsburg seems to have taken the lead in bringing this branch of the steel trade to a successful issue. Many tons a week of plow points alone are said to be turned out in Pittsburg alone. There is also a large call for steel wagon boxes and skeins, gearing, pinions, etc.; while a great variety of castings to take the place of expensive forgings, keep up with the capacity of different establishments now successfully in the business. One great advantage of the annealed castings is that they can be drawn under the hammer or cut with shears the same as rolled or hammered steel. This is especially a valuable feature in agricultural steels.

IMMENSE STEAM HAMMER.—It is intended to build at the great steel works in Essen, Prussia, a new steel hammer, capable of working a mass of metal 100 tons in weight. It is estimated that that this machine, which will be the most powerful in the world, will cost $1,000,000.

BALLOONING experiments have been made at Woolwich, England, in ballooning for military purposes. Balloons were guided backward and forward in any desired direction by Menier, the inventor, in a still atmosphere. The test of the value of the invention will be its success in currents of wind.

SCIENTIFIC PROGRESS.

Remarkable Effects of Arctic Cold on Man.

Lieut. Payer, the Austrian Arctic explorer, has been laying some of the results of his explorations before the Geographical Society of Vienna. Referring to the influence of extreme cold on the human organization, he related that on March 14th, 1874, he and his companions made a sledge journey over the Semiklai glacier, in order to make observations of Francis Joseph land. On that day the cold marked 58° Fah. below zero. Notwithstanding this intense cold, M. Payer and a Tyrolese went out before sunrise to make observations and sketch.

The sunrise was magnificent; the sun appeared surrounded, as it does at a high degree of cold, by small suns, and its light appeared more dazzling from the contrast with the extreme cold.

The travelers were obliged to pour rum down their throats so as not to touch the edge of the metal cups, which would have been as dangerous as if they had been red hot; but the rum had lost all its strength and liquidity, and was as flat and thick as oil.

The metal of the instruments was just like red hot iron to the touch, as were some lockets which some of the travelers, romantically, but imprudently, continued to wear next the skin.

M. Payer says that so great an amount of cold paralyzes the will, and that, under its influence, men, from the unsteadiness of their gait, their stammering talk, and the slowness of their mental operations, seem as if they were intoxicated.

Another effect of cold is a tormenting thirst, which is due to the evaporation of the moisture of the body.

It is unwholesome to use snow to quench the thirst; it brings on inflammation of the throat, palate and tongue. Besides, enough can never be taken to quench the thirst, as a temperature of 35½ to 58° below zero, Fah., makes it taste like molten metal. Snow eaters in the North are considered as feeble and effeminate, in the same way as is an opium eater in the East.

The group of travelers who traversed the snow fields were surrounded by thick vapors formed by the emanations from their bodies, which became condensed, notwithstanding the fire in which the travelers were enveloped. These vapors fell to the ground, with a slight noise, frozen into the form of small crystals. Notwithstanding the humidity of the air, a disagreeable sensation of dryness was felt.

Every sound diffused itself to a very long distance; an ordinary conversation could be heard at a hundred paces off, while the report of guns from the tops of high mountains could scarcely be heard. M. Payer explains this phenomenon by the large quantity of moisture in the Arctic atmosphere. Meat could be chopped, and mercury used in the shape of balls.

Both smell and taste become greatly enfeebled in these latitudes; strength gives way under the paralyzing influence of the cold; the eyes involuntarily close and become frozen. When locomotion stops, the sole of the foot becomes insensible.

The only possible protection against the cold is to be warm clothed, and to endeavor as much as possible to prevent the condensation of the atmosphere, while the much vaunted plans of anointing and blackening the body are pronounced to have no real value.—*Scientific American.*

The Burning of Oxygen and Hydrogen.

M. Neyreneuf has decribed two methods of showing the vibratory motion attending the explosion of a mixture of oxygen and hydrogen in a cylindrical tube; first, by using tubes carefully dried, and secondly, by covering the interior with paraffine. In the first case the steam condensing on the colder parts leaves transparent the parts which the flame in vibrating has more strongly heated. The latter are, on the other hand, shown in the second case by the melting of the paraffine. It is indispensable that the combustion shall not be too rapid; and further, to obtain the best effects the proportion of the mixture should be varied with the dimensions of the tube. With a tube one and one-quarter inches in diameter and about eight inches long, containing one part of hydrogen and one of air, lines appear resembling fern leaves. With tubes of less diameter the effects are more regular, especially if a musical sound is produced by the explosion. Fine strias are then observed perpendicular to the axis of the tube. When the tube is very long, there is only a confused sound, but the strias are well separated and sharply defined. If the mixture is ignited by the eudiometric method, these appearances are no longer produced. If the tubes open at both ends, the effect is the same as if one end is closed. With a long tube the appearance in the dark is the same as that of a Geiseler tube illuminated by a single motion of the breakpiece.

INCOMBUSTIBLE PAPER.—A French paper recently announced the discovery of an incombustible paper, of which may be made all State and law documents of any importance, and last, if not least, the bills of the bank of France. The importance of this discovery may be easily appreciated.

The American Association for the Advancement of Science.

The regular annual meeting of the above named association convened at Detroit, Mich., on the 11th of August. Hon. O. J. Walker, of Detroit, delivered an address of welcome, to which Prof. Hilgard, as President of the Association, made a suitable response. The retiring President, Prof. Lo Conte, in his address dealt with the evidences of evolution, and he endeavored to show that, while change of species may be admitted in creation, there still is reconcilable evidence of intelligence and design. He discussed the strict relation of natural history or biology to that mass of learning and influence which is commonly called theology, and to that smaller mass of belief and action which is called religion; and in reference thereto stated that it will be necessary to separate the essential truths of religion from the accessories of tradition, usage, and, most of all, organizations and interpretations, which have in the lapse of time gathered around the primitive or revealed truth. In conclusion, the speaker considered that the influence of science upon religion has been beneficial. Scholastic interpretations founded upon imperfect knowledge, or no knowledge but mere guess, have been replaced by sound criticism of the texts and their exegesis, in accordance with the times and circumstances for which they were written. Prof. S. P. Langley, of Allegheny, read an interesting paper on the Solar Atmosphere, a brief *resume* of which was given last week. He also presented an essay on "Carbon Determination in Steel and Iron." Prof. Dawson read an able address on "The Origin and History of Life on our Planet," extracts from which we shall give hereafter. These are all of the proceedings which have as yet come under our notice.

PROGRESS OF TELEGRAPHY—ONE WIRE FOR MANY INSTRUMENTS.—The *Golos* announces the arrival at St. Petersburg, of M. La Cour, assistant director of the Copenhageu Physical Observatory, in order to submit to the telegraphic conference a new invention in telegraphy. That invention gives the possibility of transmitting despatches between two telegraphic stations through one wire only, and by means of many instruments, so that transmission by one instrument cannot impede the action of the other. M. La Cour, while engaged some years ago in investigating the passage of electric currents through conducting media, found that electricity is transmitted from place to place by undulations analogous to those of sound. In consequence of this discovery, he hit upon an arrangement of electro-magnets and tuning forks, by means of which a particular current passing through a tuning fork pitched to a certain note does not become merged in or confounded with other currents which, after passage through differently pitched tuning forks, are simultaneously transmitted along the same wire. This, of course, renders it possible to send many messages at a time through a single wire.—*Telegraphic Journal.*

DANGEROUS EXPLOSIVE MIXTURE.—The Irish Court of Queen's Bench recently granted a motion to draw out of court a sum of £1,500 tendered by the Governor and Directors of the Apothecaries hall of Ireland, as compensation for the consequences of their mistake in selling a packet of sulphide of antimony for oxide of manganese.

A man named Marsden, intending to make oxygen, mixed chlorate of potash with the sulphide of antimony, instead of the black oxide of manganese, and from the explosion which followed, he was killed, and his wife severely injured.

Chlorate of potash detonates with great violence when heated with sulphur or carbon, or with compounds containing these elements. Too much care cannot be exercised in making oxygen to be assured that the oxide of manganese used is free from contamination.

PHOTOGRAPHING CHILDREN.—W. A. Nicholas, Australia, says: As nearly all children are photographed in white dresses, and the faces are a great deal tanned through exposure to the sun, I have found a useful help in a single wax match. If I have been unable to get full exposure through the restlessness of the little sitter in dull weather, by lighting a match and holding it just under the face only, so as to make that part of the plate hot during development, it is astonishing the increase of detail I get. There is no danger of the plate cracking through uneven expansion.

ELECTRICITY IN THE ARTS.—Electricity is gradually working its way into an important position as an aid to industrial arts. It has recently been announced that a joint stock company has been formed in London with a capital of one million dollars, for the manufacture of Gramme's magneto-electric machine, which is confidently expected will soon be widely applied to the production of light, to the electro-deposition of metals, and to various chemical manufactures, etc.

CONCENTRATED FIRE OF ARTILLERY.—Herr Krupp, the Prussian cannon manufacturer, is making experiments to prove that the concentration of several guns on one spot in the side of a cuirassed ship and their simultaneous discharge quadruples the destructive power of the guns. The guns are discharged by electricity, and the experiments are proving highly successful.

Mining Summary.

The following is mostly condensed from journals published in the interior,in proximity to the mines mentioned

California.

AMADOR.

The Mines.—Amador *Ledger*, Sept. 11: During the heat and excitement attendant npon a politicsl cauvass, other matters are geuerally for the time heing overlooked. Hence, for some weeks past we have not given thst attention to onr mining interests that their importance deserves. We are glad to report that quartz mining remains unchanged, our developed mines yielding their regular returns, with appearance of an incresse of gold as greater depths are reached. Indeed the quartz mines of the conuty never looked more hopeful than at present. Owing to the scarcity of water placer mining has nearly ceased, but will be resumed with renewed vigor on the incoming of water this winter. A number of hill claims have been 'prepsred for hydraulio washing as soon as water can be had, and others will be worked on a large scale this winter. From appearances we think there will be more placer mining carried on this winter in the vicinity of Jackson aud Sntter Creek, than has been done for a number of years past. The waters in our mountain streams are lower st the present time thsn has ever before been known, but fortunately not likely to reach a lower stsge. The long and exoessive hot weather has told heavily npon our water supply, but we are informed, that by reason of the cool nights in the mountains, with a corresponding change in temperature lower down, the streams are increasing in volume, and hence will increase slowly nntil the rains set in. In the meantime the Amador canal affords a supply to onr principal quartz mills.

Rich Rock —*Dispatch*, Sept. 11: A lot of very superior quartz has just been struck in the Good Hope mine, near this place, and we nnderstand that the indications are that there ie a large quantity of this rock in deposit there. We have full faith that this mine, if fully developed, will prove to be one of the richest in our county.

McKay and Love. — Footill *Ensign*, Sept. 11: Thie mine is located about two miles above Jackson, and is said to be a continuation of the same lead now worked in the Eureka and other mines, the rock being very similar in its character. A shaft has heen sunk to the depth of 60 ft, when the flow of water became so great as to prevent further sinking. They are now running a drift 200 ft in length to connect with the shaft, for the purpose of drainage. The ledge ie well definsd, averaging from eighteen inches to 3 ft iu width. No rock has been crushed, but an assayed ssmple proved it to he of a good paying character. It is the intention of tha ownere to pnsh operations on this looation, as they are confident they have a good thing.

CALAVERAS.

Enterprise Consolidated.--Calaveras *Chronicle*, Sept. 11: The extensive and fortunate developments of this company, in the West Point district, are attaining a prominence which promises to enrich the ownere and to be a sonrce of pride for the county. The uow principal works of the Mina Rica are situated on an ore body 232 ft in lenglh, which averages 4 ft wide, and wae worked years ago to the depth of 135 ft. The new shaft ic 12 ft by 4, in the clear, and is now 175 ft deep. Siuking progresses at the rate of 9 ft per week. The 40 ft of backe attsined show a uniform width of 4 ft, containing 18 inches of very high grade ore. The whole is eetimated at $40 per ton. The hoisting works are driven by a 16-horse power horizontal engine, conenming three-fourthe of a cord of wood in 24 hours. Engineers aot as "tub-landers." A pump is employed two houre out of twenty-four iu emptying a water tank placed at the depth of 150 ft. No water to speak of below it.

The company own another mine, the "Maria," about one mile west of the Mina Rica. A transverse tunnel taps the first vein at a considerable depth, and hae been extended on the lode 120 ft. The ore averages 2 ft in width and ie estimated to yield $15 per ton. The main tunnel will be extended, shortly, to nine other lodes which crop east of, and parallel with, the vein now being developsd.

About 400 yards south of the Maria is located the company's 8-stamp mill, driven by a large overshot wheel and free water. A Hepburn settler and two Wheeler pans are employed. This mill has done well for prospecting purposes, hnt the extenoive and valuable backs of the Mina Rica alone neceseitate the erection of a large new mill near the mine.

Happy Valley Hydraulic.—Good progress ie being made in running the bedrook tuunel, in the Happy Valley hydraulic, through which the flume is to he laid in order to reach the bank of gravel. It is expeoted that the tunnel will be completed by the time the raine set in, and that everything in cuunection with the mine will be in readiuese for vigorous piping as soon as water oan he obtained. The Happy Valley hydraulic will have the longest flume of any mine iu the county—about a mile—and when it gets into full operation we shall he surprised if it don't require ae long a sack as any of them to hold its product.

EL DORADO.

Extensive ann Rich.—*Republican*, Sept. 9: Further prospecting npon the ledge mentioned by us recently, as having been discovered by Mr. Veach, near the Baltic mill, warrants the belief that the ledge is both extensive and rich. Mr. Veach has shown us some very fine specimens of rock taken from it. The ledge is probably on the same vein as the Mt. Pleasant mine, which is now in very successful operation.

INYO.

The Sunrise.—Panamint *News*, Sept. 8: Thia mill is running regularly, and a few days sgo made a shipment of bullion, some $2,000, just to show them that the thing can be done. They have now on hand quite a large amount of amalgam, and another shipment will be made in a few days. They sre working their ores np seventy per cent. of their value, without roasting.

The Surprise Mill.—Below we give the figures for September 7th, of the workings of this mill, as taken from Mr. Stetefeldt's books: Chlorinations, first charge (extra fine), 95.6-10. Average chlorinations, during day shift, from furnace shaft, 93.5-10; from the flue, 95.9-10. During night shift, from the shaft, 91.5-10; from flue, 95.00. Pulp ssmple, $95.39 per ton; tailings, $7.06 per ton. Bullion, 978 in fineness. Salt used, 3 to 3¼ per cent. We do not think that these fignres have ever been eqnalled by any other mill, nnless, perhaps, by the Manhattan, at Anstin, which also operates with the Stetefeldt furnace, and on ores averaging $200 ner ton. The Surprise mill has heen rnnning uninterruptedly for the past fifteen days, crnshing twenty-five to twenty-eight tons of the Wyoming ore every twenty-four hours. Ore fom the Hemlock mine will soon be delivered at the mill, when the working will be increased twelve to fifteen tons more per day.

MARIPOSA.

The Mariposa Estate.—*Gazette*, Sept. 11: The main working tunnel now being driven from the Ophir mills on the Merced has now attsined a total length of 1,112 ft, with the heading in rough trap rock. There does not seem to be auy grit whatever in the rock, and the holes are made by a grinding process. One might well say that each foot now made had to be fought for. Captain Hewett, iu charge at the river, does not recollect the time when he has seen tougher material to contend with. Arrangements are now being made for firing with a battery, and also for putting in a system of electric signals. The Buffalo carriaga now in nse is a great improvement over the old style of single carriages. Its use permits the cars to run under the carriage and remove the waste, while the drills aleo are in operation. The amount of water flowing from this tunnel also is on the inorease. Each day develops new water conrses, some of them being quite large. Taken altogether the proepect of the Mariposa laud and mining company, in this direction, is considered very good indeed.

NAPA.

Iron Mine.—Napa *Register*, Sept. 11: We have heretofore had occasion to refer to Mr. Sharp's irou mine in Chiles' valley. Mr. Sharp sold the ore by the ton on the ground to an Eastern company, who hanled it out, and shipped it at St. Helena, to San Francisoo, whence it was sent to some Eastern smelting works. The enpply, it eeems, hae suddenly given ont, at least the purchasers think so, for they have abont ceased operations, after taking 170 tone. Mr. Sharp got $5 a ton on the ground, or could have got $10 at St. Helena, and thought when he first made the bargain that thsre would he some thousands of tone to remove. He was at eome expense in opening roads, and owing to the sudden cessation of operatione only comee out about even. He thiuks thongh, there is still a good deposit, by digging a little, and will try it himself presently. The ore ie of superior quality and is worth going after.

NEVADA.

The New York Hill.—Grass Valley *Union*, Sept. 11: We mentioned a few days ago that the last clean-up of the New York Hill mine, yielded about $15 to the ton of rock crushed. Hitherto we have chronicled ornshing from that mine, none of which ever came under $75 to the load. Since the New York company has leased the Larimer mill, the ore crushed is reckoned by the ton of 2,000 pounds; before the leaee the ore was estimated by loads of 3,500 pounde. Taking these differences in the number of pounds in a ton and in a load, the cruehing would give about $78.75 to the old fashioned load. So the rock hae not fallen off in richness, hut there is a differenoe in the eize of a ton and that of a load of ore.

Good Clean up.—*Union*, Sept. 9: A day or two ago the New York Hill mine had a clean-up. That mine is in the habit of doing good work in the way of cleaning np. This time, 422 tons of rook were crushed, and the yield was 1,019¼ ounces of gold which is worth in round numbers, $17,500. Besides this gold, there are 16 tons of sulphurets remaining to be worked hereafter. The New York Hill sulphurets, at the laet working, paid $104 a ton, and this gives us a yield of $45 per ton for the rock worked.

Eureka Mine.—The superintendent's letter, dated September 4th, says: The clean-up for the past six daye is 200 ounces of amalgam. The 12th level cross-out is in 533 feet from the shaft; ground hard, with no improvement in the indications. The 5th level cross-out is in 213 ft. In Eureka No. 2 the west drift is in 235 ft, with good walls, but no ledge; the east drift is in 200 ft; ledge small and split, No. 3 shaft is sunk and timbered 71 ft.

Howard Hill Mine.—*Union*, Sept. 14: A shipment of $4,000 was made from this mine the latter part of last week, and a further shipment, a clean-np from the plates, wss made yesterday, but the amount we did not learn. Everything is looking well at tha mine, and the stamps of the new mill are kept constantly employed. The rock being crushed is mostly taken from the 300-ft level, where tha ledge is strong, averaging four ft, and produces a fair qnality of paying ore. The main shaft is down 400 ft, and the drift has been run east into the old Cambridge ground, where the rook improves in appearance as the drift is extended. A great deal of dead work has been done in the mine to put it in a condition for systematio operations, and it is only now heginning to pay its way. With the opening ont of the fourth level there will be a large extent of backs, from which plenty of rock can he oheaply mined, and handsome runs and profits are confidently anticipated.

Prospect Mining Co.—*Foothill Tidings*, September 11: This compauy have, we underatand, recently purchased a new mining property, sitnated below the Allison Ranch mine, which they intsnd to develop at once. A meeling of the stockholders is oslled for the 15th inst.

Shanohai Mine.—Thia property, situated on Massachusetts hill, hack of the old Rocky Bar mine, is now worked by Jones & Co., and we are glad to learn that they ara meeting with good aucoess; the ledge being of good size and the rock looking well.

Colbert & Co. are siuking a shaft on the Bays' Ranoh ledge. This property has been idle for some time, but the owners have faith that it will maks a number one mine when they get it properly opened, and they have now started to proapect it thoroughly.

Kentucky.—The drift on the 300-ft level has reached a point on the ledge 100 ft east of the shaft, where they have a ledge from 12 to 15 inchee thick, which shows well in sulphurets. The ground is good, with a large increase of water coming in at the face of the drift.

PLACER.

The Crater. — Placer *Argus*, Sept. 11: Thongh there is sufficient fine ore in sight to run the company's mill for the next year without sinking another foot, the St. Patrick Co. is erecting new and powerfnl hoisting works, with pnmps, etc. to sink and prove the value of the mine below the present depth; and the rich ore fonnd in the, at preeent, lowest level—440 ft—ie certainly a strong inducement to do so. The olean-np of the St. Patrick mine, on the 7th of September, shows still an improvement on former runs. Running time of the mill, 22 days, orushing 430 tons of ore, yielding 1,090 ounces of gold. Two hnndred tons of ore are left at the mine to begin the next crushing.

The Julian.—*Herald*, Sept. 11: The Julian quartz mill, on Jenny Lind flat, helow Newcastle, is compelled to lie idle much of the time just now for the want of water. The mine itself, we learn from the owner, Mr. Schnabel, is looking well. The ledge is large and well defined, and very uniform in ite yield. Always paying expenses, and, as the Scotchman would say, a wee hit besides.

A slab of quartz rock was shipped below last week from the Greene mine, containing something over two square feet, through which there was a streak about four inches wide that waa nearly or quite half gold. The piece was eetimated to contain at least $1,500. Of conrse this wae a specimen, and a rare one, though all the rock now being taken from this mine at present is immensely rich.

PLUMAS.

Meadow Lake.—Plumas *National*, Sept. 11: An old Quincyite, writing from this place, gives a hopeful lookout for these mines. He says: "There are hnt few people here at the present time, but most of them are at work on their locations. We hardly expect to accomplish anything this season, bnt want to get things in ae good shape as possible for next spring, when we expect things to "howl" here again, as in former days. The ore is here and in paying quantitiee, and there ie hut little doubt that we will have a cheap, practicable process of rednotion. We expect to get returne from Prof. Fryer in a few days, and the future of Meadow Lake will depend very mnch on hie report."

"A Chunk of Brass."—Some time this epring a man named Taylor came to this place, directly from Michigan, and has been in the employ of Mr. Meylert ever since until last week. For a while he was making lime at the kiln npon Spanish oreek. During his stay here he collected a number of specimens of qnartz, rock, etc., to show to his Michigan friends. Last week he started below for the purpoee of going home, and rode to Oroville with Mr. Rodgers, of this place. On the road he opened his carpet sack to put in a specimen whioh Mr. Rodgers gave him, and that gentleman, while looking over the collection, discovered a "chispa" which Taylor said was a "chunk of brass," which he picked up in the tailings, near the lime kiln. It proved to be a nugget of gold, weighing something over 5 ounces, and Rodgers says that there was one happy emigrant when he informed him what he had fonnd. It had been in his overcoat pocket in the har room of Meylert's hotel for some weeks before he started. Taylor is coming hack in a short time with hie family, and if he don't "etrike diggings," there ie no use of anybody looking for them.

SONOMA.

Mining Notes.—Sonoma *Democrat*, Sept. 11: The Great Eastern mine, near Guerneville, is turniug out hetter than the most eanguine expectation of its owners. A six weeks' run, retorting two tons of ore every twenty-four honrs, has yielded over one hnndred and eighty flasks of mstal. Their new furnace, now in course of constrnction, will he running insida of ten days. It is the Waldhridge improved patent, and is calculated for working ten tona a day. The Great Eastern is unqnestionably one of the best mines in the county. Mr. Haskins is the superintendent.

The Mount Jackson is rebuilding their furnace; adding a new ore chamher and changing the character of the redaction works. The mine has greatly improved as the work of development progressed, in the past two months; it is unquestionably the same ledge as the Great Eastern. John Cntter, formerly of American mine, is building at his own expense a furnace for experiment, adjoining that of the Monnt Jackson; intending to nse the condensers of the Jackson works.

At the Oakland mine, near Geyser peak, brick are being hanled as rapidly as possihle for the pnrpose of building a large Green furnace. This mine looks splendid. In the lower ohannel, at a distance of two hundred and fifty feet, they have cross-cut the ledge and drifted one hundred and fifty feet each way on the ledge, showing good metal. In the northwest drift they are sinking a shaft, probably fifteen or twenty feet. At a depth of sixty feet they were taking ont splendid metal. They have on the lower dump two hnndred and fifty tons of metal. Stewart & Kellogg have a contract with the owners to fnrnish the brick for the new furnace. They also have a contract to work two hundred and fifty tons of ore at the Ida Clayton furnace near Kellogg. They haul the brick from kilna near the Ida Clayton mine, and hack load with ore. The oompany expeot that metal from the two hundred tons of ore will more than pay the entire cost of building the furnace. William Davis ie the superintendent of the mine, and it is in splendid condition.

The Missouri is running a deep tunnel into their mine. The Rattleenake have force enough to keep np the work in their two tunnels. Tha owners of the Bacon and Edith mines, near Pine mountain—the English company—are building a large furnace.

TRINITY.

The Ward Mine.—Trinity *Journal*, Sept. 11: The Ward mine, on the Oregon Gulch monntain, ie being placed in the best poseible working order under the supervieion of O. M. Loveridge, the energetio superintendent of the Weaverville ditch & hydraulio miniug company.

Buckeye Ditch.—Captain George H. Atkins, superiutendent of the Buckeye water and hydraulic mining company, informs us that work is rapidly progreseing on the ditch. Six milee of the upper end—by far the hardest portion to bnild—are completed, and the remaining 10 miles will he finished at an early day. The company has made arrangements for the purchase of tha Cnuningham mine, on Bolt's ihll, one of the richest placer olaime in the county. Weather permitting, they will have the water from Van Matre oreek on this Bolt's hill property by the latter end of October.

TUOLUMNE.

Will Resume Work. — Tuolnmne *Independent:* Mr. D. T. Hughes, snparintendent of the Patterson mine, at Tuttletown, has received notice from Mr. Carrigan, the owner, that work will ba resnmed in two or threa weeks.

Marks & Darrow Q. M. Co.—The men employed in this and surrouuding mines have enjoyed a hot apell, or as it might bs oalled, a heated term. For eome days during August, in Tuolumne. mining district, Fahrenheit showed 102 and 104 degrees in the ehade, and pretty snltry at nights. Recent visitors, after inspecting the cooler spots (in ahafts Nos. 3 and 6, and standing on the metallio slate,) were regaled by some chipe from the old block—the big vein in ahaft No. 5. The main hoisting shaft, (new) No. 6, has some 80 ft yet to go ere drifte will be run north and south to the maiu lode as exposed in Nos. 2, 3 and 5. An additional shift is to be put on the eneuing week, and some engineering work of some import, which we ehall speak of in due time. We would (for we could) say more of thie and other mines in our connty, bnt they speak for themselvee, and are not on or in the market. If they should, and when they do, need capital, there is no donbt many of onr California mines can command it.

Mining Machinery. — Sonora *Democrat*, Sept. 11: The machinery intended for the New Alhany mina is being rapidly completed by Phelps, Shepard & Cowie at their fonndry.

Nevada.

WASHOE DISTRICT.

Ophir.—Gold Hill *News*, September 9: Daily yield, 200 tons of ore. There is little or no ohange in the value or qnality of the ore extracted. Most of the work now being done on the 1600 and 700-ft levels ia confined to repairs to the several drifts and cross-cnts, preparatory to more energetic prospecting operations. The erection of the new powerful pnmping and incline hoisting machinery is making steady and favorable progress.

Consolidated Virginia.—Daily yield 600 tons of ore. No change in either the prodnction of the mine or qnality of the ore extracted. The ore hreasts are looking finely as nenal. The usnal monthly dividend of $10 per share was declared on the 7th inst., aggregating $1,080,000. The yield for the past month wae sufficient to allow of the usual returne of $1,600,000, with a considerable surplua to oarry over to

next month. The mills are all running, and there seems only prosperity and success ahead.

Sierra Nevada.—A station has been completed, and a drift started west of the 1000-ft level of the new shaft to cut and prospect the ledge. This drift will open the mine a depth of 300 ft lower down than it has ever before been prospected, and is an item of very important interest to the mine owners on the north end of the Comstock, as it penetrates virgin ground at a greater depth than has ever before been reached on that portion of the ledge. The north and south drifts on the 700-ft level of the old shaft are steadily advancing, without change of interest to record. Sinking the new shaft is going rapidly forward.

Belcher.—There are now about 4,000 tons of ore accumulated in the ore dumps, ready for milling. This surplus is entirely occasioned by the inability of the mills on the Carson river to crush their full capacity of ore, on account of the low stage of water. As soon as the supply of water will permit, the amount of ore extracted can be greatly increased. There are no new features in any of the prospecting operations on the different levels of the mine. Work on the 1600-ft level is going ahead as usual, and the air shaft is nearly completed down to the 1300-ft level.

Bullion.—The combination drift on the 2000-ft level of the Imperial mine, is advancing steadily without any valuable ore developments to note. The face of the main north drift on the 1700-ft level of the Imperial, is in a fine character of quartz and ore, fair headway being made. Enlarging and sinking the main incline shaft is going steadily forward at the rapid rate of 5 ft per day. Everything is in fine working condition, and the appearances are that the Ballion will yet be added to the list of our dividend paying mines.

Hale & Norcross.—The main west drift on the 2200-ft level is steadily advancing. No new features to chronicle. Driving the south drift from the bottom of the winze on the 2200-ft level, to connect with the north drift on the same level, is making fair headway.

Caledonia. — Everything working finely. Sinking the new shaft is making excellent progress. Sinking the old incline is also making good headway, notwithstanding a strong flow of water encountered at the bottom.

Chollar-Potosi.—There has been a few days' delay in the extraction of ore, owing to an excess of ore in the dumps, beyond which no important changes have taken place during the week. Prospecting on the 1150, 1250 and 1350-ft levels is still carried on, without any valuable developments to record. Sinking the combination shaft is making the usual fair rate of progress. The large, handsome hoisting works building is rapidly nearing completion.

Dayton.—The tank pit below the third station level is fast approaching completion. The pump bob and other machinery is fast being placed in position, and it will now be but a short time before everything will be in complete readiness for resuming the sinking of the main shaft. The water is entirely drained from the third station level, everything being found in almost as good repair as at the time when the mine was shut down.

Florida.—Main west drift advancing well as usual. It is draining the first winze in the old tunnel workings, and when this is done, the winze will be sunk deeper. Some very good milling ore was found at the bottom of it, but the great influx of water stopped work. This tunnel now comes to the rescue, and will assist very materially in developing whatever good ore may be there.

Leo.—Making good progress, driving main drift northward from bottom of wiaze; are in a distance of 43 ft to-day, the ground still quite dry and favorable for working. Face of drift is still in ledge matter of excellent character, carrying numerous veins of fine looking quartz Ledge contianes large and well defined.

Buckeye.—The pumps and other machinery are working splendidly, and the shaft nearly drained ready to resume sinking the main incline. The prospects of the Buckeye are very favorable for the development of good paying bodies of ore at a much greater depth than has ever before been attained in the mine.

Savage.—Drifting north on the 2000-ft level is making a fair rate of speed; no change of interest. The drift north on the 2000-ft level is also making rapid headway. Sinking the main incline goes steadily forward without change of value.

Imperial-Empire.—Stopes have been opened between the 1850 and 1950-ft levels and the extraction of ore fairly commenced. So far as opened the ore body is showing finely. Prospecting in other portions of the mine afford nothing of value to record.

New York Con.—The powerful new surface machinery is being put in position as fast as possible. The requisite buildings are completed and Superintendent Apple is of the opinion that he will have everything in readiness to start up about the 1st of next month.

Leviathan.—The drift at the 420-ft level is getting well into the main ore vein, and good developments are daily looked for.

Overman.—The south drift from the bottom of the winze on the 1100-ft level has been driven ahead 20 ft during the week with no valuable changes to record. The south drift on the 900-ft level is again advancing. The west drift from the 1100-ft level is also again being driven ahead.

Utah.—Everything in and about the mine working finely. Sinking the shaft is making excellent progress. The flow of water is still strong, but is easily handled by the pumps. Prospecting the 400-ft level to the northward has been vigorously resumed.

Lady Washington.—The pump tank chamber at the 260-ft level is nearly completed, the framing and other carpenter work of the tank is being done, and the joints of the new pump are being fitted together preparatory to lowering.

Cosmopolitan.—The ore in the face of the main tunnel assays about $30 to the ton, and shows increase of width during the past week. Some very good ore is also met with in the winzes below the tunnel level.

Crown Point.—Extracting the usual amount of ore from the upper levels of the mine. Sinking the south winze on the 1600-ft level goes steadily ahead, without change of value. Driving the main east prospecting drifts on the 1700-ft level, as usual, with favorable prospects of soon reaching the main ore vein.

Yellow Jacket.—The north and south winze below the 1740-ft level are both being steadily driven downward, the bottom of each still being perfectly dry. The cross-cuts west from the north drift on the 1740-ft level have just been started, the face of each being in very favorable ground.

Silver Hill.—The bottom of the north winze on the third station level, on Monday last, encountered a flow of water so strong that work had to be suspended in the winze for the present. The bottom of the winze at the time of the suspension was in a fine character of quartz, with favorable indications of good ore developments ahead. Nothing new of the east cross-cut on that level. Work on the shaft progressing as usual.

California. — The north prospecting drift on the 1550-ft level is still in fine ore. Sinking the C. & C. shaft is making the usual good progress. Work on the mill is going ahead rapidly.

Idaho.

Golden Chariot.—Owyhee *Avalanche*, Sept. 10: The carpenters are vigorously at work on the new building, and the engine and boilers will be in position as soon as possible. There will be no delay in starting up the works when the balance of the machinery arrives from San Francisco. In the new discovery sections of the 1st and 2d levels of the mine, the developments have recently been very promising. From the 4th and 9th levels the ore that is taken out is reported to be richer in quality than any that has yet preceded it from any part of the mine. Much good ore is also coming out of the 4th Minnesota level, and altogether the Golden Chariot is in a very satisfactory condition, and bears a promising look for the future.

Silver Cord.—Stoping will be commenced in a few days. The new boiler has been placed in position, and the machinery for the new works is nearly all on the ground.

South Chariot.—The drift of the 11th level is making satisfactory progress. The stoping between the 9th and 10th levels has resulted in developing a splendid quality of ore, considerable quantities of which are now taken out daily. The mine is in good condition throughout.

Pauper.—The ore house has been enlarged and improved, and the works generally have been renovated and put in first-class shape. The hoarding house adjoining the mine has also undergone sundry improvements and has been made capable of accommodating a larger number of occupants. The superintendent states that the mine will in a short time be doing a splendid paying business.

Mahogany.—The stopes are looking well and a large quantity of good looking ore has been taken out during the past week. There is the usual force of men at work within the mine and on the surface.

Ina Ellmore.—Cross-cutting has commenced on the 12th level. At the 13th level cross-cutting for the ledge will soon commence. Developments are looked forward to with much interest.

Oro Fino.—This mine continues to look unusually well, and the South Chariot mill is kept constantly employed on the ore. Superintendent Catalow has great faith in the paying prospects of the mine, which will soon become remunerative on its own merits and yield a handsome return to the company whose liberal expenditures have made the work the subject of general admiration.

Elmira.—Operations will soon be temporarily suspended in order to give the owners an opportunity to make preparations for a fall and winter campaign by the erection of new buildings, etc. There are about thirty tons of ore on the outside of the mine, the crushing of which will commence next week at the Leonard mill.

Wagontown Mines.—From the Wagontown mines the reports of operations are unusually encouraging. In the Harkins claim a rich strike was made yesterday in that part of the mine known as the "Dead Beet." The ledge at this point is of the talc formation and carries some streaks of gold. This is rather an uncommon development in these parts, and is quite promising. Some rich rock has been taken out of the Henrietta recently. In the cross-cut from the main shaft where the ledge is being divided, the seams develop some very fine ore. Mays & St. Clair are doing a tip-top business on their claim. They have been stoping for several weeks past and have now 150 tons of ore on the outside. Much of it is first-class and very rich. The ledge is seven feet wide at the bottom of the shaft and all solid ore. The shaft is down 55 ft in the Webfoot, and everything is looking quite promising in this claim.

Gas Fixtures.

We made a visit one day this week to the new establishment of Mr. Thomas Day, Nos. 122 and 124 Sutter street, and came away with the impression that it was as handsome a store as there is in San Francisco. Just imagine one large lofty room, fifty by one hundred and twenty feet, with an immense collection of chandeliers pendent from the ceiling, and the walls covered with brackets, curiously colored shades, bronzes, elegant fixtures, and all the miscellaneous varieties of a first class gas fitter's establishment. There is a perfect forest of chandeliers of more than imaginable variety of design, varying in price from a few dollars up to $550 each. All these are hung from the ceiling in such a manner as to be critically examined, and the combination of colors and designs makes the display a highly ornamental one.

This firm was established in San Francisco before gas was introduced, and imported the first lamp posts ever brought to the city. The new and elegant store in which business is done was opened about a month since, and is without doubt one of the most elegant in the city. Two floors are occupied. The main show room is 50x120 feet. A room in one side of this where plumber's materials are kept, is 40x40. The basement covers about the same space as the main room, and is used for heavy goods.

The business is quite an extensive one, and the variety of goods dealt in is great. The stock of chandeliers is handsome, and the designs are of all characters and dimensions. The heavy crystal chandeliers are from France and England, but the bronze ones are mostly from New York and Philadelphia. About one-quarter of the main show room is divided off by a railing, and neatly carpeted. Within this enclosure are kept the more ornamental and costly goods. Every inch of space is utilized, and one can imagine the variety of the stock when it is stated that of all the chandeliers exhibited no two are of the same pattern, each being only a sample of those on hand, so that the whole forms the largest stock on the coast.

The bronze clocks and fancy articles are of elegant designs. A plentiful supply of articles of this kind is kept on hand. Most of the bronzes are imported from France. A large supply of photographs of bronzes is kept for the convenience of purchasers, so that people who desire it may select any that can be had in Paris. Mr. Day thinks that he is better able to meet every call than the largest houses in New York. He has an agent in Paris, who selects for him and keeps him posted on all the new designs. The New York men make occasional visits to Paris to select what they want, but carry only a small stock, and make no use of the photographs. Many of these bronzes are most elegant things. The subjects are chosen by persons of taste, and real artists attend to the execution. Some of the pieces are sold at $500. Many of them are arranged so as to be used as gas fixtures or not, as desired. Imitation and real bronzes both are kept on hand.

The marble and bronze clocks are very handsome and made in various designs. Around the shelves in part of the main sales room are arranged a great variety of handsome and elegant gas shades. It is only lately that colored shades have been imported here, but now any one can match their furniture with shades of similar color. The richest of these shades are of French manufacture, but the best hand painted shades for drop lights are American, they being made better in this country than elsewhere. Some of these are really beautiful works of art, skilfully executed.

With chandeliers and gas fixtures so many different kinds are kept that they seldom make them to order. In this line they are as well supplied as any house in the United States with choice designs. They have taken great pains to make proper selections, and as they are bound to no one manufacturer, but trade with all or any, they can select what is desirable from each. Side brackets, hall lights, etc., are kept to match the chandeliers, in bronze, plate, orystal, gilt or steel.

A large supply of plumbers' and gas fitters' goods are kept and this house supplies most of the plumbers and gas fitters here. A large stock of brass goods is kept and iron fittings, iron pipes and everything of that character. A curious thing they have is the enameled bath tub, made of iron enameled inside and as smooth as glass. They have also the same style of wash basins, stands, etc.; copper bath tubs and boilers may also be seen. They have several styles of cabinet stands with wash basin and hot and cold water for bedrooms, etc., making an elegant piece of furniture out of the wash stand. These are made of walnut and maple, with marble tops. The supply of plumbers goods is very varied and the articles too numerous to mention.

One would hardly imagine there was so many kinds of gas stoves until examining those in this store. Some of the little nickle plated ones are very handsome. They also have a variety of gas-log stoves similar to the one exhibited at the Fair. These are made to resemble a pile of logs on a fire place, and the little jets of gas, when lighted, give the wood the appearence of burning. The "wood" is made of asbestos and other indestructible material and will last a lifetime. It is no trouble to make such a fire any time. Quite an assortment of fountain jets is kept on hand, as well as a number of German student lamps and other articles of a miscellaneous character.

New Style Ore Pulverizer.

In the extreme rear end of the Mechanics' Institute Pavilion in the Machinery Department is a queer looking piece of machinery which, when in motion, moves back and forth four heavy pieces of iron which set in a box filled with water. People stop and look and wonder what it is for, as they do at many other articles with which they are not familiar.

It is called Moyce's Ore Pulverizer, and is intended for crushing, or rather grinding, ore. the machinery is of rather peculiar construction and entirely different from any ore pulverizer previously in use. There are four heavy grinders, placed side by side, which are moved back and forth on a bed by means of eccentrics on the shaft. The grinders or pulverizers weigh about 800 or 1000 pounds each. The shoes with which they are shod may be removed like ordinary stamp shoes, as can the dies in the bottom of the iron box in which the grinders operate. These heavy grinders, as they move back and forth, have a peculiar rocking motion which is communicated by the eccentrics, so that the ore is stirred up and brought under the shoes at each backward and forward movement.

The idea of the machine is to get the benefit of the arastra-like grinding, but in a more rapid manner. All mill men know that there is nothing yet invented that will come up to the old-fashioned Mexican arastra for crushing rock fine and working gold ores up to a high percentage of the assay value. The only trouble is that it is too slow in its operation. This machine grinds the ore in the same manner, except that the drags move backward and forward instead of in a circle as in the case of the arastra. The rolling motion which is communicated to these grinders has the effect of bringing a new batch of ore under them at each move. The shoes are slightly rounded to aid this, so that the ore does not pack at each end of the dies as it would with a flat shoe.

The ore is first broken up by a small rock breaker and then fed into the pulverizer through a hopper. Being ground up fine the ore is amalgamated as soon as it leaves the pulverizer. A five-horse power engine is required to run this machine, rock breaker and all. The whole mill can be made in sections, so as to be packed on mule back in mountainous countries. There is no complicated machinery to get out of order and no heavy frames to set up before the mill can be put in motion. The space occupied is very small, the mill being low and compact. A mill of this kind, rock breakers, engines, pumps and all, could be put up at a comparatively small cost. The one to which we refer is calculated to grind half a ton of ore per hour, or about twelve tons per day, which is greatly in excess of the capacity of three or four ordinary arastras. These machines are made at the Pacific iron works, in this city, and are mainly intended for prospecting mills, although adapted for heavy work where necessary.

Progress in the Sutro Tunnel.

The following is the report of progress in the Sutro tunnel, for week ending Sept. 8, 1875:

Number of feet in tunnel, August 29	10,666
Number of feet driven during week	101
Distance in, September 8,	10,767

Details of work performed are as follows, heading being 8x10 feet:

Holes drilled	313
Holes blasted	316
Aggregate depth	2,191 feet
Average depth	6.902 feet
Powder consumed	648 lbs
Exploders consumed	316
Rock extracted	1,322 tons

Water.—Quantity, 46 miners' inches. Temperature—at mouth, 76 degrees; at shaft No. 1, 79 degrees; at shaft No. 2, 79 degrees; at header, 83 degrees.

Air.—Temperature—at mouth, 79 degrees; at shaft No. 1, E. 78 degrees, W. 73; at shaft No. 2, E. 80 degrees, W. 81; at header, 84 degrees.

Remarks.—Ground—fair drilling and good blasting, consisting of a mixture of quartz and porphyry.

The Fryer Works. — The Grass Valley *Union* of Sept. 15th says: We visited this establishment yesterday, in company with Mr. Fryer and his partner, Mr. Hall, who has just arrived from New York, and found a force of workmen busily engaged in setting up the big boiler, which is one of the main features in working by the new process. Beside this all the cast iron "sections" are on the ground ready to be put in place. Every exertion is being made to put the works in order for the regular working of ores in quantity, and it is expected this result will be attained in about three weeks. Convenience as well as neatness has been studied in the arrangement of various parts of the establishment, which strikes the eye pleasantly, and carries the impression that the proprietors have all confidence in the success and permanency of their enterprise. Until the present enlarged works are completed nothing will be done in the way of working ores, but we can say that recent tests of different ores with the small apparatus which has been used give the most satisfactory results in every instance, whether they be free milling or the noted rebellious ores of Meadow Lake district.

The New Railway Tunnel.

Ths work on the tunnel of the Delaware, Lackawanna and Western railroad oompany, under Jersey City heights is being pushed forward with remarkahle rapidity, consideriug the extent of the work aud the many obstacles met with. In the construction of the great Heosad tunnel, which necessitated an outlay of many millions of dollers, the engineers met with many difficulties, hut they found about as much soft as hard rock; but in the Delaware and Lackawanna tunnel there is nothing hut solid trap rock. The labor of piercing this has already cost large amounts of money, the finest and most powerful drills being nsed day and night. Masons are now employed in arching the eastern entrence facing Hohoken, and it is expected that some time next week the immense keystone and tablet will he placed in position, after which, the work of laying the copings will be commenced. The stone used for this portion of the masonry will he highly polished, and the names of the Delaware, Leckawanna and Western railroad, and the Morris and Essex railroad, the date of the commencement of the work, name of the engineers and those of the President, Board of Directors, and the contractor will he engraved upon it. The stone is a singularly beautiful specimen of blue granite of immense size. The masonry at the western entrance is not quite so far advanced, operations at this point not having been begun until a year after the shafts had been hegun in the eastern extremity. Ths tunnel when completed, will he 5,000 feet in length, twenty-eight feet in b'ght, and twenty-four feet in width, and will have involved an outlay of $2,000,000. The entire distance thus far excavated from the eastern entrence is a little over 1,100 feet, about one-fifth of the whole distance.

It is anticipated that hefore the middle of next month shaft No. 3, which is 2,500 feet from the mouth, will be reached. Eight hundred meu, all told, are employed, of which two gangs are engaged day and night in six shafts. A large force is now employed in tearing away the rock at the western end, and having succeeded in piercing to within forty feet of shaft No. 6, which is distent about 500 feet from the entrance. The seamy nature of the rock at this point will make it necessery to bnild about one thousand feet of solid masonry, which will require ahout three millions of bricks. Four general hlasts a day, in tbe two headings and the various sbafts, ere reqired, and the average number of mines exploded each time throughout the tuunel is thirty-two. These are set off at uiue o'clock in the morning, at noon aud at four and six o'clock in the afternoon. The hroken stone teken from the interior is used in making a high embankment, extending about 2,000 feet towerd Hoboken. One hundred and fifty cars are required to carry the stone from the tuunel, and in addition to masons, carpenters and ordinary workmen, thirty-two engineers and as many blacksmiths are coustantly employed. Yestsrday the masons hegan work on shaft No. 1, and will finish the others in quick succession. Everythiug connected with this groat work, except the operations of the engineers, has been done under the direct supervision of Mr. Johu McAndrews, the contractor, who has already hnilt many hridges along the line of the road, besides sinking e number of coal shafts at Screnton. Mr. McAndrews is confident that everything will be in readiness for running the traius hy the middle of July next. The ship canal at Hoboken, on both eides of which large warehouses will be built, will he completed in the fall, and will constitute another great accessory of the tsrminus of the road.—*N. Y. Times.*

Art Education for Mechanics.

Tbe idea of making educetion more practicel seems to have at last reached tbose who have charge of our public schools, and good results are likely to follow. Attention has been directed to the primary departments, end it is conceded that the hest teechers should he furnishod to the younger pupils, and every facility afforded for their advancement. The ornamental part of an educetiou is well enough for those who have sufficient time to pursue it, but the majority of scholars are thrown out into life to begin their work at the ege of fourteen. Whatever education they are to acquire at the public expense, must be gained before that time, end as they are to he self-dependent, it must be conceded that it ehould be ae practical as it is possible. There is a demand in the country for ekilled lebor, but there is uo call for business and professional men, nor yet for those who are ready to teke "anything not menial," meaning any occupation that does not call for the labor of their hands. It was far better that the boy who has his own way to make in life should have a trade at his hack, thau be coutent with merely an ornamental education. His skill in labor will not prevent bie making a fortune in business, or following any other calling. And he has the advantage of heing able at any time to fall hack upon his trade, of which uo reverse can deprive him. The mechanic and his trade, ouce united, are forever inseperable, and industry with skill ie the sure road to prosperity. But the progress of our manufacturing industries demand the highest type of skilled labor, for which we have hitherto lookod largely to Europoan countries. If we would create it in our midst, we need art schools and technological colleges. Help along the drawing in our public schools.

Circular Saws for Re-sawing.

To say there has been a struggle in attempting to re-saw lumher with circular saws, would be but a mild description of the time, expense and effort that hes been devoted to this object. The incentive has, of course, heen the greater speed at which sawing is executed with circular saws. In America, where the gang re-sawing machine has not yet come into nse, and where re-sawing is confined mainly to splitting thin hoards from planks, the circular re-sawing machines have heen qnite successful, and are in general nse for tho nerrower varietiss of lumber, and in some cases of the deepest stuff. One firm expended a great deal of money and time in an experimental way attempting to split deep lumher with the circular saw, and have certainly heen successful in the kind of re-sawing to which their experiments were more espccially directed, splitting one-inch hoards; 15,000 to 20,000 feet a day are sawed on a single machine. The re-sawing circular saw consists of a central disc of wrought iron, about sixty iuches diameter, turned very true; on the periphery is attached segmental plates, as in a veneer sawiug machine, of ahout sixteen geuge at the teeth. The disc and saws are beveled off from the center to the periphery, the lnmber springing off on one side to pass the eye of the saw, which is perhaps one inch in thickness. The feed is by means of rollers, expansively geared and acting in concert with the saw spindle, from which they are driven.

We notice this machine at this length for the reason that no other of similar proportions has been attempted in America. Splitting saws with power feed are, as before stated, in general use for splitting "siding," or weather hoarding, and other lumber to ten or twelve inches wide; and if such machines were as carefully and accurately made as sawing machines are in England, and the packing hoxes aud guides adopted, saws of fourteen to eighteen gauge could no doubt be successfully worked in lumber to sixteen and eighteen inches deep.

Re-sawing is quite a different thing in England from what it is America, not only with respect to the nature of the lumber, whieh has so much to do with tho nature of the machines for splitting it. A machine to work lumber eight inches deep or twelve inches wide is, in the English market, considerod as adapted to general uses. On the contrary, in America re-sewing machines to have the same range of adaptetion, must split thirty inches desp, and plening machinee are rarely made with a less width thau twenty-fonr inches. Machinery to work lumber from the Wabash valley aud in other parts of the Middle States, in America, must have a maximum width of thirty-eix inches; end even at this, boards and planks sometimes require to be split in order to ho worked. The advantages, however, of working lumber of this width for any use is questionahle, and the only advantege is thet less is wested in suh-dividing wide than narrow hoards. —*Richard's Wood-working Machines.*

Lac.

There is certainly no more curiously interesting article of Indian export than lac, whether in the form of a heautiful dye or in that of a certain secretion elaborated hy a husy little insect called the *Cocus lacca*, the derivation of the latter word evidently coming from the Sanscrit *laksha*, signifying 100,000 and owing its origin to the fact of so great a mnltitude of tiny workers heing engaged in manipulating the secretions which issue from punctures made in the twigs of certain smooth harked trees, euch as the peepnl, kossum, byar, hanyan and prass.

Among the Hindoos lac is of immemorial renown, aud is to be found throughout India, Siam, Burmah and Assam; that produced in Siam, fetching the highest price in the home market. After "swarming," the insects atteoh themselves to a young green hranch, and from its sap, modified hy their own action and properties, a resinous coating is formed and divided into minute chambers, whicb eventually hecome a cradle for baby *Cocus lacca*, a tomb for the parent, and the stick-lac of commerce. The bodies of the insects possese the dye, with which also the whole inside of the coating is impregnated. As the eggs are hatched, the young lahorers work their way through the walls of the shells and appear in myriads, so that the side of operations appeers to he covered with living vermillion. There are five descriptione of the article—stick-lac, eeed-lac, lump-lec, shell-lac aud hutton-lac. The first is the exudation *pur et simple*, and resembles dirty coral; of this a eingle tree usually yields from thirty to forty pounds. Seed-lac is the sems, hut in a granulated form and deprived of coloring matter. To accomplish the seperation it is necessary that the wood be carefnlly divided from the lac, an operation performed by passing a roller repidly over the twigs, when the coating comes off. The resinous residue is then freed of all impnrities, slightly bruised, washed in cold water, and finally steeped in hot water to kill the original manufacturere. The colored fluid is now strained off, and the grannlated particles are dried. Lump-lac is seed-lac in a consolidated form, and is prodnced by constant kneading. To ohtain shell-lac, seed lac is strained through coarse cotton hags placed near charcoal fires to admit of the coutents molting. Tho resin comes out in a form of thin flakee, which ie shell-lac, while the rougher portion, from its eimilarity to that artiole, receivee the term "button."

The dye is obtained during the procees of prepering ssed-lac, and is precipitated from an alkaline lixivium by the agency of alnm. Ths coloring matter is thsn vatted, filtered on tables, and pressed in boxes like indigo, appearing in the market in small thin cakes.

In India, lac, in whatever form, is used for many purposes—for trinkets, such as earrings, necklaces, bracelets, and numherless other ornaments which find ready purchasers in the hazars; in the manufacture of ink, and as a basis of sealing-wax. The beautiful specimsns of lecqnerware, from Scinde, which took a prize at the exhibition of 1851, owed their heanty to lac; and in Burmah it is also used by jewelers for coloring gold, and a cement where with to bind metal work. Large quantities are produced in the Shan States, and it is the desirs of the Government to introduce regular lac preserves iato British Burnmah. The insects ere removed from one tree to another, and even long distences, with the greatest ease.—*Chemist and Druggist.*

The Newport Coal Company.

Another one of the compauies organized to furnish oheep coal on a co-operetive plan is the Newport coal company, which exhibits some of the product of the mine at the Pavilion. The mine is one of the oldest coal mines on the coast. They shipped coal from it to thie city as early as 1855. The company now owning it has just heen incorporated, with a capital stock of $4,000,000, in 40,000 shares. Tbe company offers 10,000 shares of its stock for sale, the first 10,000 being offered at $50 per share, $10 down, the balance in monthly installments of $5 each. The holder of each share of this stock is entitled to purchase half a ton of screened coal monthly, at the rate of $8 per ton, from the vessel alongside the wharf, or from the yard; sacking, wharfage, drayage, etc., beiug added. This right hegins on the first payment heing made. The mine is ou Coal Bank slough, Cocs bay, Oregon, forty hours by steem from this city. The proprietors have been shipping coal here for twenty years, and the ooal is well known. It is claimed to he the cleanest of our domestic ooals, hnrning with a bright flame, and is free from smell; when the draft is shut off it smoulders slowly, enabling the user to maintain the fire for a long period with a small consumption of fuel, a great recommendation for domestic uses. The seam of coal which tbe company is now mining is said to contain over 6,000,000 tons of available materiel, and the ground is prohably nnderlaid with two seams, as yet untouched.

From the way in which the ooal liee the company do not require hoisting or pumping works, nor will they for many years, as a very large body of the coal lies ahove tho water level of the mine, and can be extracted through the main gangway or tunnel, which penetrates the ooal for more than 2,000 feet.

The former owners have done nearly all the dead work of the mine, so that the company succeeds to a property already in a position to furnish 200 tons a day. The company has snhstantial bnnkers et the mine, capable of holding 2,000 tons; a good tramway to deep water; locomotives and cars capahle of loading 200 tons in six hours; good houses for the officere of the company and its employees; blacksmith shop, horses, mules, stables, barn, boarding honse, orchards, water, etc., so that unless the production he very largely increased there need be no great outlay for extra improvements.

The directors of the company are: Jas. R. Kelley (President); S. S. Manns (Secretary), Jas. Flanagan, Patrick Flenagan and Felix Chappellet: The compauy's offices are 118 and 120 Market street, and at Chappellet & Miners', Oakland. The coal may be examined at the Pavilion.

Building Societies in England and Wales.

There are 2,000 building societies in England and Walos, with a membership of 800,000, a snbscribed capital of over £9,000,000, a loan and deposit capital of over £6,000,000, total assets to the amount of £17,000,000, mortgage advances over £16,000,000, and a yearly income of more than £11,000,000. One society has nearly 17,000 members, and another 10,000. The income of a single society is over a million and a half pounds. So great is the confidence of the puhlic in these enterprises, that many of them have reduced the rate of interest to four, and even three per cent., in order to check the influx of depoeite which still come flowing in. Though the societies frequently loen large amounts on the security of mills and factories, yet they meinly do business with the working classes or with a class slightly euperior to them in station. In the northern counties they have proved of great service to the working classes, hy encouraging the conetruction of small honses, thereby keeping the rents of that clase of dwellings at a moderate sum.—*Ex.*

Woonen Shoe Manufactory.—E. W. Shipper, of Meadville, Pa., has commenced tle manufacture of wooden shoes. His mechinery, mostly the result of his own mechanical ingenuity, is cepahle of turuing ont hundreds of peirs a day. This is the first factory of the kind in this country. It is thoug ıt such shoes will be suitable for fermers and others when working iu the wet. They might aleo he suitable for miners.

Rochester Flour.—Rochester, N. Y., claims to produce more flonr to-day than ever ehe did before, and more of the higher gradee than any other city of the United Statee. Six hundred coopers find employment in making barrels for the flour manufactursd there.

Edge Tools.

Little more than a ysar ago Mr. W. F. Palmer, in connection with another gentleman, fitted np a factory on Berry street, between Fourth and Fifth, for ths manufactnre of sdged tools. As the capital at the command of these gentlemen was limited, thsy, of necessity, relied for their success on the labor of their hands. When but a few montbs had passed, their husiness met with a serious check by the sudden death of Mr. Palmer's pertner. This misfortune subjected their mutnal property to the usual legal process, and, as a consequsnce, greatly retarded the progress of the business.

Mr. Palmer, however, resolved to push the business forward by hie own exertions, and, with only one helper in his factory, toiled on day after day, determined to show the mechanics of San Francisco that he oould furnish them with tools that would claim their patronage by their excellence and durability. Many of them were, however, slow to understand why they should pay a higher price for the tools he manufactured than apparently the same kind of tool of Eastern make. But when a few had been convinced that the best was the cheapest, even though at a greater expense, the word soon passed from mouth to mouth, that W. F. Palmer was manufacturiug a snperior implement, and it was not long until the merit of his tools had secured him a living patronage.

Altbough his manufactnring facilities are yet limited, the reputation that his wares have secured to him has placed his business on a substantial basis, and with the rapidly increasing demand, will provide the means for extending thess facilities He confines himself principally to the manufacture of ship carpentsrs', house carpenters', millwrights' and butchers' tools. His experience in this line is large, having been engaged in the same busines for a number of years in the Atlantic States. It is a common saying among wood workers, that "any tool that will etand the work in sbip building will stand anything." Allowing this to be true, (and it certainly is a good test,) Mr. Palmer, no doubt, takes great satisfactiou in viewing the long list of names of San Francisco mechanics which he has, that attest the superiority of the work he turns out. When it was generally nnderstood that a Mechanics' Fair was to be held this season, Mr. Palmer hegan preparation for an exhibition that would he hoth attractive and instructive. Ae a result of his labor, in this direotion, we would refer the visitor to his stand at the west wall of the Pavilion, abont midway, where he makes a fine display of the kind of tools he manufactures. That these are entirely of home manufacture, the samples that are here seen in the differeut stages of perfeotion—from the crude iron up to the finished tool—is evidence.

How They Drop Shot.

A reporter of the Baltimore *American* thns describes one of the many processes of making ehot in one of the shot-towers of that city: One of the "secrets" of the mannfacture is the mixing of the lead, with a certain proportion of a combination of mineral subtances called "temper." The temper is fused with the lead, and gives the molten metal that oonsistency which makes it drop, and withont which the lead wonld be moulded by the sieve, and would form little penoile instead of round shot. When "BB" ehot, for instance, are to be made, the lead is poured into a pan perforated with holes corresponding to that size. The little pellets come ponring down in a continnous shower, aud fall into a tank filled with water on the grouud floor. In their descent of two hundred feet they become perfect spheres, firm and dense, and they are tolerable cool when they strike the water, although the swift concussions make the tank foam and bnhble as if the water was hoiling furiously. The shot must fall in tbe water, for if they ehonld strike any firm substance they would he flattoned and knocked out of shape. To get the little pellets perfectly dry after they have beeu in the "well," is the most difficult and troublesome process of the whole manufectnre. An elevator with small buckete (very much like those used in flour mills) carries the shot up as fest as they reach the bottom of the well, and dehosits them in a box 60 feet above the firet floor. The water drips from the buckets es they go up, and not much is poured into the receiver above, although it is intended to be a sort of dripping machine. From this receiver the shot runs down a spout into a drying pan, which greatly resembles a gigantic shoe, made of sheet iron.

The pan rests at an angle which permits the wet ehot to roll slowly down to the chamber helow, and the pellets become perfectly dry as they pass over the warm sheet-iron.

Alumnium.—According to Winkler there are at preseut four alumnium mannfactories, which produce 35 cwt. per annum. Of this quantity 20 cwt. goes to France and 15 to England. Alumnium is also made in Berlin. The price for a numher of years hae heen $12 to $15 per pound. It is not probable that it will he produced cheaper than that. This fact, with its nnchangeability and lightness, being three times lighter than oopper, four times lighter thau silver, and seven or eight times lighter than gold, render it excellently adapted to coin, especially as it is easily coined.

The Ticonderoga farmers have converted their church into a cheese factory and thsir race course into a cow pasture.

Useful Information.

Snakes in Ireland and Irish Oak.

Everybody has heard the old legand concerning the driving out of snakes from Ireland by St. Patrick. While making a tour of the island some years since, we inquired of many of the natives as to the existence of snakes, and the invariable reply was that they were rarely, if ever, met with. Reptiles, a few inches in length, are sometimes found, but they rather resemble worms than snakes, and it is a question if the Irish peasant really knows what a snake is. There certainly seems to be some reason for believing that Irish earth possesses peculiar properties antagonistic to reptiles. It now appears from a statement in *Land and Water* that Irish timber has a quality somewhat akin to that which distinguishes the earth it springs from, in that it will never harbor spider or cobweb. The ceiling of the nave of St. David's cathedral, in London, is constructed of that material, and cobwebs, it is said, are never seen there, though ite excellent carving might well form a groundwork for the spider's ingenuity. It does not appear for what reason Irish timber was imported into England, where the oak was formerly so plentiful, but it may possibly be due to some superiority in quality. The curious recumbent figure of Robert, Duke of Normandy, in one of the side chapels of Gloucester cathedral, is said to be carved out of a single piece of Irish oak, which gives promise of proving as durable as bronze, which it somewhat resembles.

Buttons from Pebbles.—Immense quantities of buttons, manufactured from pebbles, are produced in Parie, and sent to almost every part of the globe. These pebbles, which are of crystalized felspar, containing as little clay and lime or lime salts as possible, are reduced to powder by heating them to cherry red ond then plunging them into cold water. The powder is separated from its impurities by being passed through a wire gauze sieve, and is next well stirred in water. The residuum is treated with a quantity of hydro chloric acid, varying from three to ten per cent., to free it from the oxide of iron, which would give the buttons a reddish tinge in the baking process. One hundred pounds of powder are mixed with two of chloride of sodium and four of floar paste, dissolved in five quarts of water; the whole is then passed through the sieve, and dried to a proper consistency for moulding.

Water Supply Works. — The first waterworks in the United States were planed and constructed by Mr. John Christopher Christenaen, at Bethlehem, Pa., in 1762. The machinery consisted of three single-acting force pumps, of four inch calibre and eighteen inch stroke, and worked by a triple crank, and geared to the shaft of an under-shot water wheel, eighteen feet in diameter, and two feet clear in the buckets. The water was raised by this machinery to the hight of seventy feet, and subsequeotly to 114 feet. The works were in operation as late as 1832. The first rising main was made of gum-wood, as far as it was subject to great pressure, and the rest was of pitch-pine. In 1789 leaden pipes were substituted, and in 1813 they were changed for iron.

Asphalte for Paths and Roadways.—Let the gravel or limestone chips be passed through a three-fourth inch riddle. Pour coal tar over the gravel or scraps, and well mix just enough to blacken them. Lay on the path three inches of gravel riddled through one and one-half inch riddle, and spread it evenly; over this layer spread one inch of the finer kind, levelling with a straight edge. Then roll it with a heavy roller three or four times. If the asphalte adheres to roller, water and sand it with coarse river sand, and roll again until it becomes consolidated. When dry a dressing of hot tar may be given it, dry sand being dusted over it. Sand it until the surface be thoroughly hard.

Chinese Bronzes.—A chemical examination of some Chinese and Japanese bronzes of unusually deep color, exhibited in Paris in 1869, has shown the existance of a much larger percentage of lead than occurs in the ordinary bronzes, proving that it is to this substance that the special composition and color of the brouzes is due. Where zinc was present in considerable quantity, it seemed rather to counterbalance the effect of the lead.. An alloy composed of five parts tin, seventy-three of copper, ten of lead and two of zinc, proved to be exactly like the Chinese bronze, and identical with it in fracture and polish.

American Oil in Japan.—The consumption of petroleum in Japan is very large, and shiploade are received from America. Japan, however, possesses naptha springs in her own territory, and some time since Ischieaka Schujo was sent to Pennsylvania to obtain information relating to the process of production and preparation. His son is still in the States purchasing the necessary machines and perfecting his studies of the subject.

Clay Pipes.—Over 1,000,000 clay pipes are imported into this country annually, the greater number being the celebrated "T. D." brand. All these pipes are made in Glasgow, Scotland, and chiefly by one firm, W. White & Sons, honest old quakers, a house that has existed for nearly a century and a half.

Snake Skin Shoes.—We saw last Saturday, says the Winchester (Tenn.) *Journal*, a nice pair of No. 4 shoes, the vamps of which were made of rattlesnake hide, and the quarters of chicken-snake hide. Also several snake hides neatly tanned, and three feet long and eight inches wide. They belonged to J. H. Henderson, who lives on "Big Coon," in Jackson county, Ala. He makes a specialty of catching all kinds of snakes, rattlesnakes in particular, and, without injuring or killing them, proceeds to take off their hides. These he tans in about two months, and then makes them into shoes, slippers, etc. He uses a weed which grows on the mountain, to mesmerize the snakes. He says they will readily become harmless under the influence of the weed, which he fastens to the end of a long stick, and, rubbing it for awhile about the snake's head, soon has it insensible, and then he ties it preparatory to skinning it.

Utilizing Sawdust.—Sawdust can be converted into a liquid wood, and afterwards into a solid, flexible, and almost indestructible mass, which, when incorporated with animal matter, rolled, and dried, can be used for the most delicate impressions, as well as the formation of solid and durable articles, in the following manner: Immerse the dust of any kind of wood in diluted salphuric acid, sufficiantly strong to affect the fibers, for some days; the finer parts are then passed through a sieve, well stirred, and allowed to settle. Drain the liquid from the sediment, and mix the latter with a proportionate quantity of animal offal, similar to that used for glue. Roll the mass, pack it in molds, and allow it to dry.

Fern Leaf Ornaments.— Handsome ornaments can be made by mounting fern leaves on glass. The leaves must first be dyed or colored They are then arranged on the mirror according to fancy. A butterfly or two may be added. Then a sheet of clear glass of the same size is placed on top, and the two sheets secured together at the edges and placed in a frame.

Steamboat Power.—A Massachusetts man, wanting power for his mill, which is on the river side, has hired an idle steamboat, backed it up to the proper position, and taking off the paddle wheel, bolted the steamer fast, and it furnishes him all the power he wants.

Recently two inkstands and a pen were dug up at Pompeii. The pen is of metal, and made almost similar in shape to our quill pens.

The British Admirality have ordered a hundred of Captain Boynton's water dresses for coast-guard service. They will cost $60 each.

Good Health.

Death in the Nursing Bottle.

The *Scientific American* furnishes a very timely and truthful article on present extended use of the india rubber tube and mouth piece, connected with the nursing bottle. It holds that a prolific source of the present alarming infant mortality in New York (about 800 a week) is traceable to this cause. That journal says: We might write a column on the dangers that reside in the milk, unless special care has been taken to obtain it fresh or by suitably diluting pure condensed milk. But this danger is well known, and our business at present is with the bottle, or rather its dirty tubs, which should never be used more than once, then thrown away and a new one bought.

Even when new, these white tubee, impregnated as they are with oxide of zinc, are not unobjectionable; far worse are they when saturated with sour milk, germs of putrefaction, decay and disease. Some of these child-murdering Yankee inventions have reached Berlin, and have called forth the following from a practicing physician of that city:

"The supposed advantage of these bottles consists in this, that they can be placed beside the infant in bed, while other bottles must be held in the hand all the time. What sensible mother or nurse would leave a child with a bottle without watching it? The danger of the bottle consists in this, that it is absolutely impossible to cleanse it. When sucked on, little particles of milk become attached to the tube and cork; these curdle and soon turn sour. If some of this deposit be placed under the microscope, we see innumerable bacterio, organic beings which indicate decomposition and decay. At every meal the child draws in thousands of these germs. The decomposing process acts upon what it finds in the mouth, œsophagus, and stomach; and the result is diarrhea, *cholera infantum*, etc. I will here expressly remark that the usual method of placing the apparatus in water, or merely rinsing it out with a stream of water, is in no way sufficient. Some dealers sell a suitable little wire brush with the bottle, but even this does not answer the purpose, for the apparatus is not clean by a long way after drawing the brush through it several times; and who will take the trouble to clean it so thoroughly eight or ten times a day? How much time it would require! Another disadvantage is that the bottle is air-tight, and a partial vacuum is formed, which renders sucking so difficult as to exhaust the child, and it stops before its hunger is satisfied. Hence, parents, you who are compelled to feed your children with a bottle, throw away this apparatus, which can only bring destruction upon your children, and either select a bottle with glass mouthpiece, which is filled from below, or take a large rubber mouthpiece, which is perforated by a small hole and can be drawn directly over the neck of the glass bottle. This large mouthpiece or nipple can readily be turned inside out and thoroughly cleaned and rubbed with dry salt."

Causes of the Decay of Teeth.

In a paper read before the American Dental Society of Europe, Dr. George W. Field says: "By analysis, healthy blood is found to contain a small percentage of inorganic matter, and we can but infer that it is there for a purpose, and that purpose the building up and supporting a perfect osseous system, and that it is from this source alone that the teeth can derive the materials essential to the proper development of their different parts. The blood, acting as medium to supply these materials, cannot manufacture them, but must be supplied most generously, and the food taken into the system must be the base for supplies. Then it follows that the food richest in phosphates is what we need. In the preparation of wheat flour the most valuable part is rejected —that which contains the very nutriment for the want of which we are losing our teeth. The animals fare better than we. The Scotch oatmeal is still richer in phosphates than wheat, be the latter ever so properly prepared; therefore, to substitute this for the fine wheat flour is what is essential if we wish to have such teeth as nature designed we should. These are my convictions, and they are strengthened daily.

I have had opportunity to examine the mouths of people of almost every nationality, and I have found none that could be compared with those from the north of Iraland and of Scotland. These people make the use of oat meal as a principal article of food. They tell me that it is an almost universal brenkfast dish, in the form of porridge, with milk, especially for the young. In many families it is served in cake form for supper. This is a national dish. All partake of it, old and young; and it is with the latter, during the period when all the developmental forces are active, that the system thus nourished is the most benefited These people not only have a good dental development, but they are strong and healthy, possessing a strength and vigor of constitution almost unknown elsewhere. Acknowledge that nature must find in the food the material out of which to build up a strong and vigorous constitution; how can we expect to have teeth other than of the delicate, fragile sort, easily acted upon by the deleterious agents present in the mouth, if we persist in withholding the very elements required for their proper nourishment and development?

We all know that, during the period of growth and development, if there is an unusual deficiency of the bone-producing elements, if, because of a severe illness, there is a suspension or a weakening of the assimilative power of the system, this temporary arrest of the developing process in the growth leaves its ineffaceable mark, and nowhere so conspicuous as upon the teeth. This being the case, is it unreasonable to suppose that, given the ordinarily good health, and a activity of the developmental forces of children, and a generous supply of the proper bone food, we will have as a result a good dental development?"

Hygiene in the Sick Room.

This subject is admirably summed up in the following extract from "Cameron's Manual":

The atmosphere of a room in which a patient lies cannot be subjected to the influence of such disinfectants as sulphurous acid or chlorine. Abundance of fresh air should be admitted—in fact, too much attention could hardly be paid to the ventilation of the apartment—and it should be provided with a fire-place. The larger the room is, the better for both patient and attendants. Light should, unless under very peculiar circumstances, be freely admitted. Solution of chloralum or permanganate of potassium should be placed in large saucers. The dejecta and saliva of the patient should be instantly covered with a strong solution of bluestone, chloralum, or a weak solution of chloride of lime, and they should be speedily conveyed from the room. Slops of any kind ought to be promptly removed. The less furniture (consistent with comfort) the room contains the better. Window and bed curtains, carpets, and tablecloths should not be tolerated. The linen which has been removed from the patient is best placed in a tub containing chloride of lime solution. In a house where there are several inmates, it is well to hang a sheet moistened with chloralum, etc., outside the door of the sick room. Instead of handkerchiefs, the patient might use rags, and these after use should be placed in a basin and covered with disinfecting solution. The attendants should not place themselves in such a way that the air entering the apartment would pass from them towards the patient. The less communication held between the inmates of the sick room and those of the other apartments (who are obliged to remain in the house) the better. Should the patient die, the body should be isolated, and interred as speedily as decency admits of.

Domestic Economy.

Horse Flesh as Food.

A Paris correspondent of the St. Louis *Globe* writes as follows: "A great prejudice exists out of France against horse flesh as food. It is sold here in every arrondissement, and is often very palatable. Scientists have pronounced it as nutritious and savory as beef, from which it is not easily distinguishable. To my taste it seems like a mixture of veal and beef. I ate it first a number of years since, and liked it, having confidence in my cook, and in the healthy condition of the meat. The horses that are butchered are horses that have received incurable wounds, have broken their legs or are in some way rendered useless, not, as is frequently affirmed, those that have died of disease or of old age. The authorities look after this with parental solicitude. A horse that had perished from disease could not be disposed of, so vigilant are the police, for gastronomic purposes.

Horse Banquets.

You may remember that the late Geoffrey St. Hilaire, the famous savant, once gave a horse dinner to a number of his friends, all of whom were vastly pleased with it. The noble quadruped was served in every style, from soup to roast and ragout. A few years since an equine banquet took place at the Grand hotel. One hundred and fifty persons, representing the learned professions, and embracing many distinguished men, were at the table, and not one of them failed to approve, palatably, of the repast. The dishes, nearly all horse, were exquisitely cooked under the general supervision of a master of the art, and were described as exceedingly toothsome. I should have been glad to be present. I know I should not have said *neigh* to an invitation, had I been in the city.

After the dinner was over, the director of the entertainment informed the guests that the beasts killed were not young nor fat, but old, lean and worn down by labor; that their ages were from seventeen to twenty-three years. This was a surprise to the partakers, who had accounted for the excellence of the horses by the supposition that they had been carefully selected for their youth, freshness and fatness.

The Consumption of Horse Flesh

Has become commoner than it was when the banquet was given. Nevertheless, it is not very common, nor will it be, because the supply is not likely to be very large. Horses are worth so much more than beef that they cannot be substituted to any extent. They can be made available only when accidents occur. During wars horse flesh is more abundant, naturally, and might be put to excellent use by the Commissary Department. It has been used extensively by the French in Algeria, and will be, doubtless, in the future. A cavalryman should have small fear of hunger when he is, so to speak, on the back of his dinner. It would be a pity to slay so noble a beast as a horse for food; but when he is slain, is it not wise to eat him? As food he serves his distant kinsman, man, as the Darwinians would have it, and serves his kinsman to the last.

Choice Treatment of Foods.

In the choice of foods we cannot exercise too much care. It is cheaper to procure only the very best articles. All vegetables and fruits should be grown on the best soils, and the fertilizers used should be well decomposed and not fresh and rank. Partially decayed food of whatever kind, should be avoided. For breads, the best white wheat is none too good. If grown in new soil it is likely to be better and to contain abundance of the mineral matter so needful to health. Fruits for eating without cooking should be ripe, tender and not too tart; while those for cooking may be either sweet or sour, but they must possess the peculiar quality of retaining when cooked their best flavors. Potatoes should be fresh and ripe—old ones are less wholesome, especially when they have been exposed to the light and air, and bruised by much handling, or long exposed to the cold.

Animal food should be chosen with great caution. Only healthy animals should be used for eating. They should neither be too old nor too young, too fat nor too lean. In butchering, all the blood should be removed from the body, as otherwise the flesh putrefies readily. It should be thoroughly cooled before eating. It is also desirable that the animal be not killed for several hours after eating or after fatigue. The long journeyed animals are sent in crowded, filthy cars, render their flesh unwholesome.

The treatment of animal food is a matter of importance. Why do we cook it at all? First, to render it more pleasing to the sight; second, to develop its best flavors; and third to render it digestible and palatable. Flesh cooked too much is rendered innutritious and indigestible; if cooked too little it is disagreeable eating. Liebig says he would never have flesh subjected to a higher temperature than 170° Fah., except for a few minutes after it is put into the pot, when it may be submitted to a temperature of boiling water in order to coagulate the albumen into a sort of crust on the outside to hold in the flavors that might otherwise be evaporated. In roasting meat, also, let the heat at first be high, and gradually decreased to the boiling point for the same reason. Stewed meats are more wholesome and nutritious than any other. The process renders flesh tender and succulent and easy of digestion.

MINING AND SCIENTIFIC PRESS.

W. B. EWEB.....SENIOR EDITOR.

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San Francisco:

Saturday Morning, Sept 18. 1875

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GOLD MINES IN FRANCE.—According to a letter from Hennebont, in the department of Morbihan, some gold deposits are looked for in the western provinces of France. A few days ago some men were breaking up some stones on the road leading from Hennebont to Kervignac, when one of the stones, harder than the rest, was thrown on one side by one of the laborers, who had not been able to break it. The foreman snatched the hammer from the hands of one of his men, struck the stone a few sharp blows, and broke it. To the surprise of every one the stone was thickly streaked with some yellow metallic substance. The foreman picked up the pieces, placed them in his pocket, and on arriving home in the evening showed them to a jeweller, who informed him that the metallic substance was gold, and offered him $100 for the stone. The news spread like wildfire through the town, old quarries are being explored, and every one is seeking an auriferous deposit, which all assert must exist somewhere in the neighborhood.

A SUSPECTED RUSE.—It has been suspected that the cool and persistent manner in which certain English manufacturers recently proclaimed that they would not exhibit at Philadelphia next year was a ruse; that their object was to lull the manufacturers of other nations into a sense of security and then turn out in full force and make an exhibit which would overwhelm them. Johnny Bull is a sly dog.

THE Russian River Land and Lumber Association have purchased the land of Purington & McKenney, on Russian river, opposite the mouth of Austin creek. They will build their engine houses and machine shops at this point and lay off a town. They have also bought the land of William Carlisle, adjoining the Moore tract of land from H. Ludolf.

Native Petroleum in Great Britain.

Notwithstanding the island of Great Britain was the first country in the world to produce coal oil in merchantable quantities, which it did, some forty years ago, from a spring in a coal mine in Scotland, near the English border, we believe that this article has never been found, native, in any other locality in Great Britain until quite recently. We are now, however, told that veritable coal oil springs have recently been found in another coal mine, in North Staffordshire. In relation to this discovery, a correspondent of *Iron*, writing under a recent date, says:

I had an opportunity this morning of seeing what is perhaps the only instance in the kingdom of a petroleum spring. It is in a pit near Longton, the courteous manager of which guided me through the workings, and showed me in many places the petroleum oozing through the ground and collecting in small pools, just as water does in a very damp and marshy soil. The petroleum is at first a treacly-looking mass, not flowing readily in cold weather. It is collected in barrels, which are carried above and emptied into a tank, which is warmed by steam, and the crude hydrocarbon is run off from a little water which occurs with it, and sold for purification. Five or six tons per week are collected; a valuable addition to the output of coal. I was informed that no inconsiderable quantity of solid paraffine could be obtained from this petroleum. It certainly is a good burning oil, being used in the pitshaft."

The oil obtained from both of the localities above named is, we believe, perfectly identical in character with the native petroleum of this country; and the fact that it is found in England only in actual or near contact with bituminous coal, furnishes additional evidence of its carbonaceous origin. The first discovery of oil above referred to, was made directly in the mass of the coal seam—the coal itself was saturated with the liquid. In taking it out a pit was sunk in the coal and small channels made to conduct the fluid into the same, from which it was taken out in buckets and placed in barrels for transportation. The coal obtained at this mine was used for making illuminating gas, and was mostly shipped to London for that purpose. It was rich in hydrocarbon.

A Minature Engine.

There is now on exhibition at the Mechanics' Institute Fair a miniature steam engine which has good claims to being the smallest steam engine in the world. It was made during leisure hours by C. C. Thomas, engineer at the California mill, in this city. Mr. Thomas had his attention attracted some two years since by an item in the MINING AND SCIENTIFIC PRESS, to the effect that a steam engine had been built in New York which could be covered by a lady's thimble. He thought he would try and build one himself which could be put under a very small thimble.

The result of his labors is now shown. The engine is a vertical one, three-quarters of an inch long in its greatest proportion. The cylinder is one-eighth of an inch bore and three-sixteenths of an inch stroke. The valve moves one-thirty-second of an inch. The engine is made of gold and silver, the working parts, however, being made of steel. The whole thing is set on a California gold dollar and can be covered up with a No. 6 thimble.

Mr. Thomas made a little lathe to turn out the different parts of this monster piece of machinery, and every piece is as perfect as it would be in one of a large scale. The engine is all constructed in such a manner as to be taken apart, the whole being made like an ordinary engine. It ran as well the first time it was tried as it ever has, and when we saw it at work the other evening at the Fair it was working away as smoothly and easily as possible, being connected by a belt to a fly wheel. Mr. Thomas has a good magnifying glass on hand so that people can examine the engine closely if they wish to. It was built for amusement, during leisure hours, and to show what could be done on a very small scale. Just for the fun of the thing we have calculated the horse power of this little engine, running 500 revolutions per minute, under a pressure of ninety pounds of steam. Its power is one-twenty-five-hundredth part of one horse power, or worked down to a fine point decimally, .0004013187609375.

Although this is really a wonderful little engine, its owner has nearly completed one still more marvelous. It is a horizontal steam engine on a gold bed-plate just half an inch long. It will have a cylinder one-sixteenth of an inch bore and three-thirty-seconds of an inch stroke. The valve in this engine will move only one-sixty-fourth of an inch. It will be complete in all its parts like the other and admit of being taken apart and put together. We examined the pieces of this little marvel of mechanism the other day, and under a glass one could see with what skill the different parts were made and how delicate they were. It is now nearly completed and when done will without doubt be the smallest engine in the world, being even more diminutive than the vertical engine.

Notices of Recent Patents.

Among the patents recently obtained through Dewey & Co.'s SCIENTIFIC PRESS American and Foreign Patent Agency, the following are worthy of mention:

HARVESTER.—Joshua B. Webster, William A. Dorr, Stockton, and Martin McClenathan, Merced. This invention is an improvement on the harvester or header heretofore patented by these same parties, viz.: in April, 1874. The improvement consists of an improved arrangement of the loose gear wheel employed to drive the machine and an improved bearing for the pitman lever which drives the sickler. The device may be briefly described as follows: A gear wheel is attached to the frame of the header, and is made loose upon the end of the shaft by means of a slot or key way partly through one side of the central hole through which the shaft passes, so that the key way is on the inside of the hub. The end of the shaft is provided with a short projecting pin, which enters the slot and receives the gear wheel, after it is slipped upon the shaft. A collar is placed upon the shaft inside of the gear wheel, and moved up against the end of the hub and received by a set screw. By this means the gear can be made to engage with the pinion on the transverse shaft, which passes across inside of the gear wheel with more or less mesh according to the work to be done. The wheel is also loose upon the shaft, so as to provide against any irregularity of casting. The pressing roller which is secured to the end timber of the header frame, is made adjustable by slotting the screw holes in the plate through which it is screwed to the under side plate. The ends of the shafts of the bearing which are provided with enlarged heads, which prevents them from shifting their boxes when the weight of the machine comes upon either wheel as upon a side hill. The friction is relieved by securing a wear plate on the under side of the beam beneath which the lever is secured and another on the upper face of the lever with a circular rim.

EDGE MORTICING MACHINE.—Charles J. Hardy, San Francisco. This is a portable machine especially designed for making mortices for the reception of mortice locks in the edge of doors or any piece of timber. It is provided with two clamping jaws to hold it fast to the door or timber in making the mortice. The frame of the machine consists of a bottom and top plate connected at corners by four rods which serve as guides for the two heads which support the boring and morticing tool. The morticing tool consists of a concave-convex bit, one edge of which is bevelled and sharpened on the cutting side, the points being bent at right angles to the bit, so as to stand across the end. The back of the tool is provided with a spiral groove and a spindle is provided with a spiral groove along a portion of its length so that it will clear itself of the cuttings or borings of the tool. This tool will not only bore a hole similar to an auger hole, but after the hole is bored it can be lengthened by moving the tool up and down slowly, so as to cause it to cut a groove or mortice equal in width and depth to the original boring or auger hole. The machine is operated by two cranks. A rim or flange can also be sunk, if desired, around the mortice by simply securing one or more short cutting bits to the outer face of the head at the bore of the cutting tool.

BALING PRESS.—H. L. Pike, Seattle, Washington Territory. This is an improvement in baling presses by which the inventor is enabled to make the action continuous, forming and pressing the bale at the same time. The machine is an upright box or case into which the material to be baled is fed from the top alternately from one side and the other. Two pressure platens are operated, alternating from one side and the other, so that they are carried in above the material and drawn down upon it, the plate below being withdrawn just as the other passes in above the new charge until the bale is sufficiently large, when, being tied, it may be discharged below and another introduced to pass down in turn.

ENGLISH COLONIAL RAILWAY.—In Cape Colony, Africa, about 800 miles of railway are about to be constructed at a cost of twenty or twenty five millions of dollars, and in New Zealand there are 550 miles of railway in construction, and 360 more authorized. India has already 5,872 miles of railway open, while 1,927 miles remain to be completed.

WORK is progressing rapidly on the Guerneville branch of the N. P. R. R. About 150 men are at work and the road has been graded from Fulton through Fulton's, Peugh's and Espy's places, and they are now at work on Meacham's and Drennen's places. There is about 35 feet on Drennen and Carriger farms.

EXTENSIVE beds of porcelain clay have been discovered near Los Angeles, and arrangements are being made to establish a manufactory of queeneware and pottery.

Short Lectures on Patents.

No. 14—By J. L. BOONE, of the MINING AND SCIENTIFIC PRESS Patent Agency.

Infringements.

It is an infringement upon the rights of a patentee for another person to make, use or sell a patented article or machine without first having obtained the right to do so. Every article or machine constructed in the manner described or claimed in a patent is supposed to yield a certain profit, called a royalty, to the patentee, but when the royalty has once been paid upon a manufactured article or machine it becomes an article of commerce, to be used and sold in any way the owner may see fit. These facts are pretty well known by most people but there are some who contend that it is no infringement for a person to manufacture a patented article for his own use. This is an error. It is not only an infringement for an unauthorized person to make a patented article but it is equally an infringement for the manufacturer of such a machine, or anyone else, to use it after it is made, and the patentee can sustain a suit for infringement as well against the user as against the manufacturer. An inventor cannot prevent others from making and using a machine or device which he has invented before he secures his patent for it, but when he does receive his patent he can maintain a suit against the user and prevent the future use of it, unless the royalty demanded is paid. If the inventor gives another person the privilege of manufacturing a machine which he has invented before he obtains a patent for it, the party thus priveleged can continue to use the machines thus manufactured after the patent is obtained or until they are worn out without liability to the patentee for royalty, as the granting of such a privilege by the inventor previous to the issue of the patent is considered in the light of a special license which will continue with the machine even after the patent is issued, but where no such privelege is granted and another manufactures the machine, before the issue of the patent, the further use of the machine after the issue of the patent is an infringement of the rights of the patentee.

It is no infringement upon the rights of the patentee if another and unauthorized person builds a single machine for the purpose of experimenting with it in order to improve it, but the use must be strictly experimental and not for profit.

It is not necessary that a patentee should give an infringer notice that he is infringing before commencing a suit against him to restrain him from continuing the infringement, but the patentee cannot collect damages from the infringer if it is proven that he (the patentee) failed to mark the articles or machines manufactured by him under the patent with date of the patent, and did not give the infringer any personal notice that the invention was patented and that its manufacture was an infringement; but when the patentee has fully complied with the law by marking each manufactured article or machine with the date of the patent no further notice is required to be given and the patentee can commence suit against the infringer, first, for an injunction to restrain him from continuing the infringement, and secondly for damages for past infringement. These cases are usually tried by a jury and in assessing damages the juries are required to base the amount upon the actual damages which the patentee has sustained by reason of the infringement, but in all cases of willful infringements the court can treble the amount of damages given by a jury.

The prosecution of infringement rests is the duty of patent lawyers; those who make this branch of the law a specialty. Few lawyers possess the mechanical ability to undertake patent cases, and the law of patents is but little understood by the larger proportion of the legal fraternity. A patent case can be more easily defeated by an ignorant attorney than any other kind of a case, no matter how good a cause of action exists. Generally speaking, it is better to pay a good patent lawyer a large fee than to accept the services of an ordinary lawyer for nothing, because the future value and even existence of the patent depends upon its success or non-success before the courts, and as a patent usually has only a single legal ordeal to pass through in order to determine its validity it is a necessity to have it properly represented and protected during this trial. Following is the section of the law relating to the infringements of patents:

"And be it further enacted: That damages for the infringement of any patent may be recovered by action on the case in any circuit court of the United States, or district court exercising the jurisdiction of a circuit court, or in the supreme court of the District of Columbia, or of any Territory, in the name of the party interested, either as patentee, assignee, or grantee. And whenever in any such action a verdict shall be rendered for the plaintiff, the court may enter judgment thereon for any sum above the amount found by the verdict as the actual damages sustained, according to the circumstances of the case, not exceeding three times the amount of such verdict together with the costs."

WORK has been suspended on the narrow gauge railroad at Tomales.

Metallurgy of the Copper-Silver Ores of Inyo County—No. 3.

[Written for the PRESS by SAMUEL PURNELL.]

The Solving Process.

About the year 1848, the celebrated Dr. Percy, of London, suggested the use of hyposulphite of soda for dissolving chloride of silver. In 1858 the soda salt was successfully applied on a working scale by Van Patera. Within the last five years it has been successfully adopted in seven works in Mexico, and by Mr. Guido Kustel, in Idaho and California. From an excellent manual on this process by Mr. Kustel, many of the following facts and figures are derived. The manipulations, in brief, consist of: 1—roasting with common salt; 2d—dissolving the chloride of silver with an alkaline hyposulphite; 3d—precipitation of silver sulphide by an alkaline sulphide; 4th—reduction of silver sulphide by heat. As first practiced by Patera, this process was too costly and delicate to suit this country, but lately, with improved furnaces and new discoveries in its working, it has become admirably suited to the needs of the Pacific coast. It is probably the only one at present known that will economically heat the class of ores now under consideration. The modern treatment will be shown hereafter.

Crushing.

The ores being freed from clay and lime as much as possible, and concentrated if necessary, are crushed in any usual manner, fine enough to pass through No. 24 or No. 30 screens. This has been found fine enough to admit of good roasting and good leaching. Very fine ore is difficult to leach. The object in removing as much clay and lime as possible, is that they become very fine in the filtering boxes and obstruct the passage of the solutions. The lime also consumes salt and lime sulphide.

Roasting.

The ores being crushed may now be roasted. This may be performed either in the long reverberatory furnaces, already familiar, or in the Bruckner cylinder to an equal, if not greater advantage in point of efficiency, and to a decided advantage in point of cost.

Roasting in the reverberatory furnace can scarcely be done under $10 per ton, while the cylinder will do the same work for $6, and less. The cost of the cylinder, $2,000, is less than a reverberatory furnace. The cylinder is usually constructed twelve feet long and five feet six inches in diameter; it is lined with common brick, and revolves upon friction rollers at the rate of one turn per minute. The charge for a furnace of this size is about 4,000 pounds of ore and the necessary salt. An inclined diaphragm causes the ore to pass back and forth through the glowing gases. The capacity, depending on the character of the ore heated, will be from eight to ten tons per twenty-four hours. In Colorado these furnaces have chloridized up to ninety-six per cent. in actual working at an expense of $5.50 per ton. The cylinder allows of an almost complete chloridizing; is economical of fuel; the progress of the work is at all times under control; the ore is moved entirely by machinery; the attention required is only part of the time of one man. Still, in Mexico, they generally prefer the old form of long reverberatory, principally for local reasons. Mr. Bruckner's furnace, sections of which are herewith shown, was described in detail in the MINING AND SCIENTIFIC PRESS, of May 1st, 1875. Should the crushed ore contain a sufficient amount of copper to render its extraction profitable, it is now mixed with a certain proportion of salt, and introduced into the furnace. If there is not enough copper present to warrant its extraction it is best not to add the salt till after the oxidizing roasting, or the turning of all base metals into oxides. To chloridize the copper, about two pounds of salt extra should be added for each pound of copper in the ore. To chloridize the silver, from five to ten per cent. of salt must be added, according to the assay value. Other base metals besides copper will consume a portion of the salt, so that the entire amount to be added will depend on the ore; the amount necessary will soon be learned by trial. On the matte assay, should ore prove to be so deficient in sulphur, as not to furnish a sufficient amount of sulphuric acid to decompose the salt, some sulphur must be added, or sulphurous acid fumes be introduced continuously into the furnace. The heat is regulated to a dark red, and when the sulphates and oxides are fully formed, the heat is raised sufficiently high to decompose the sulphates and liberate sulphuric acid. The acid in turn decomposes the salt, liberating chlorine (which being in a nascent state has intense combining power), and in an hour or more the silver and copper will be fully chloridized and soluble. Samples may be taken from the furnace at various times and assayed for chlorides. The time required will depend materially on the amount of base metals present—a comparatively poor ore roasting in less time than one inclined to sinter and bake. As soon as the copper and silver are chloridized, the ore should be removed from the furnace in order to retain the base metal oxides as far as possible in that condition. Not much fuel is required till near the end of the roasting. At least ninety per cent. of the silver should be chloridized, and all the copper. Should the ores contain a very large quantity of antimony and arsenic (antimoniate and arseniate of silver are very imperfectly decomposed by chlorine), it would be best to roast with the admission of superheated steam, as then through the formation of hydrochloric acid these metals are converted into volatile chlorides. By this the loss of silver is very much lessened. The use of steam however, necessitates the use of about double the usual quantity of fuel for roasting. The order of decomposition of sulphides is about as follows: Iron, copper, zinc, lead, silver, antimony, arsenic. Care should be taken that the roasting is not carried too far or the heat raised too high, or else the copper will lose its chlorine and be converted into insoluble oxide.

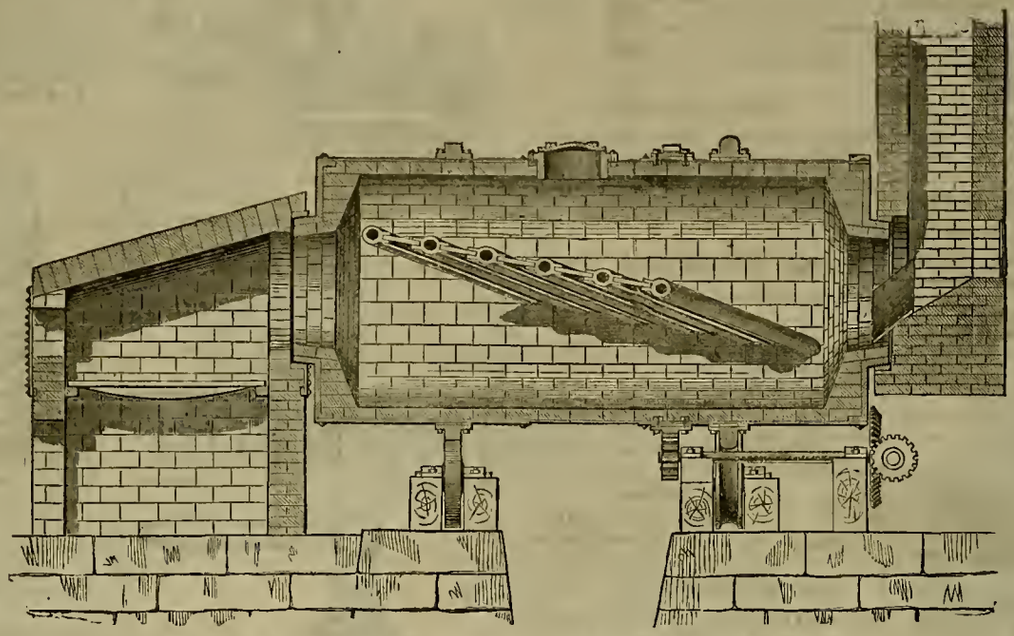

Fig. 1. Longitudinal Section Through Axis of Bruckner Revolving Furnace.

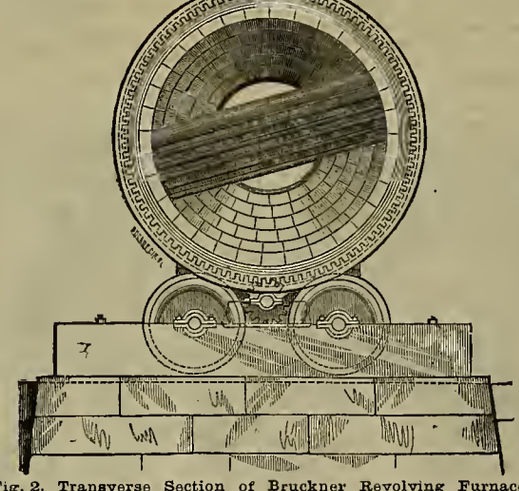

Fig. 2. Transverse Section of Bruckner Revolving Furnace.

Some metallic copper would also be formed, which would inclose particles of silver. If the amount of copper present is valueless, the heat must be raised to a light red to destroy the chloride and thus eliminate it from subsequent operations. Unless a very high heat is employed the silver chloride is permanent. Fifteen per cent. lead ores can be readily roasted without sintering, and the lead present can be so nearly neutralized as not to interfere with the remaining operations. The formation of base metal chlorides can be avoided by an oxidizing roasting with steam, after which salt and sulphurous acid can be introduced to chloridize the silver. Should the silver chloride be decomposed by too great heat, metallic silver would be formed, which would be lost in leaching. As with all other systems of roasting, suitable dust chambers should be provided. It is a great mistake to neglect the precaution of dust chambers, for often the fine dust escaping is very rich, and is otherwise entirely lost.

[To be Continued.]

A RIOT took place in the North Carolina gold section, last Sunday.

The Concentrating Works at Falun in Sweden.

In a previous article I have given the results of concentration in a California mill, the material under treatment being quartz, containing auriferous pyrites of copper, arsenic and iron.

Careful trials, with large quantities of rock, had given 19½ to 26 per cent. of the gold value, as being the average yield obtainable by the use of sluices, Hendy's concentrators, percussion tables (Rittingar's, roughly made) and blanket sluices. The yield was "believed" to be, by some, "at least 90 per cent."

This estimate is modest, compared with other reports of "results," obtained with new processes and machines, which have been trumpeted out to the mining public from time to time. Have we not a dry concentrator that is claimed to have saved 90 per cent. of the assay value, out of a silver ore? and even a process yielding 102 per cent. has been accounted to us, as among the wonderful creations of native genius.

The subjoined sketch of the works, and the work in use at the present day in the treatment of the ores from the mines at Falun, is chosen for comparison, for the following reasons:

The new concentrating works at Falun in Sweden are pronounced by some of the most experienced European concentrating men, to be the most masterly solution of the problem of concentrating poor ores, obtaining a high percentage of the valuable mineral at small expense, and in a reliable mechanical manner, depending little on the skill and attention of the workmen.

The apparatus there used may be considered models of good construction and suitability. It is the principle of continuity, applied to operations, apparatus and their disposition, in a manner nowhere excelled; and from this point of view, the Falun creation deserves the predicate of being the most perfect concentrating establishment in Europe, and therefore in the world.

The apparatus there used are such only as are now recognized—wherever the principles of concentration are well understood—to be the most perfect and efficient of all the great number that have been invented within late years, and which are therefore superseding all others in the many extensive concentrating establishments of Europe. Already seven years ago, during a seven months' tour through the mining districts of that continent, the writer witnessed the erection of a variety of constructions based on the same principle, in a dozen different works, and for the treatment of almost every kind of ore. Though many of these constructions proved faulty, and give way to others, the correctness of the principle remained intact, and has everywhere been recognized and verified by the astonishing results obtained in a number of places for years past. Experience and experiment have led to important improvements and simplifications in the construction of these machines, so that finally a few standard types were arrived at, which answer all requirements, and which excel all other constructions to such an extent that the latter no longer deserve notice for practical purposes.

The concentrating apparatus here mainly referred to are:

The continuous or Harzir Jiggers.

The Rittinger percussion tables.

The rotating continuous buddles.

The endless belt table.

The first two of these are of particular interest here, as being the ones best adapted to meet the peculiar requirements of our local circumstances.

The manner of their application in Falun, is also the one most suitable here. From a concentrating point of view the ores of Falun, of all European examples that could be adduced, also more closely resemble those which here are most frequently the subject of treatment, *i.e.*, the relation of specific gravities of the minerals to be separated is the same, as well as their relative percentage. The gangue there is quartzose, as here, and the principal mineral to be separated, pyrites, in quantity average not more than two-third per cent. The ratio of specific gravities being near the lower limits of occurrences in practice, the applicability of the same general method of treatment, to any other ore, with equal success, follows as a matter of course.

Briefly stated then: Of all European concentrating works of established merit, those at Falun most perfectly represent the principles, the apparatus and the mode of their application, which at the present time stand most approved as the result of the research and experience of centuries; and are there used under conditions which most closely resemble those most frequently presented on this coast.

A description of what has proved itself to be a masterpiece of success, among the successful and experienced, ought to present valuable hints to the practice of a mining region, which has shown itself so devoid of these qualities as this; for it may be boldly asserted, that none of the machinery or other methods of concentration, so far need here, have given results that will at all compare with those generally obtained in European works, even when the question of cost and profit is not considered. It cannot be claimed in this instance that peculiar local circumstances sanction the use of machinery which, at a greater first cost and less durability, does less, at greater expense, than other arrangements, which can everywhere be built with equal facility and minus "patent" claims.

The copper ores from near the mines of Stora Kopparberg, near Falun, are separated into two main classes:

1. Into so-called Blodmalm (soft ores), and
2. Hardmalm (hard ores).

The first of these, composed principally of iron pyrites with one-half per cent. copper, is broken up and charged in the "raw smelting" of the hardmalm (having for its object the formation of a matte of certain composition, for subsequent roasting). The latter, the hardmalm, contains copper, iron and magnetic pyrites, besides some galena and zinkblende in quartz, talcose slate and hornblenda, etc., from which, hitherto, ores containing four-fifth per cent. copper were obtained by hand separation, for the purpose of raw smelting; all poorer ores, the so-called "trikmalm"—containing about one and one-half per cent. copper—were laid aside as worthless for the time being.

It may be mentioned here that the wealth of the mines was much greater in early times, the cost of production, and the expense for fuel, timber, etc., at the same time less than at present, whereas the price of copper in the meantime has declined more and more.

In order to be able to compete successfully under these circumstances, with other copper smelting establishments at home and abroad, ways and means had to be found to diminish as much as possible the cost of production and reduction of the ores. To this end, the erection of extensive mechanical concentrating works was determined upon, after having previously become convinced, by carefully conducted experiments with a variety of improved

(Continued on Page 188.)

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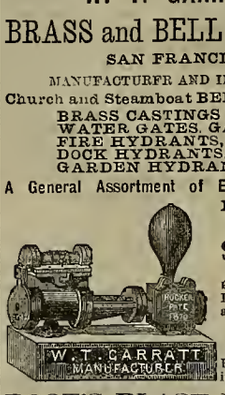

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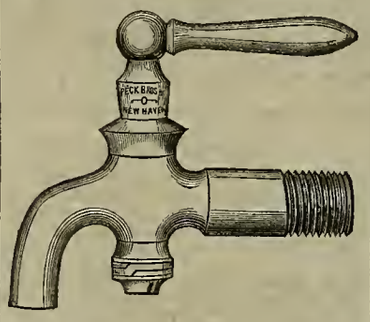

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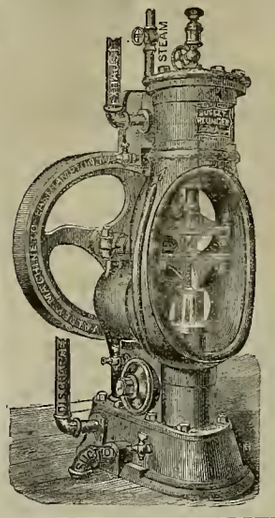

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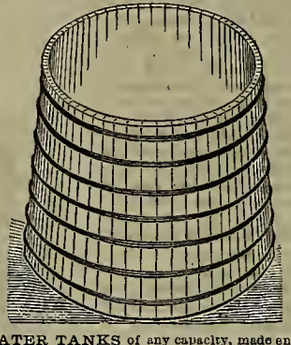

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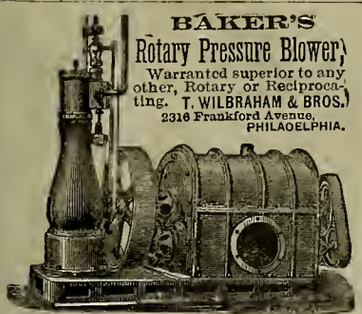

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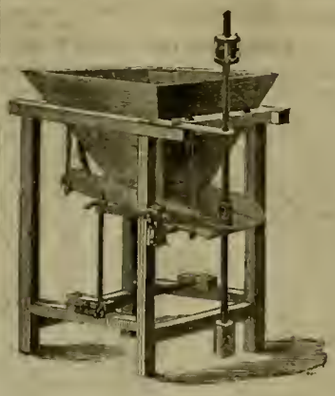

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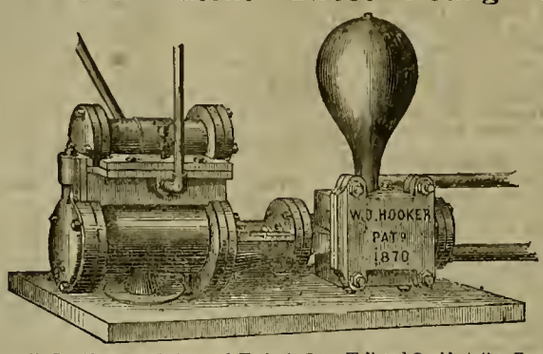

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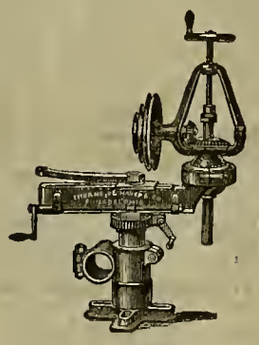

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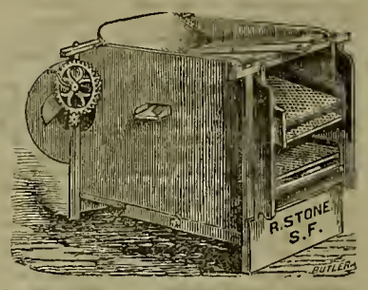

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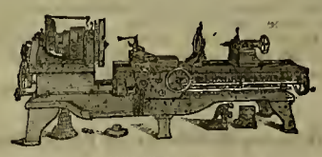

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(Continued from Page 185.)

apparatus for wet concentration, that there would be no particular difficulty in increasing the percentage of copper in the hardmalm four-sixth fold, equivalent to reducing the bulk of raw material for smelting seventy-five to eighty per cent.

It is not the object here to describe the individual machines and apparatus used in these works, in detail—it would lead too far; their main features may be found described in the Reports of the Commissioner of Mining Statistics; in a translation of Rittinger's classic work on concentration, and in Guido Kustel's book on the same subject. My object is rather to attempt in brief survey to picture the general arrangements of the Falun works, mentioning such improvements of value as are not described in the above mentioned treatises on concentration, and give a short statement of the working results. All the data are translated from a description furnished by the constructing engineer and director of the establishment, Mr. E. Heberle, and may therefore be considered perfectly reliable.

The main peculiarity of the works consists therein, that all the raw material, as well as all resulting intermediate products, are transported by automatic mechanical appliances through the whole establishment, and are distributed to the respective machines with the greatest precision, to a nicety not attainable by manual labor. The ores and other products for the smelting works, are delivered from the machines and apparatus directly to their proper receptacles, while the waste sands are likewise carried to their place of destination by mechanical arrangements.

The attempt has here been made, therefore, to carry to the highest limit the principle of continuity, the constancy of operation, so that in the real sense of the word the labor of the hand has become the work of the machine.

The building of the works was begun in June, 1868, and operations were commenced in August, 1870.

The buildings are built with slag brick, the size of the main building being 278x54 feet, and 20 feet high to the span beams. The wings at each end are 195x82 feet, and 17 feet high. The walls, two feet nine inches thick, are hollow, a five inch space being left between an inner and an outer wall, as a protection against the very severe cold of the northern winters; furthermore the building is provided with double windows, and the rafters are boarded in, the spaces being then filled with sawdust, or other poor conductors of heat. For the illumination of the establishment special gas works are provided, and so arranged as to serve for heating purposes at the same time.

The motive power is obtained for the present from two Fourneyron's turbines of respective forty-eight and twenty-eight horse power. They are built directly into the Ostanfors Au, a stream connecting two lakes, which furnishes per second 100-120 cubic feet of water. The fall is at present six and one-half feet, but it will be increased to twenty-six feet by damming and dredging the stream.

The power is transmitted into the works and distributed to the various machines, partly by wire rope, partly by bolting.

The ore is carried by railroad from the mine into the garret of the main building, and directly into the respective hoppers.

CHAS. C. RUEGER.

[To be Continued.]

Life Saving Stations on the Pacific Coast.

A Washington dispatch states that the Treasury Department is making preparations for the early establishment of the life-saving stations authorized by Congress for the Pacific coast, and the Commission designated for that purpose have located sites for them as follows: At Neah bay, upon the Indian reservation; at Shoalwater bay, upon the lighthouse reservation; at Cape Disappointment, upon the military reservation; at Cape Arago, upon the lighthouse property; at Humboldt bay, upon the lighthouse property. For the stations designated in the Act for Point Reyes, the site selected is near Duxbury; for stations authorized to be established between Point Lobos and Point San Pedro, a site is selected near the beach on the southwestern extremity of the Golden Gate park, the Park Commissioners of San Francisco having granted the use of the land for that purpose. The station designated for Point Concepcion will be located about two miles east of the lighthouse, at what is known as the Caxa harbor. It is expected that all those stations except that at Shoalwater bay and Point Concepcion will be manned by volunteer crews. The one at Neah bay will be manned by Indians. The Indians there are very peaceful and friendly, and are expert surf men. Regular crews will have to be stationed at two of the stations named above. Proposals will soon be received for the construction of station houses.

DAMAGE BY LIGHTNING.—A large amount of property in Maine has been damaged by lightning this summer. On a single day, not long since, ten buildings were struck and burned in various parts of the State, and a loss of $17,000 thereby entailed. But then they have no earthquakes in Maine.

THE Wilmington manufacturing company, at Wilmington, now have their shop in full running order.

The Mining Share Market.

It is now authoritatively announced that Flood & O'Brien's new Bank of Nevada will commence business on the 4th of October, and it is expected the Bank of California will reopen its doors on the same day and the session of the San Francisco and Pacific Stock Board will undoubtedly be resumed at that date. In the meantime the California Board and curb stone operaters are doing a rushing business. The mining share market has shown a stronger tone during the present week.

The sales in the California Board Wednesday were the heaviest known in that institution for a long time, and may be taken as an indication that some parties are squaring accounts; to be more explicit, that some of the leading brokers are settling back accounts with a view to preparing for the active resumption of regular business. In the morning session of the Board the sales aggregated 7,950 shares, and in the afternoon session, 6,430 shares, making a total of 14,380 shares for the day. The sales on the street were also very large, and included 1,200 shares of Mexican, 1,000 of Ophir, and, at least, 1,000 of Imperial. At 5 P. M., sales were made at the following rates: Savage, $80; Ophir, $50 and $50.50; California, $57; Best & Belcher, $41 and $40.50; Mexican, $19 and $18.75; Belcher, $19; Consolidated Virginia, $255; Imperial, $9; Gould & Curry, $16.75; Crown Point, $24; Sierra Nevada, $12.75.

This morning, Thursday, yesterday's prices were not sustained in the Board, but after the close a lively business was done on the street. There are many evidences of a reaction for the better, and all signs point to an advancing market.

The Empire mining company of Grass Valley have declared the ninth dividend of fifty cents per share, payable after September 15th. The Northern Belle has declared a dividend—the fourth of one dollar per share—payable after the 15 h inst. The Justice mining company has levied an assessm ent of five dollars per share on the old stock, issued prior to August 16th, 1875, and one dollar per share on stock issued since that date.

The following assessments have been levied since our last: North Carson, Andes, Buckeye, Independent, Eagle, Pioneer, Edith, Newark and Gold Mountain.

The reports continue favorable from all mining districts.

PATENTS & INVENTIONS.

A Weekly List of U. S. Patents Issued to Pacific Coast Inventors.

FROM OFFICIAL REPORTS FOR THE MINING AND SCIENTIFIC PRESS, DEWEY & CO., PUBLISHERS AND U. S. AND FOREIGN PATENT AGENTS.]

By Special Dispatch, Dated Washington, D. C., Sept. 14th, 1875.

FOR WEEK ENDING AUGUST 31ST, 1875."

BRIDLE BIT.—Soren H. Holm, S. F., Cal.

MACHINE FOR COUNTING STOCK.—William F. Jeans, and David H. Bailey, Ferndale, Cal.

SALINO PRESS.—Denning L. O'Connor, Covel, Cal.

—The patents are not ready for delivery by the Patent Office until some 14 days after the date of issue.

NOTE.—Copies of U. S. and Foreign Patents furnished by DEWEY & CO., in the shortest time possible (by telegraph or otherwise) at the lowest rates. All patent business for Pacific coast inventors transacted with perfect security and in the shortest possible time.

LET THE PEOPLE SPEAK.

MANHATTAN, Kansas.

R. V. PIERCE, Buffalo, N. Y.:

Dear Sir—Your Favorite Prescription has done my wife a world of good. She has taken nearly two bottles and has felt better the past two weeks than at any time in the past two years. No more periodical pains; none of that aching back or dragging sensation in her stomach she has been accustomed to for several years. I have so much confidence in it that I would be perfectly willing to warrant to certain customers of ours who would be glad to get hold of relief at any expense. I have tried many Patent Medicines, but never had any occasion to extol one before. Very truly yours,

GEO. B. WHITING.

Mrs. E. R. DALY, Metropolis, Ill. writes:

"Dr. R. V. Pierce—My sister is using the Favorite Prescription with great benefit."

MARY ANN FRISBIE, Lehman, Pa., writes:

"Dr. R. V. Pieros—What I have taken of your medicine has been of more benefit to me than all others and hundreds of doctors' bills."

Dr. Pierce's Favorite Prescription is sold by dealers in medicines generally.—Com.

THOUGHTLESSNESS.—Persons sometimes return their paper, marked "stop this paper." Their name being pasted on the sheet they think that is all we need to be able to cross their names off. Now that is thoughtlessness. Your P. O. address is needed as much as your name. We have thousands of names arranged only according to locality. Our mailing clerk does not know where everybody lives.

WOODWARD'S GARDENS embraces an Aquarium, Museum, Art Gallery, Conservatories, Tropical Houses, Menagerie, Seal Ponds and Skating Rink.

MINING SHAREHOLDERS' DIRECTORY.

Compiled every Thursday from Advertisements in the Mining and Scientific Press and other S. F. Journals.]

ASSESSMENTS.—STOCKS ON THE LIST OF THE BOARDS.

Company.	Location.	No.	Amt.	Levied.	Delinq'nt.	Sale.	Secretary.	Place of Business.
Alpha Cons M Co	Washoe	7	1 00	Aug 12	Sept 17	Oct 7	Wm Willis	419 California st
Alta M Co	Washoe	2	50	Aug 23	Sept 27	Oct 19	Wm H Watson	302 Montgomery st
Andes S M Co	Washoe	5	25	Sept 10	Oct 18	Nov 8	M Landers	507 Montgomery st
Arizona S M Co	Nevada	2	1 00	Aug 20	Sept 24	O t 15	Wm Willis	419 Oellfornia st
Battle Cons M Co	Washoe	2	25	Aug 13	Sept 16	Oct 6	Theo O Kilbe	419 California st
Buckeye G & S M Co	Nevada	15	25	Sept 13	Oct 16	Nov 5	C A Sanky	331 Montgomery st
Caledonia S M Co	Washoe	14	3 00	Sept 3	Oct 8	Oct 28	R Weganar	414 California st
Cosmopolitan M Co	Washoe	2	25	Aug 11	Oct 10	Oct 25	" Landers	507 Montgomery st
Crown Point G & S M Co	Washoe	23	50	Sept 4	Oct 8	Oct 23	Chas E Elliott	419 California st
Empire M & M Co	Washoe	20	50	Sept 4	Oct 6	Oct 28	W F Deen	419 California st
Gila Cons M Co	Washoe	6	75	July 20	Sept 9	Sept 23	Joseph Sanguire	419 California st
Gold Mountain G M Co	Cal	8	2½	Sept 10	Oct 20	Nov 10	J P Cavallier	513 California st
Hale & Norcross S M Co	Washoe	47	5 00	Aug 21	Sept 24	Oct 15	Joel F Lightner	438 Cali ornie st
Ida Elmore M Co	Idaho	18	1 00	July 20	Aug 27	Sept 18	C B Higgins	402 Montgomery st
Imperial S M Co	Washoe	24	1 00	Sept 4	Oct 8	Oct 28	W E Deen	419 California st
Justice M Co	{$5 on old stock and $1 on new}	16	6 00	Sept 15	Oct 18	Nov 14	Jas S Kanncdy	Merchents' Ex
Knickerbocker M Co	Nevada	13	1 00	Sept 7	Oct 16	Nov 5	J H Sayre	Stevenson's Build'g
Lady Washington M Co	Washoe	5	50	Aug 19	Sept 22	Oct 12	H C Kibha	419 California st
Leo M Co	Washoe	4	50	Sept 8	Oct 8	Nov 5	W R Townsend	325 Pine st
Mammoth S M Co	Nevada	19	15	Aug 18	Sept 29	Oct 28	D A Jennings	401 California st
Mint G & S M Co	Washoe	11	20	Sept 7	Oct 12	Nov 4	D A Jennings	401 California st
Newark S M Co	Nevada	11	50	Sept 14	Oct 19	Nov 9	Wm Willis	419 California st
New York Cons M Co	Washoe	15	33⅓	Aug 31	Oct 4	Oct 23	H C Kibha	419 California st
New York M Co	Washoe	6	50	Aug 21	Oct 4	Oct 23	H C Kibe	419 California st
Omega Table M & M Co	Cal	7	5	July 27	Aug 31	Sept 20	David Wildar	Merchants' Ex
Original Gold Hill G & S M Co	Washoe	4	50	Aug 26	Sept 30	Oct 18	W M Helman	309 California st
Pauper M Co	Idaho	5	30	July 24	Aug 30	Sept 23	W F Bogart	402 Montgomery st
Phil Sheridan G & S M Co	Washoe	3	50	Aug 6	Sept 8	Sept 29	W R Townsend	330 Pine st
Phoenix M Co	California	3	00	Sept 8	Oct 16	Nov 8	Chas E Elliott	419 California st
Pine S M Co	Ely District	10	1 00	Aug 13	Sept 21	Oct 12	Chas E Elliott	419 California st
Poorman G & S M Co	Idaho	3	1 00	Aug 25	Sept 30	Oct 21	Wm Willis	419 California st
Rocky Bar M Co	Washoe	3	10	Aug 6	Sept 16	Oct 6	J P Cavellier	513 California st
Ryo Patch Cons M & M Co	Nevada	4	50	July 30	Sept 8	Sept 30	D F Verdenal	409 California st
Senator S M Co	Washoe	12	50	Aug 27	Oct 2	Oct 21	W H Sayre	331 Montgomery st
Silver Central Cons M Co	Nevada	2	10	Aug 3	Sept 8	Sept 29	Lucien Hermenn	330 Pine st
Silver Cord M Co	Idaho	10	1 00	July 20	Aug 28	Sept 20	C S Higgins	402 Montgomery st
South Mounta n Cons M Co	Idaho	1	2 00	Aug 9	Sept 14	Oct 4	Wm Willis	419 California st
S Overman S M Co	Washoe	3	1 00	Aug 6	Sept 7	Sept 27	David Wilder	Merchants' Ex
Sierra Nevada S M Co	Nevada	12	15	Sept 6	Oct 6	Oct 23	Louis Kaplan	Merchants' Ex
St Patrick G M Co	Cal	11	50	Aug 12	Sept 15	Oct 7	D F Verdenal	409 California st
Succor Mill & M Co	Washoe	12	50	Aug 18	Sept 22	Oct 13	Wm H Watson	302 Montgomery st
Surprise Valley M & M Co	Inyo Co Cal	1	20 00	Aug 30	Oct 4	Oct 23	W R Townsend	330 Pine st
Victor Q M Co	California	2	25	Sept 2	Oct 5	Oct 26	John R Wilde	Merchants' Ex
Ward Belcher Cona M & M Co	Nevada	5	50	July 14	Aug 25	Sept 22	D A Jennings	401 California st
Woodville Cons S M Co	Washoe	3	1 00	Aug 21	Sept 23	Oct 11	W M Helman	309 California st
Woodville G & S M Co	Washoe	11	1 00	Aug 21	Sept 23	Oct 11	W M Helman	309 California st

OTHER COMPANIES—NOT ON THE LISTS OF THE BOARDS.

Annie Belcher Q M Co	Cal	2	25	Aug 17	Sept 20	Oct 7	J M Buffington	311 California st
Blue Jacket M Co		2	1 00	July 30	Oct 25		O J Eaton	724½ Market st
Cons S M Co	Washoe	27	5 00	Aug 21	Sept 27	Oct 19	Joel F Lightner	438 California st
Cons Poe M Co	Washoe	8	25	July 24	Aug 24	Sept 24	Jas H Kinrad	Reno Nevada
Constitution M Co	Nevada	1	15	Aug 31	Oct 4	Oct 22	Frank Swift	419 California st
Coquille Black Sand G M Co	Oregon	1	10	June 8	Sept 15	Oct 21	F P Reynolds	111½ Leidesdorff st
Eagle Silver M & M Co	Nevada	2	50	Sept 11	Nov 10	Nov 10	H L Byrne	323 Kearny st
Edith Q M Co	Cal	5	20	Sept 14	Oct 30	Nov 20	Wm Stuart	113 Leidesdorff st
El Dorado State Co	Cal	1	40	Aug 19	Sept 21	Oct 9	Hugh Elias	416 Montgomery st
El Dorado W & D G M Co	Cal	10	10 00	Aug 5	Sept 6	Sept 21	Hugh Elias	410 Montgomery st
Enterprise Cons M Co	Cal	4	10	July 29	Sept 6	Sept 24	F J Hermann	418 Kearny st
Georgia S M Co	Washoe	1	10	July 29	Oct 2	Oct 22	B W Coleman	414 California st
Golden Chariot M Co	Idaho	14	75	Sept 2	Oct 7	Oct 26	Louis Kaplan	Merchants' Ex
Hayes C & S M Co	Nevada	7	20	Aug 18	Sept 28	Oct 25	Geo S Spinney	320 Ca ifornia st
Howard Hill G M Co		3	25	July 28	Sept 6	Sept 24	F J He mann	418 Kearny st
Independent G M Co	Cal	9	50	Sept 11	Oct 12	Oct 30	Geo Grimes	240 Montgomery st
Little Pancake Q M Co	California	2	10	Sept 3	Oct 7	Oct 29	Geo R Spinney	320 California st
Morse & Evans G M Co	California	2	10	Sept 6	Oct 15	Nov 12	Daniel Buck	331 Montgomery st
North Bloomfield G M Co	Cal		1 00	Aug 14	Sept 22	Oct 12	Thos Derby	320 California st
North Carson S M Co	Nevada	2	10	Sept 7	Oct 14	Nov 5	W A Van Bokkelen	419 California st
Oakland G & S M Co	Nevada	2	50	Sept 2	Oct 7	Oct 29	Wm H Watson	302 Montgomery st
Omega Table M & M Co	Cal	7	5	July 27	Aug 31	Sept 20	D Wilder	Merchants' Ex
Ore Fine M Co	Idaho	1	1 00	Aug 17	Sept 17	Oct 8	Frank Swift	419 California st
Panthar M Co	Nevada	1	20	Aug 31	Oct 1	Oct 19	Frank Swift	419 California st
Picacho M & M Co	Cal	1	10	Aug 2	Sept 13	Oct 18	Ford H Rogers	330 Pina st
Pioneer Cons M Co	Nevada	4	10	Sept 14	Oct 19	Nov 9	Wendell Easton	419 California st
Prussian G & S M Co	Nevada	5	50	Aug 19	Sept 27	Oct 20	R H Brown	402 Montgom ry st
Rattlesnake Q M Co	Cal	3	25	Aug 24	Sept 28	Oct 18	Andrew Baird	310 California st
San Francisco Copper M Co	Nevada	2	10	Aug 4	Sept 6	Sept 30	R De Clermont	Front & Jackson st
St John G M Co	Kern Co Cal	3	5 00	Aug 30	Oct 4	Oct 23	W R Townsend	330 Pine st
Tigor M Co	Nevada	1	15	Aug 31	Oct 2	Oct 20	Frank Swift	419 California st
Weaverville D & H M Co	Cal	7	2 25	Aug 19	Sept 20	Oct 18	Ford H Rogers	330 Pine st
West Point G & S M Co	California	1	25	Sept 6	Oct 8	Oct 25	Louis Kaplan	Merchents' Ex
West Point G & S M Co	Cal	1	10	July 23	Aug 24	Sept 13	J O'Connel	409 Montgomery st
Wm. Penn Cons G & S M Co	Washoe		6	Aug 7	Sept 11	Sept 30	John F Pope	424 Montgomery st

MEETINGS TO BE HELD.

Name of Co.	Location.	Secretary.	Office in S. F.	Meeting.	Date.
Booth G M Co		Geo R Spinney	320 California st	Annual	Sept 21
Crown P int Ravine G & S M Co		J M Buffington	311 California st	Annual	Sept 20
Little Pancho Q M Co	California	Geo R Splaney	320 California st	Annual	Sept 20
McMahon S M Co		George R Spinney	320 California st	Annual	Sept 20
Niagara G & S M Co		W R Townsend	330 Pine st	Annual	Sept 28
Stanislaus River M Co	Cal	Called by Trustees	113 Leidesdorff st	Special	Sept 20

LATEST DIVIDENDS (within three months)—MINING INCORPORATIONS.

Name of Co.	Location.	Secretary.	Office in S. F.	Amount.	Payable.
Black Bear Quartz	Cal	W L Oliver		25	July 19
Ocea Virginia M Co	Washoe	Chas H Fish	401 California st	10 00	Sept 7
Empire G M Co	Sierra Co Cal	C Collischon		5 00	Aug 17
Empire M Co	Neveds Co Cal	D A Jennings	401 California st	50	Sept 15
Eureka Consolidated M Co	Nev	W W Traylor	419 California st	1 00	Aug 5
Excelsior M & M Co		Frank Swift	419 California st	1 00	April 10
Gila S M Co	Neveda	W Aug Knapp	116 Lsidesdorff st	25	Aug 16
Jefferson S M Co		C A Sankey	331 Montgomery st	50	May 15
Leopard M Co		R H Brown		50	July 15
Lyon Mill & Mining Co	Washoe	E P Stone	Hayward's Bldg	50	Aug 18
Manhattan S M Co	Nevada	Chas S Neal	419 California st	1 00	June 15
Northern Belle M & M Co		W Willis	419 California st	1 00	Sept 15
Oneida M Co		L Kaplan	Merchants' Ex	50	Aug 21

METALS.

[WHOLESALE.]

WEDNESDAY M., September 15, 1875.

American Pig Iron, ₰ ton	38 00	@	39 00
Scotch Pig Iron, ₰ ton	40 00	@	44 00
White Pig, ₰ ton	— —	@	38 00
Oregon Pig, ₰ ton	— —	@	38 00
Refined Bar, bad assortment, ₰ ₰	— —	@	3¾
Refined Bar, good assortment, ₰ ₰	— —	@	— —
Boilar, No. 1 to 4	— —	@	5¾
Plate, No. 5 to 9	— —	@	6¾
Sheat. No. 10 to 14	5¾	@	5¾
Sheet, No. 16 to 20	8	@	— —
Sheet, No. 22 to 24	— —	@	— —
Sheet, No. 26 to 28	8½	@	— —
Horse Shoes, par keg	7 50	@	8 00
Nail Rod	10	@	— —
Norway Iron	9	@	— —
Rolled Iron	6	@	— —
Othar Irons for Blacksmiths, Miners, etc.	— —	@	4½
COPPER.—			
Braziers'	35	@	— —
Copper Tin'd	37½	@	— —
O'Nial's Pat	37½	@	40
Sheathing, ₰ ₰	24	@	40
Sheathing, Yallow	— —	@	25
Sheathing, Old Yellow	— —	@	12¾
Composition Nails	24	@	— —
Composition Bolts	24	@	— —
STEEL.—English Cast, ₰ ₰	20	@	25
Anderson & Woods' American Cast	— —	@	16½
Drill	— —	@	16½
Flat Bar	18	@	22
Plow Steel	9	@	10
TIN PLATES.—			
10x14 I O Charcoal	11 50	@	12 00
10x14 I X Charcoal	13 50	@	14 00
Roofing Plats I O Oharcoal	10 50	@	11 00
Banca Tin	25	@	30
Australian	25	@	30
ZINC.—By the Cask	— —	@	11
Zinc, Sheat 7x3 ft, No 7 to 10 ₰ ₰	— —	@	11½
do do 7x3 ft, No 11 to 14	— —	@	11½
do do 8x4 ft, No 8 to 10	— —	@	11½
do do 8x4 ft, No 11 to 10	— —	@	12
NAILS Assorted 40ds	— —	@	4 10
QUICKSILVER, per ₰	67	@	70

Gold, Legal Tenders, Exchange, Etc.

[Corrected Weekly by CHARLES SUTRO & CO.]

SAN FRANCISCO, September 15, 3 P. M.

LEGAL TENDERS in S. F., 11 A. M., 86 to 86¾

GOLD in N. Y. 116⅞

GOLD BARS, 890. SILVER BARS, 6¾ and 7⅛ per cent. discount.

EXCHANGE on N.Y., 60-100 per cent. premium for gold; on London bankers, 49; Coummercial, 49⅝; Paris, five francs per doller; Mexican dollars, three to five per cent. discount.

LONDON — Consols, 93 to 93⅜; Bonds, 102½

QUICKSILVER in S. F., by the flask, per ₰, 65c.

LEATHER.

[WHOLESALE.]

WEDNESDAY M., September 15, 1875.

City Tannad Leather, ₰ ₰	26@29
Santa Cruz Leather, ₰ ₰	26@28
Country Leather, ₰ ₰	24@29
Stockton Leather, ₰ ₰	25@29
Jodot, 8 Kil., per doz	$50 00@ 54 00
Jodot, 11 to 15 Kil., per doz	68 00@ 72 00
Jodot 14 to 19 Kil., par doz	82 00@84 00
Jodot, second choice, 11 to 16 Kil. ₰ doz	57 00@ 74 00
Cornallian, 12 to 18 Ko	57 00@ 67 00
Cornellian Famalas, 12 to 13	63 00@ 67 00
Cornellian Famalas, 14 to 16 Kil	71 00@ 76 50
Simon Ulimo Femalas, 12 to 13, Kil	60 00@ 63 00
Simon Ulimo Femalas, 14 to 15, Kil	70 00@ 72 00
Simon Ulimo Femalas, 16 to 17, Kil	73 00@75 00
Simon, 18 Kil., ₰ doz	81 00@ 84 00
Simon, 20 Kil. ₰ doz	65 00@ 67 00
Simon, 24 Kil. ₰ doz	72 00@ 74 00
Rohart Calf, 7 and 9 Kil	35 00@ 40 00
Franch Kips, ₰ ₰	1 00@ 1 35
California Kip, ₰ doz	40 00@ 67 50
French Sheep, all colors, ₰ doz	8 00@ 15 00
Eastern Calf for Backs, ₰ ₰	1 00@ 1 25
Sheep Roans for Topping, all colors, ₰ doz	9 00@ 13 00
Sheep Roans for Linings, ₰ doz	5 50@ 10 50
California Russet Linings	4 00@ 4 50
Best Jodot Calf Boot Legs, ₰ pair	5 00@ 5 25
Good Franch Calf Boot Legs, ₰ pair	4 00@ 4 75
Franch Calf Boot Loga, ₰ pair	4 00@ —
Harness Leather, ₰ ₰	30@ 37
Fair Bridle Leathar, ₰ doz	48 00@ 72 —
Skirting Leathar, ₰ ₰	33@ 37½
Welt Leathar, ₰ doz	30 00@ 50 00
Sniff Leathar, ₰ foot	17@ ⅞
Wax Side Leathar, ₰ foot	17@ —

LUMBER.

CARGO PRICES OF REDWOOD.		PUGET SOUND PINE —Retail Price.	
		Rough, ₰ M	22 50
Rough, ₰ M	$18 00	Fencing, ₰ M	22 50
Rough refuse, ₰ M	14 00	Flooring and Step, ₰ M	32 50
Rough clear, ₰ M	30 00	Flooring, narrow, ₰ M	35 00
Rough clear refuse, M	20 00	Flooring, 2d quality, M	25 00
Rustic, ₰ M	32 50	Laths, ₰ M	3 50
Rustic, refuse, ₰ M	24 00	Furring, ₰ lineal ft	— —
Surfaced, ₰ M	30 00	REDWOOD—Retail.	
Surfaced refuse, ₰ M	20 00	Rough, ₰ M	22 50
Flooring, ₰ M	28 00	Rough refused, ₰ M	18 00
Flooring, refuse, ₰ M	20 00	Rough Pickets, ₰ M	18 00
Beaded flooring, ₰ M	30 00	Rough Pickets, p'd, M	20 00
Seaded floor, refuse, M	25 00	Fancy Pickets, ₰ M	30 00
Half-inch Siding, M	22 50	Siding, ₰ M	25 00
Half-inch siding, ref. M	16 00	Surfaced and Long	
Half-inch, Surfaced, M	25 00	Bended	37 50
Half-inch Surf. ref., M	18 00	Flooring	35 00
Half-inch Battens, M	22 50	Do do refuse, ₰ M	25 00
Pickets, rough, ₰ M	13 00	Half-inch surfaced, M	32 50
Pickets, rough, p'ntd	18 00	Rustic, No. 1, ₰ M	40 00
Pickets, fancy, p'ntd	25 00	Battens, ₰ lineal foot	⅛
Shingles, ₰ M	3 00	Shingles, ₰ M	

Paper Making.

If any of our readers, who have leisure, will take the Sancelito ferry boat, and, after crossing the bay, jnmp aboard the narrow gange cars of the North Pacific Coast railroad company and take a ride over that road, they will not only be pleasantly surprised at the varied and interesting scenery through which it passes, but will wonder that so little is known, by the people at large, of the existence of such a railroad in California.

Evidently it has not been "written np" much, but, come to think, it is very young, and yet in its swaddling clothes. The railroad has nothing particular to do with our anbject, however, but as the reader "does the road," he will, at a point about fifteen miles from San Rafael, see, through the trees, a cluster of white buildings with usual external evidences of industrial occupation within. This is the birthplace of the paper manufacturing interest of the Pacific coast. Here, in this quiet country, far away from the never ceasing strife, excitement and allnrements of the city, may be heard the song of the mill, night and day, telling a tale of thrift and happiness. This is the

Pioneer Paper Mill.

And was bnilt in 1856, by S. P. Taylor & Co. The existence of the mill is, therefore, nearly twenty years, and, as the annual prodnct is about $75,000, the total product, since its inception, has amonnted to nearly one and a half millions of dollars, nearly the whole of which sum is retained on this coast. As the world goes, everything is measured by a yard stick composed of dollars and cents, and it is eminently proper that we should cite this instance of the benefits derived from encouraging home industry.

Though the amount is insignificant compared with some prodncing interests, yet the argument is indisputable that if the Pioneer paper mill had no existence, this million and a half would have been lost to this coast, and benefited other communities. On the other hand, this little stream of money is distributed among the popnlace, benefiting all a little.

This argument might be extended to a certain limit, and that the capacity of the country. Had we on this coast iron, steel, cotton, woolen and other manufactories, in a sufficient nnmber to supply bnt half of the trade of our merchants who get their stocks from the East and Europe and therefore become the debtors of other countries, it is very probable that the recent panic would not have occurred. The panic was said to have been caused by the scarcity of coin—some said "lock np of coin." Is it any wonder coin should be scarce and not be felt, when our merchants, to avail themselves of the high premium on gold, some three months ago, sent away fourteen millions of dollars in excess of ordinary, to square np with their Eastern creditors?

The Pioneer paper mill is not confined to the manufactnre of any one class of paper, although the bulk of its manufacture is manila paper of excellent quality and superior strength. It also manufactures printing, hardware paper and a coarse heavy paper in rolls, which is used extensively in roofing and for carpet underlining.

For the latter purpose alone it is estimated that abont twenty tons will be required for the next twelve months. Its nse is becoming general; the cost is trifling and is saved many times over in the course of a year, in the saving of fnel. The depot of the Pioneer mills is the paper warehouse of S. P. Taylor & Co., 416 Clay street, in this city, where a large stock of news, manila, hardware, straw wrapping paper, twines, paper hags, etc., are always to be fonnd. To show the variety of papers manufactured by this mill, we may mention some of the sizes and kinds in their display at the Fair. Of manila paper they exhibit some 24x30 inch, of 60, 50 and 25 ponnds to the ream; 18x27 of 12 and 16 pounds; 24x42 of 40 and 56 pounds; 32x46 of 50 and 90 pounds. Also, some 18x24 violet colored paper, fast color, for druggists' nse, and some 24x36 and 22x32 blue, for same purpose. Of book paper they exhibit 24x38 of 40, 44 and 56 pounds. Of house paper they show 24x36 of 30 pounds; 26x38 of 35 ponnds; 28x42 of 40 ponnds and 28x42 of 42 pounds to the ream. They also exhibit some roll white paper made for wall paper, a new article of manufacture here.

We have with much interest noted the progress of this branch of home industry, with which, as pnblishers, we are so intimately concerned. And it is with pleasure that we can say that Messrs. Taylor & Co. have steadily improved their manufactures, and are furnishing to-day a quality of goods which should secure for them ready sales and rapidly increasing demands. The same amount of persistent enterprise displayed in other branches of local industries would soon double the present amount of home manufactures on this Coast.

A FEMALE weaver in the Petalnma woolen mill wove 112 yards of flannel, of fine texture, in two looms in one day's weaving last week.

ONE hundred and fifty tons of iron for the Santa Cruz and Watsonville railroad, lately arrived in Santa Cruz per steamer.

THE citizens of Santa Ana propose to build a narrow gange railroad from that point to Newport, a distance of 8 miles.

General News Items.

THE steamer *Eastport*, which went ashore at Point Arena, has been got off, and the steamer *Gipsy* has been sent up to tow her into this port. She will be repaired and used as a freight boat on the southern coast ronte, by the present owners, Goodall, Nelson & Co.

THE manufactnre of sewing machine needles is carried on extensively in Brockton, Mass., and in the past year the prodnction at two manufactories has been nearly 5,000,000. At present they are finishing about 20,000 needles a day.

A LARGE excursion party, nnder the auspices of the California Immigrant Union, left Chicago for this city on Saturday last, and will arrive the latter part of this week. The party was made np from different parts of the East.

GEORGE W. BITTENBERGER, a young medical student, was shot and killed by his brother Edward, on Washington street, last Saturday evening. There is hereditary insanity in the family.

CHAMPAIGN county, Illinois, has 2,150 acres devoted to broom-corn, and the cultivators who make this a specialty are among the most prosperous in the country.

CONDENSED AIR as a street car motor, has, it is said, been abandoned in New Haven, on the gronnd that horse power is more profitable.

A FROST in the Eastern States, and light ice formed in some sections of New Hampshire, last Snnday.

THE U. S. steamer *Tennessee* passed through the Snez canal last week.

MRS. LINCOLN has left the insane asylnm.

THE Illinois Ku Klnx are subsiding.

THE Repnblicans have carried Maine.

Mining and Scientific Press.

Started in 1860, is one of the oldest weekly journals now pnblished in San Francisco. It has been conducted by its present proprietors for ten years, during which period it has been repeatedly enlarged and constantly improved. The active and steadfast efforts of its pnblishers have gained for its conduct an amount of practical experience greater than any other pnblishers have accumulated on this coast, of a weekly journal.

The sum paid by us for the best editorial talent obtainable for our special class journal; for engravings, for interesting news and correspondence, and for printing a large-sized, handsome sheet, is unequalled by that of any other American weekly west of the Mississippi.

AS A PRACTICAL MINING JOURNAL it has no rival on this Continent.

It is the only MECHANICAL, and the only SCIENTIFIC journal of the Pacific States.

Miners, Assayers, Millmen, and Metallurgist in the United States should take it.

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To Country Printers.

The large drum cylinder printing press, now used in the FAIR DAILY office, in the Mechanics' Pavilion, is offered for sale. It is nearly new, works satisfactorily, and will be sold at a bargain. Address PAINTER & Co., type fonnders, 513 Clay street, S. F., or the pnblishers of this paper.

Our Agents.

OUR FRIENDS can do much in aid of our paper and the cause of practical knowledge and science, by assisting Agents in their labors of canvassing, by lending their influence and encouraging favors. We intend to send none but worthy men.

J. L. THARP—San Francisco.
B. W. CROWELL—California.
A. C. CHAMPION—Tulare, Fresno and Inyo Counties.
JOHN BOSTRON—California.
A. C. KNOX, California.
G. W. MCGREW—Santa Clara county.
CHAS. T. BELL—California, Oregon and W. T.
D. J. JAMES—Australian Colonies.
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Interferencea Prosecuted.
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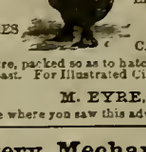

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Notice is hereby given, that at a meeting of the Board of Directors, held on the 31 day of September, 1875, an assessment of ten cents per share was levied upon the capital stock of the corporation, payable immediately, in United States gold and silver coin, to the Secretary, at the office of the company, No. 402 Front street, room 8, San Francisco, Cal.

Any stock upon which this assessment shall remain unpaid on the 11th day of October, 1875, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Saturday, the 30th day of October, 1875, to pay the delinquent assessment, together with costs of advertising and expenses of sale.

W. O. WILSON, Secretary.

Office, No. 402 Front street, room 8, San Francisco, Cal.

Hope Quicksilver Mining Company—Lo-

cation of principal place of business, San Francisco, California. Location of works, Cinnabar Mining District, Sonoma County, State of California.

Notice is hereby given, that at a regular meeting of the Board of Directors, held on the 2d day of August, 1875, an assessment (No. 2) of Five cents per share was levied upon the capital stock of the corporation, payable immediately, in United States gold coin, to the Secretary, at the office of the company, Room 2, No. 408 California street, San Francisco, Cal.

Any stock upon which this assessment shall remain unpaid on the 8th day of September, 1875, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Thursday, the 30th day of September, 1875, to pay the delinquent assessment, together with costs of advertising and expenses of sale.

JACOB HARDY, Secretary.

Office, Room 2, No. 408 California street, San Francisco, California.

POSTPONEMENT.—The date of the delinquency of the above assessment is postponed to the 8th day of October, and the date of delinquent sales to November 1st, 1875.

By order of the Trustees. J. HARDY, Secretary.

September 8, 1875.

Manhattan Marble Company of Californ-

ia. Location of principal place of business, San Francisco, California. Location of works, Oakland, Alameda county, State of California.

Notice is hereby given, that at a meeting of the Directors, held on the 6th day of August, 1875, an assessment (No. 8) of five dollars per share was levied upon the capital stock of the corporation, payable immediately in United States gold coin, to the Secretary of the company, at his office, Nos. 13 and 15 Fremont street, San Francisco, California.

Any stock upon which this assessment shall remain unpaid on the 15th day of September, 1875, shall be deemed delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Monday, the 4th day of October, 1875, at 12 o'clock M., to pay the delinquent assessment, together with costs of advertising and expenses of sale.

L. L. ALEXANDER, Secretary.

Office, Nos. 13 and 15 Fremont street, San Francisco, California.

Mount Auburn Gold Quartz Mining Com-

pany. Location of principal place of business, San Francisco, Cal.

Notice is hereby given, that at a meeting of the directors, held on the 25th day of August, 1875, an assessment (No. 1) of twenty-five cents per share was levied upon the capital stock of the corporation, payable immediately, in United States gold coin, to the Secretary, at the office of the company, No. 402 Montgomery street, room 9, second floor.

Any stock upon which this assessment shall remain unpaid on the 27th day of September, 1875, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Thursday, the 28th of October, 1875, to pay the delinquent assessment, together with costs of advertising and expenses of sale.

C. A JAMES, Secretary.

Office, 402 Montgomery street, room 9, San Francisco California.

Orleans Mining Company—Location of

principal place of business, San Francisco, Cal. Location of works, Grass Valley Mioing District, Grass Valley, Nevada County, Cal.

Notice is hereby given, that at a meeting of the Board of Trustees of said company, held on the 8th day of September, 1875, an assessment, No. 7, of one dollar per share was levied upon the capital stock of said company, payable immediately in gold coin of the United States of America, to the Secretary, at the office of the company, room 8, No. 215 California street, in the city of San Francisco.

Any stock upon which said assessment shall remain unpaid on the 7th day of October, 1875, will be advertised on that day as delinquent, and unless payment shall be made before, will be sold on the 25th day of October, 1875, to pay the delinquent assessment, together with costs of advertising and expenses of sale.

GEO. P. THURSTON, Secretary.

Office, room 8, No. 215 California street, San Francisco, Cal.

Silver Wave Mining Company—Location

of works, White Pine Mining District, Nevada.

NOTICE.—There are delinquent upon the following described stock, on account of assessment (No. 12) levied on the 21st day of July, A. D., 1875, the several amounts set opposite the names of the respective shareholders, as follows:

Names.	No. Certificate.	No. Shares.	Amount.
A F Carmody, Trustee	574	250	$ 62 50
E Fisher, Trustee	552	250	62 50
W N Hawley	468	25	6 25
N Reynolds	545	20	5 00
E A Richardson, Trustee	499	100	25 00
E A Richardson, Trustee	520	100	25 00
E A Richardson, Trustee	566	10	2 50
E A Richardson, Trustee	572	100	25 00
W J Williams, Trustee	244	50	12 50

And in accordance with law, and an order of the Board of Directors, made on the 31st day of July, A. D., 1875, so many shares of each parcel of such stock as may be necessary, will be sold at public auction, at the office of said company, on Friday, the eighth (8th) day of October, A. D., 1875, at the hour of two (2) o'clock P. M., of said day, to pay said delinquent assessment thereon, together with costs of advertising and expenses of the sale.

J. W. CLARK, Secretary.

Office, Room 2, 418 California street, San Francisco, California.

Yosemite Mining Company—Location of

principal place of business, San Francisco, Cal. Location of works, Humboldt county, Nevada.

Notice is hereby given, that at a meeting of the Board of Directors, held on the 25th day of July, 1875, an assessment of twenty-five cents per share was levied upon the capital stock of the corporation, payable immediately, in United States gold coin, to the Secretary, at his office, No. 210 Battery street, San Francisco.

Any stock upon which this assessment shall remain unpaid on the 25th day of September, 1875, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on the 22d day of October, 1875, to pay the delinquent assessment, together with costs of advertising and expenses of sale. By order of the Directors.

S. O. PUTNAM, Secretary, pro tem.

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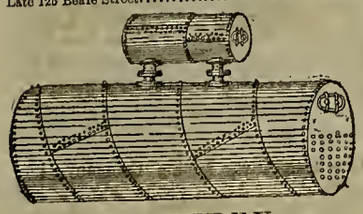

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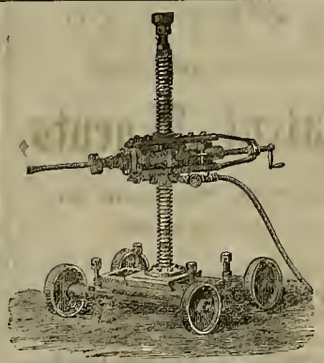

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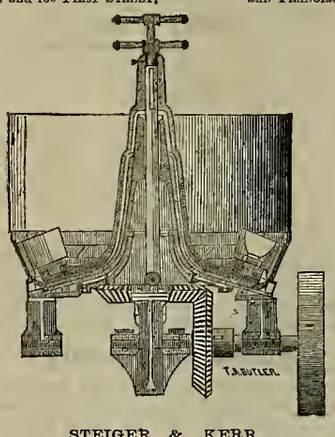

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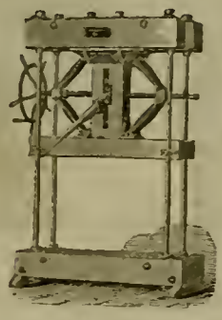

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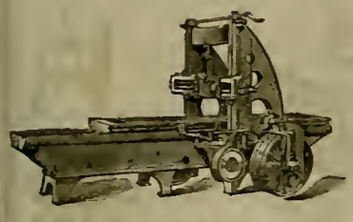

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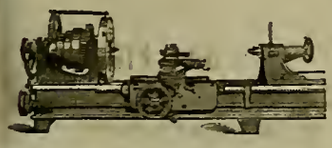

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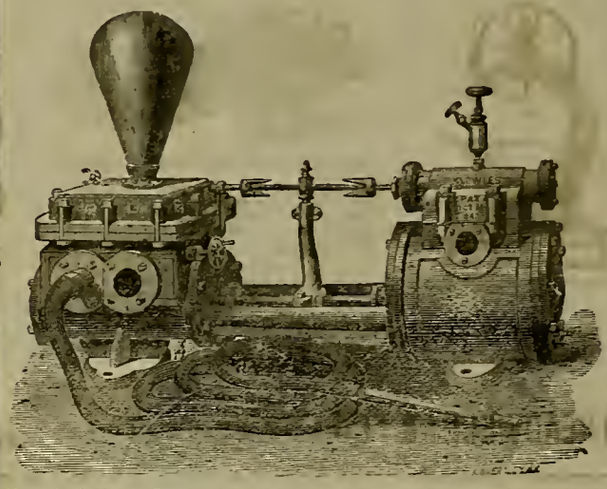

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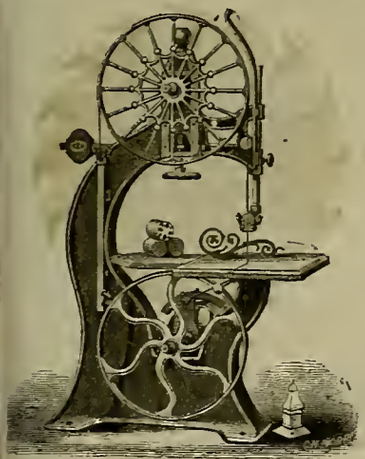

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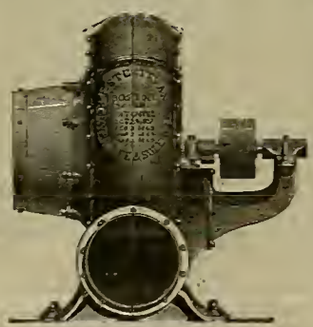

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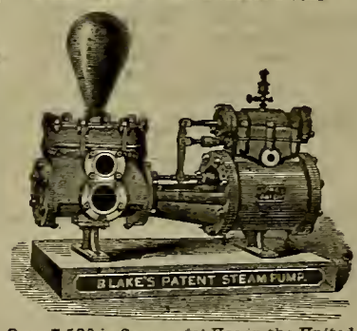

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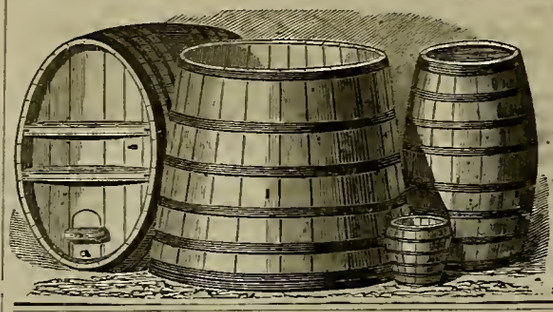

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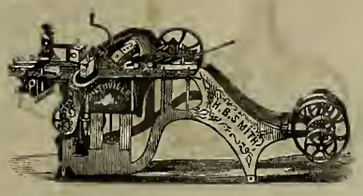

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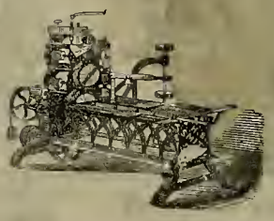

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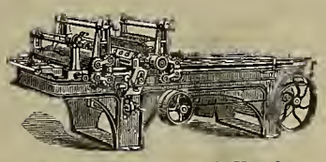

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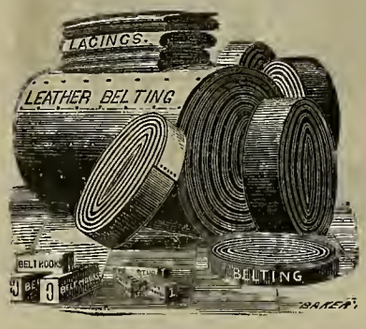

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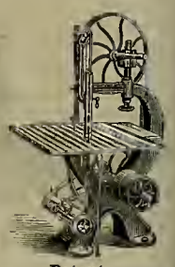

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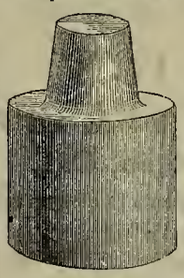

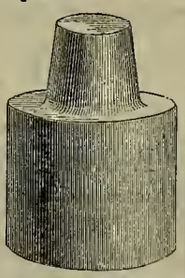

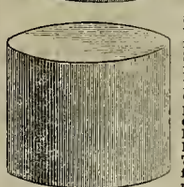

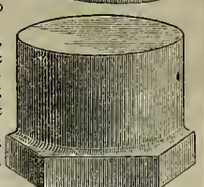

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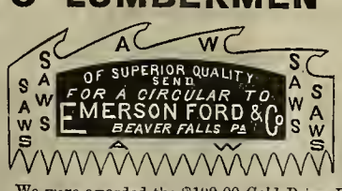

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SAN FRANCISCO, SATURDAY, SEPTEMBER 25, 1875.

VOLUME XXX Number 13.

Something About Quicksilver Industry.

[Written for the PRESS by DR. T. P. SIEVEKING.]

Since the discovery of the great quickeilver ore deposits at New Almaden, California has ocnpied often the first, and never less than the second place among the quicksilver-producing countries, and even now, whon the first mines hava greatly decreased their production, new discoveries have more than mede up for the loss.

This large production has had, as was to be expected, a great influence on the market price of the quicksilver, and in consequence has made it a necessity for the European mines, principally to try to find meana to work more economically than hefore, and to avoid the enormous losses always experienced.

The official reports of the Anstrian quicksilver mine, in Idria, where always the management haa heen in ahle and careful hands, can show best how far these losses have gone. These reports show that in the three years, 1870 to 1873, the lossss have been as follows:

1870.....46.70 per cent.
1871.....37.10 per cent.
1872.....48.25 per cent.

At tha same time the report shows that these losses are not equally reported, thera being much more in proportion lost in the treatment of poor ore than in that of rich and purer ores.

Active researches made with the purpose of finding ont where the reason for these losses lay, gave the result that it being next to impossible to graduate the temperature and the access of air accnrately enough in a large fnrnace, part of the quicksilver vapors became overheated, and expanded to such a degree that their condensation would only partially be effected. At the same time it was demonstrated that the ore, after having passed through the furnace, always retained some of the metal still, and thet a loss was caused also through absorption of qnicksilver by the bricks of the construction from which it only in part could he recovered afterwards.

Having acquired this knowledge, the crown chemist of the Anstrian empire, Mr. Patera, proceeded to make experiments tending to avoid the defects of the known processes.

He tried at first two wet processes, each of which in small scale gave very good resnlts, hut which, nnhappily, fonnd great obstacles as soon as their application in a large scale was projected.

The first process consisted in the conversion of the cinnabar nnder the action of chloride of copper into sub-chloride of mercnry, this seme being dissolved afterwards in the hyposulphite of soda end precipitated in the shape of cinnabar again, through snlphide of sodinm.

The second was fonnded on the solubility of cinnebar (very finely powdered) in a concentrated alkeline solntion of sulphide of sodium, of which an excess of water precipitates it agsin. Unhappily, both processes are very slow, demand great attention and ere rather expensive. For this reason Mr. Patera tried to improve on the performance of the old processes, and after cerefnl researches he found that cinnabar, when redneed to powder (abont the size of common sand), and exposed to the air at a temperature of ahout 950 to 1,000 degrees was discomposed entirely, and the quicksilver easily condens d.

On a large scale this process would he vsry difficnlt to manage, as the regulation of the heat would offer nearly the same difficnlty as before, and the loss would surely be considerably increased, compared with that when operating with small quantities in a laboretory. The expenses would be considerable, too, on account of the charging and discharging of the retort, reqniring many hands, and the iron of the seme heing very much corroded under the combined action of hot wet air and sulphurous vapors.

In California, since the moment when the first mine was worked for quicksilver, many experiments have been tried for the purpose of ameliorating the European proceeses. The retorting process heing slow and expensive, and demanding, moreover, a close attention, has been sparingly employed and nearly exclusively on very rich ores.

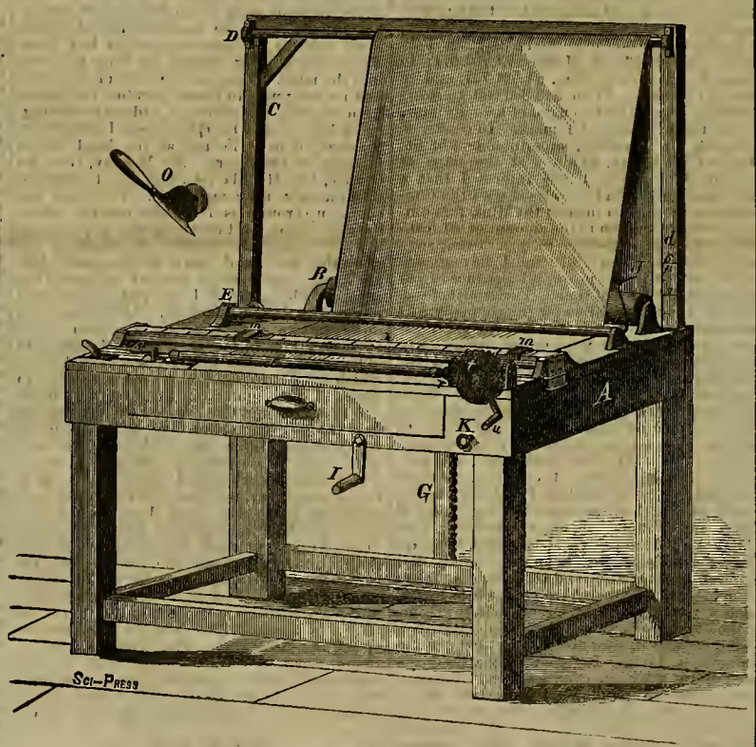
The first improvement was the Almaden furnace, which allowed to handle big quentities of ore in enormous furnaces where nnder this combined action of heat and air the reduction was effected. These furnaces, where the hot gasee from the combnstion of wood entered through pigeon holes into the closed ore chamher, and where the qnicksilver vapors went out into condensation chambers through a sscond system of pigeon holss opposite to the first, has several disadvantages. The furnace does not work continnally and hes to be cooled down every time a charge has heen burned to allow the extraction of the refuse and the recharging. Thus a good deal of heat and time is lost, and moreover, there heing a strong dreught required, the quicksilver vapors are but imperfectly condensed.

Under these circumstances it was natural that experiments were made for improvement, and that continuous working furnaces were constructed. Of theee, two different kinds have been tried and are actually in operation. The first class embraces all those where the combustion of the fnel takes place in a separate space from the ore chamber; the sscond, those where the fuel and ore are mixed. To the first the Luckhardt, Green, Knox & Osborn and Jenin processes belong. The general principle of these furnaces is the same. The ore is introduced at the top and the refuse extracted at the bottom, the ore being exposed to the action of heat while it slowly descends from top to bottom, and the qnicksilver vapors carried through a systsm of condensors by the action of a ventilator. The differences consist in the nnmber of fireplaces, the means of communication employed between tbem and the ore chamber, the regulation of air, the access, and the extraction of the vapors, leaving aside the difference of sizs as immaterial. All of these furnaces, if rightly constructed, offar nearly the same advantages and disadvantagee. They allow the working of large quentities of ore with but slight expense, and do not demand so close an attention as the retorts.

On the other hand they all have the defect mentioned above when speaking about Mr. Patera's researches. It is next to impossible to regnlate exactly the access of air and the degree of heat, and it being necessary to employ a strong dranght the quicksilver vapors are expanded to a high degree, and the condensation becomes imperfect. Moreover, in most instancss, in consequence of the want of the necessary amount of frssh air, the combnstion is not perfect and a large amount of soot is formed, of which the great amount of quicksilver it conteins, can only he partielly extracted.

Unhappily it is impossible to ascertain in California the exact loss of quicksilver, as up to the present time samples of ore have not been taken from a single establishment before nsing it, hnt it can he surmised that the loss will be very near eqnal to that experienced in Idria, as the conditions are nearly the same.

The second class of furneces as mentioned above, employ the ore mixed with the fnel (coke) and work relatively well where they are employed, but show the same disadvantages as the other kinds.



LACHMAN'S WINDOW SHADE MAKING MACHINE.

The uncertainty about the losses makes it extremely difficult to introdnce a more perfected system in this country, if the eame is new. The mines which produce a profit to their shereholders, generally content themselves with the system they employ, and are not very much dieposed to changes, while companies whose mines are not yet producing, generally dread the expense of any experiment, warned by many failures in former times. Notwithstanding, the nndersigced allows himself to call the public attention to his system, which avoids most of the disadvantages mented above, while it has the great advantage of avoiding entirely the possibility of qnicksilver poisoniog.

If cinnabar finely powdered is subjected to the action of a solution of subchloride of copper in salt water in the presence of copper, or an alloy of copper and zinc, all the quicksilver is reduced to its native state, and combines with the copper forming an amalgem of which it is easy to extract the quickeilver afterwards. Experiments made with ores from the New Almaden mine, American mine, Sulphurbank mine and Rattlesnake mine heve shown that the loss of quickeilver is very small, five to two per cent. when the ores are reduced to a fine powder. The ores are introduced in a wooden barrel, the solution ponred on it in a warm state, the copper introduced and the barrel allowed to turn for twelve hours, when, if the right conditions are observed, the process will be completed. The separation of the amelgam is afterwerds effected in the same way as in gold and silver mills.

Of the expenses of the process, the grinding of the ores and the loss of copper form the prominent items. The grindiog remains the same always, bnt the loss of copper depends entirely npon the amount of mercnry contained in the ores, and may be calculated at about forty per cent. of the weight of the aame, placing the value of copper in proportion to that of mercnry as one to four, is equal to ten per cent. of the valne of the latter.

If anybody should like further particulars, a letter addressed to Dr. T. P. Sieveking, care of Messrs. H. Walser & Co., San Francisco, will procure him all the information required.

A New Window Shade Making Machine.

The engraving on this page represents a newly invented machine for making widow shades, patented by Morris Lachman, of this city, through the agency connected with this office. It is intended for the more rapid manufactnre of window shades, such as are made of linen, and it consists in a table having upon it means for supporting a roll of the material and adjustable standards with suitable rollers by which the length of the shade is determined. A cnt-ting gauge is also so placed that as the material ie drawn through it will be trimmed to the proper width. A suitable cutter is arranged to cut off the shade, and at the aame time make the hem for it. Each shade is tacked to the permanent roller which is snpported between pivots, and by means of gearing and a crank, the material is drawn through and roned npon its roller, all ready to be removed and give place to the next.

Referring to the figure in the engraving for more explicit explanation we find, first, the table *A*. At the back of the table is a vertical moving frame *C*, which has a roller *D*, at the top. The linen passes over this roller, thence beneath the roller *E*, upon the back of the table and from thsnce to the front edge of the table where the permanent shade rollers *F*, are supported, so as to be turned to wind up the shade. *G*, is a rack attached to the frame *C*, and a pinion *H*, serves to separate it. By means of this mechanism the npper roller *D*, may be raised or depressed, and then the length from the original roll to the point where the linen is attached to the roller *F*, may be raised so as to make a shade of any desired length. A marker *J*, is arrenged so as to be operated by a handle *K*, at the front of the table. Above the linen and just back of the point where it is to be cut is fixed a trensverse bar *L*, which has a scale marked npon it. Slides *m*, move upon this bar, each slide carryir g a knife or cutter and by means of these cutters the edges of the linen can be trimmed of the selvage and cut to the proper width. At the point where the shede is to be cut off, and just in the front of the trimming knives, two or three grooves *n*, are made lengthwise of the table and transversly to the material. The cutter o, is fixed to a handle *p*, and markers are secured to this handle by the side of the cutter, so that as the cutter paeses along the groovee the marker will move in the other groove, and thus indicate the point for turning the hem. By the nse of this machine a great deal of space is economized, a matter of importance in manufactories, and the rapidity with which it performs the work for which it is intended, is simply marvelous.

THE Antioch *Ledger* says: M. D. Plummer of San Francisco, and others, have completed arrangements and are now constructing a building for the upholetering business. Experiments made have demonetrated that the tnle by a process of preparation for which these gentleman have obtained a patent, is especially snitable for this business. When prepared it much resembles hair and is tough and fibrons. Mr. Plummer informs us that he expects to place it in the market at less than one half the present price of soap-root, now some what extensively ussd.

THE first asphaltum pavement in Santa Barbara hae just beeu put down.

The Big Bonanza.

The attention of Eastern people hss of late heen attracted to the mining interests of this coast by the wonderful developments on the Comstock. So much interest hae heen manifested that the prominent Esstern jonrnals have sent relisble correspondents out to "write up" the mines. A stsff correspondent of the New York *Tribune* contrihntes to that papor of the 1st inst. a four column letter on the Big Bonanzs from which we make the following extracts:

The mines in this (Virginia) city are so marvelons in extent and operation that I should heeitate to give the facts in relation to them were they not certified hy proofs so convincing that doubt ie impossible. There is a common belief in the East that there is nothing in which such gigantic swindling is done as in mining etocke, and when the big honanza was struck I well remember the incredulity expressed on all sides. Mining to a large class of people mesns swindling, and it is not uncommon to find persons who think it ie only necessary to dig a hole in the ground, orgsnize a stock company, and hegin to sell shares in order to get rich.

This, nnfortunately, was too often the case during the oil excitement in the Venango district of Pennsylvania. Whstever mining may he in other localities, it is a stupendoue reality here, and ie carried on with the ssme precision and business ssgacity as sny legitimste manufscturing husinese in New England, New York, or New Jersey. There is no pretense, no noiee and bnetle, no pompous manifestation of wealth, no impassahle gulf betweeu the $4 miner and the twenty million capitalist. I have been here nearly two weeks, and no day has paesed during that time in which I have not visited the mines, aud each day I have seen three men, each worth not lese than twenty million of dollars, going shout qnietly among the men in the common garb of the laborer, with nothing to distingnish them from the ordinary mine hand. No diamond studs, no big rings, no finshy watch chaine, no broadcloth. Oue of these gentlemen has spent years in foreign travel, and hns mingled in polite society in other countries; another who spende most of his time in San Francisco rules the market here, and is to this coast what Commodore Vanderbilt is to New York; the other is accustomed to direct hundreds of men and employ millions of capital. Yet these threé men, when seen about their mines, would he taken for foremeu or overseers. They attend to their legitimnte business as minere and earn handsome dividends for their etockholders. These gentlemeu own a majority of the etock of the Consolidated Virginia, the California, the Best & Belcher, the Gonld & Curry, the Savage, the Hale & Norcroee, the Utah, the Occidental, and many small mines. The greatest mine in the United States, and probably in the world, is the Consolidated Virginia, the mine of the hig honanza. The figuree relating to this mine are so euormous that I ehonld not tax the credulity ot the resder if I had not examined the hooks, assessor'e retnrns, shipper'a receipts, accounts with the Government, and had the teetimony of my own senses in addition to the official papers.

A Wealthy Firm.

The Consolidated Virginia is composed of two mines—the Sides, 500 feet, and the White & Murphy, 210 feet, in all 710 feet in leugth along the lead, the width heing ae far as it extends each way, the distance not having yet heen determined, ae the walls of the mine have not been fonnd. The two companiee named were organized separately in 1859. They were worked with varying succes till ahout 1872, to the depth of abont 500 feet. The etock was on the market at this time, and four men bought the mnjority of shares, and the mines were consolidated under the name it now hears. The four men who honght the controlling interest, and yet hold it, are John W. Mackay, Jamee C. Flood, James G. Fair and W. S. O'Brien. The firm in Virginia City ie known as McKay, Fair & Co., and in San Francisco as Flood & O'Brien. Ae soon ae the consolidation had heen effected, arrangements were made with the truetees of the Gould & Curry mine to run a drift from the 1,200-ft level of their mine into the Conolidated Virginia. The drift was 1,300 feet long. Here a low grade of ore was fonnd; the vein heing eighteen or twenty feet wide, which milled about $18 a tou. A ehort distance farther, very rich ore wae reached, which milled from $400 to as high ae $1,200 a ton, and very soon afterward the miners broke through a thin film of clay, and found the bonauza, which is shaped, ae far as known, like a pocket or an egg. The bonanzae along the Comstock lode which have already been worked out were found to be of this form. As the walle of the Consolidated Virginia mine have not yet been reached, it is of course impossihle to judge of the shape. The ore is, however, known to he in a body, and not in a vein. From the time the hody was discovered it gradnally widened out on that level—the 1,200 foot—to 96 feet. The ore was followed up to the 1,000 foot level, hut never higher. Each level ie 100 feet, and after the ore has been taken out and hoisted to the top, its place is supplied with timhers iu the form of hulkheads, which prevent the mine from caving in. On the 1,200-foot level the work was oontinned down to the 1,300-foot, then 1,400, then 1,500, and finally to 1,550—the latter being for air, and also to he on a grade with the other mines.

The stock of the Consolidated Virginia consists of 108,000 shares, par value $100 each. It sells for $340 to $360 a share, and pays more dividends each year than the original par valne of the shares. Of these 108,000 shares, Mackay, Flood, Fsir and O'Brien owns 62,000. The California mine has 540,000 shares, at $100 par valne, now selliug at from $60 to $70. The firm owns 295,000 of these shares. The Best & Belcher mine hns 108,000 shares; the Gould & Curry, the same number; the Ssvage has 16,000; the Hale & Norcross, 16,000; the Utah, 20,000; snd the Occidental, 40,000. As hefore etated, the gentlemen named own the majority of the etock of all these mines. In addition, they have nine mills, which mnet be worth several millions of dollars; they own one-half of the Virginia and Gold Hill water works, cspital $5,000,000. besides flumes, factories, stocks, real estate, etc.

The Yield of the Consolidated Virginia.

The marvelous richness of the Consolidated Virginia mine can scnrcely he realized. We are so accnstomed in pnblic affaire to speak of millions of dollare with little nnderstanding of how much money it is that it hss become the cnstom to epeak thus with as little hesitation as we speak of hnndreds. I suppose that grest national hlessing—the national debt—hse made the sound ot millions familiar. A million of dollars is more money than csn he connted, dollar by dollar, in one week hy a single iudividnal, and it ie therefore imperative in dealing with the figures that a due sense of their meaning nnd importance should he considered, for in that is their only interest.

There were shipped from the Consolidated Virginia mine ahout 2,000 hars of gold and silver, nnseparated, or ahout $7,000,000, previous to the beginniug of the present calendar year. The following, which I copied from the books of the company, and verified hy bille, receipts, etc., ehows the amount of the business since that time. During the month of January, 1875, there were ehipped $1,100,697; in February, $1,200,743; in Msroh, $1,707,571; in April, $1,509,607; in May, $1,521,777, and in June, $1,503,816. From $18,000,000 to $20,000,000 a year, to he taken out of a single mine, is something worthy of remark. In conversation with Mr. Crawford, superintendent of the Mint at Carson City, who was at the mine at the same time I was, I wae informed that a ehort time ago he had a contract with the Conolidated Virginia to furnish the Mint, for coinage purposes, bullion to the nmount of $1,500,000. "It wae delivered in just twenty-one daye," said Mr. Crawford, "and I have reason to believe that it was nearly all produced from the mines during that time. The contract wae made in a very good time for the compsny. At the end of every month the mines and mills 'olean up,' that is, thoy take their machinery to pieces, take up floors, etc., and collect all the gold and ailver that may he in crevices, seams, or adhering to any portion of the mille. When they begin work again it takee some time for the amalgamating pana to fill np and begin to produce. Ae for the richnese of the mines," continued this old miner and mint operator, "there oan he no donbt. Do yon suppose theae gentlemen (meaning Mackay, Flood nnd others,) would let everyhody go down into the mine, if there was a donbt nbont it? Besides, look about you." It must he confeseed that, to all appearances, there was houndless prosperity. We were in the melting and asaay huilding. Bars of gold and silver, worth from $3,000 to $4,000 each were etacked up hy hundreds in the rooms and halle, wagons were being loaded with them, and they were thrown sbout as if they were eo many pigs of iron. In one room half a dozen men were working over as many furnaces, melting the silver and molding it into bars—very hot work. In the mine, close hy, 650 men were employ d night and day, with no Sunday play-epell. Engines, hoisting worke, maohine shops, chntes, railroads, sawmille and buildings largo enough for the world'e fair, were on every hand, in value reaching into the millions. The machinery in one mill coat a quarter of a million of dollars, and one engine in the Savage mine cost $120,000. In the Conolidated Virginia mine alone 1,000,000 feet of lumher are used every month for bulkheads, and 40,000 cords of wood are hurned in one year in the several mills and minee helonging to Mackay, Fair & Co. They have hetween 3,000 and 4,000 meu employed at an average price of $4 per day. The pay roll of one mine, which I saw myself, for the month of June, amounted to ahout $70,000. The firm paye $40,000 a quarter, or $200,000 a year, as tax on the prodnction of bnllion for one mine. The discount and express chargos on hullion to San Francisco cost the company abont $80,000 a month. The assay department, spoken of above, is ahle to melt, bar, assay, and etamp $100,000 a day in gold and silver bars in combination—the gold heing about forty-five per cent. The weight of the hars ie from 90 to 110 ponnds.

The Descent into the Mine.

The Consolidated Virginia mine is reached by a main shaft—probably 25 feet by 10. It hae no tunnels running to the enrface, because it is sitnated on level ground. The shaft, aa before stated, is now down a distance of 1,550 feet. Those not accustomed to judge of distances, had better stop and make a calonlation that will give them some idea of this diatance. The ehaft is divided into three perpendicnlar apartments about six feet hy fonr. In these the "cages" run. The cages are simply strongly built platforms, somewhat smsller than the apartment or tube in which they descend, and are covered by a honnet of iron for protection from anything falling from above. These cages—why they sre oalled cages I cannot imagine—are hoieted and lowered hy means of immense engines and machinery. This machinery—one machine for each csge—turns a wheel or drnm npon whioh a fist wire rope is wonnd. As this wheel mskes its revolutions the cage, to which the other end of the rope is attached, goes up or down, as desired hy the engineer. The machines are eo perfect in construction that the weight of a finger regulates their speed, and sends the oage whizzing through the shaft or regulates it to a five minnte trip. Each of the three hoisting compartments has three csges, one above the other. On these the ore is brought np and the empty oare are eent down. When the shifts of men take place, each of the three hoisting machines hrings np eighteen men, and when it goee down it takes the same number of fresh hands. It requires two minntes to go np or down in these cages, or jnst four minntes for the nound trip. The cagee are not like hotel elevators in any eense. In the first place they are worked by machinery that costs more of itself than ordinary hotels cost; in the next plsce they go ahont ten times ae fast ae hotel elevstors; and in the next place they have no eidee to them; no places to sit on and no lights: besides they are damp, and ss you get down very hot and disagreeahle with etesm. The precision with which they are worked ie very remarkahle, and I csnnot understand how the shaft was msde so exactly perpsndicular for 1,550 feet thst the csges do not strike the eides. Ample provision is made for eafety, so that even if the rope breaks, as it did in one of the shsfts a short time ago, the cage stops almost inetantly.

The first ehaft I went down wss the Consolidated Virginia. Adjoining the immense building which covers the ehaft and in which the machinery is, there is a hnilding nsed for offices. In the rear there is a carpeted room in which there are a hath tnh, half a hundred shoes, ae many suits of woolen clothes, eimilar to hathing suits at the seashore, and abont the same nnmher of hats—shockingly had hats. Theee enits are for visitors to wear in going into the mine. The terrihle heat of the mine and its dampness in places prevente the viciter from wearing any article of ordinary clothing. In such a snit ae I have described, I atepped on the cage, a light feeling at the head, and a jumping at the heart. Mr. Mackay, Gen. La Grange, Ben Holliday, Jr. and the foreman of the mine were my companions. The steam was oozing up around ua from the caverne helow, the cage shook a little ns each one stepped on, the bell etruck, the hand of the engineer was upon the lever, and down we dropped! Juet above our heads a stout iron bar ran across the cage. With one hand I graeped thie bar, and in tho other I held a lantern. As the cage shot down, like a cannon ball falling from a shot tower, my breath became a thing I wne nfraid of losing, and I felt a weakness nbout the lege which did not speak well for my conhidnce in them. I must confeee my head was very light, and that the hand that grasped the har was the only thing strong ahout me. Before we could bid good-hye to the light of day and the hnsy world around, we were in dsrkneea hlsok as coal. A eouud was heard above like the moving of machinery, and care filled with ore went rumbling aloug the iron floor we had left. Steam and heat came up from helow, and water dripped upon our heads from above as we shot farther and farther into the earth. Soon the sound ahove died out, a moment of silence followed, and then the noiee of engines and drille and picks cnme np to us from the hottom of the mine. A moment later, aud we felt that the epeed was leesening. The warning mark on the rope had told the engineer that the cage was almoet down. A eecond after a little bnmp wae felt, the cage stopped, and we stepped into the mine, 1,500 feet from the snrface. Time, two minntes.

In the Mine.

Here was a commodions etation, or chamher, well ventilated and etrongly timbered. It reminded me of a railroad station; the cages being cars, the miners the passengers, the ore and timber the freight. To this etation the ore is brought in care, holding 1,800 pounds. The care are puehed on to the cage, the bell is rung, and up goes the preciona freight. The air at this station was rather warm, hut it wae so much hetter than at other points in the mine that it wae a positive pleasure to return to it, after going throngh some of the drifts. In eome placea the temperature was 130°. If anyhody had told me it wae 200, I do not thiuk I could have disputed or argned the queetiou. I wae rather glad when General La Grange, in one of the hottest cross-cuts, said that hie delicate health would not admit of his going any farther. Of conrse we could not leave him, and eo we all turned hack. At the end of some of the drifts, or cross-onts, the ore, which the minere were digging ont with picks, and hlasting when it became necessary, was so hot that a person conld not rest hie hand upon it. At one place we followed the drift until we came npon the workmen, drilling and hlasting the ore which stopped the way in front. We had reached the eod. A tube of compressed air from the eurface opened at the point where these miners were at work, and yet the air waa so hot that we conld soarcely stay five minntes. The miners only stay a few minntes at a time. Fresh onee come in and take the placee of the othere. It wae at this place that I saw the working of a patent drill. A tube of compressed air furnished the motor for the drill, and it worked like a little engine. One man regulated the snpply of air and the machinery of the drill, which is so small thst a man may csrry it on his hack. Another does nothing hut pour water into the hole that is being drilled. The rock was not very hard, bnt it was too hard to work with a pick or hand-drill. The mschine went to work snd put s hole in the rock as thongh it had been chalk. It took abont fonr minntes to drill a three-foot hole, and the drill had to he changed once dnring the time. Half a dozen holes are thns drilled and loaded, snd after everybody is ont of the cross-cut they are fired off hy means of s cap and giant rowder. They open each time a fortune of wealth. The miners then go in with picks and shovels and load the cars with the ore. As esch drift advances a track is laid for the cars. After all the ore looaened hy blaets hae heen taken ont, other hlasts are made, and so mining goee on. Lnmber takes the plsce of the ore ss fast as the work proceede.

Enterprise of Miners.

In going throngh the mines miles and miles, which I did, I could not help contrasting them, at the present time, with their condition less than three years sgo. The stock was then low in price. A honanza was then unthought of. A two-compartment ehaft was down only 400 feet, and Mr. Maoksy informed me thst a little donkey engine, scarcely larger than those nsed hy threshing machines, did the whole hoisting of the mine. A board shed was in the place now occnpied by an immense hnilding, and the donkey engine has given place to a million dollars worth of machinery. When the Conolidated Virginia company took the work in hand they continned the shaft and enlarged it; they ran drifts north and south, made np raises, snnk winzes, dug croee-outs in every portion of the ore vein, and continned nntil they found the hig honanza. The present machinery and hoisting works are, ae I am informed, suffioient to sink and work the mine to the depth of 4,000 feet, inclnding what pumping may he uecessary.

My visit to the mine, as stated before, took me to the 1,500 feet level. The first thing wnnted on lsnding was drink of ice water, which was at hand, and was everywhere through the mines, and the amonnt a person will drink is amazing. We firet went sonth in the Consolidated Virginia mine 400 feet, then turning we entered cross-cut No. 4, which we followed 147 feet. Then passing cross-cut No. 3 we entered No. 2, and 324 feet of ore, a wonderful exhihition truly. In every direotion we had traversed there was ore and ore. Above our head, nnder our feet, to our right and to our left it was a continned and continuous hody of ore. We ooald not escape it. Behind ns, in front of us, nnd on eaoh hand; and when we fell in with Dr. Linderman he was half crazy with excitement. He thonght it was time to resnme specie payments, and was ready to begiu at once. A day'a experience in the minea nnder his and Dr. Rogers' inetruction makea an expert out of a novice. One comes to know very soon the difference in ores, and csn separate the good from the bad without hesitation. He may even be ahle to tell from the appearance of the chloride and sulphnret ores the amount they will mill to the ton. From No. 2 we went to crose-cnt No. 1. They are all 100 feet apart, and croes the vein or hody of ore at right angles with its course. No. 1 is the houndary between the Consolidated Virginia and the Californin minee. Nearly all the mines helonging to Mackay, Flood and their partners, connect by drifts with the Consolidated Virginia. Three hours were epent in the examination of the two mines named, and although it iuvolved travel which brought excessive fatigue, and although the heat was at timos so oppressive that it was difficult to hreathe, it wae with regret that my face was turned toward the etation late in the afternoon. We again took our poeitions on the cage. The foreman rang the bell which indicated hy three strokea that men were coming up and not ore. One stroke of the bell indicatee that the best time possihle ie to he made; two hells tell the engineer that nohody ie npon the cage, and three tell him that the freight is of human kind. So the bell etruck three—a little jerk, a snddon start, a fading away of the dimly bnrning lights, a clinging to the iron rod, darkness, eilence, and then, after a pause, bursting with the rapidity of lightning into light and life again. The clothes we wore were as wet with perapiration ae they conld have heen with water had we hathed in them. It was better than a Turkish bath and no ill effects resulted from the trip to any of us.

Market Value of Silver.

Dr. Linderman remarked, after coming ont, that he had never seen ao mnch money in his whole life, and never expected to aee eo mnch again. He will embody the resnlt of his examination in an official report to Congrese, and for this purpose he took samples of ore from every portion of the mines, and he will have them aseayed at the Carson mint. Dr. Rogere will embody the result of his examination in a report also. Dr. Linderman thinks the Nevada mines will have a great deal to do with the return to specie payments. He' eees no reason why eilver shonld not be in general circulation now inetead of small notes and fractional currency, as the low price of silver in the London market makes a greenback dollar by the qnotation worth the more by one or two cents. Silver, relatively to gold, has been gradnally sinking until it recently reached in the London market the low point of 55½ penoe sterling per

(Continued on Page 198.)

SCIENTIFIC PROGRESS.

Some New Volcanic Revelations.

The *Scientific American* summarises some new volcanic revelations as follows: The theory that our earth was successively a vaporous, a fluid and a plastic mass, which, cooling during billions of centuries, finally obtained a solid crust, in connection with the fact that during all this time she rotated round the sun and received on her equator solar heat (of which the poles were nearly deprived), leads necessarily to the conclusion that, in the neighborhood of the poles, the slowly forming solid crust must have become thicker than it is around the equator, because the solar heat was able to retard this cooling longer at the equator than at the poles. Such a crust is of course more easily perforated, by interior pressure acting outwardly, where it is thinnest; and volcanoes, which are the result of such perforation, must therefore be more numerous in the thinner places, such as around the equator, and scarce near the poles. This is confirmed by observation. Active volcanoes are not frequent around the poles; the only one near the north pole is in Iceland, while between the tropics such volcanoes are found in considerable numbers.

Another interesting consideration is that the amount of material ejected by volcanoes is enormous. The estimates of the volume of the lava ejected by Vesuvius, Etna, and especially by the volcanoes of Iceland are appalling figures; and all these masses necessarily come from the interior of the earth, and must create in the neighborhood of the volcanoes (which may be considered as safety valves) empty spaces, which are filled up by a sinking of the crust. This logical conclusion has been verified by the observation that every active volcano is situated in the center of a region of depression, and never in one upheaval, unless the material ejected by the volcano itself he so considered.

But a still more remarkable fact has been revealed by the calculations of astronomers making observations at different points of the earth's surface. It is that there are two points of depression, extending even over the ocean's surface, forming a kind of flattened poles, one the exact antipodes of the other. These points are the Antilles, in the West Indies, and the Sunda islands (Java and its surroundings), in East Indian ocean. Each region contains a greater number of active volcanoes in a smaller surface than can probably be found anywhere else on the earth. But the reason why the ocean's surface partakes of this depression, at these two volcanic centers, is as yet a problem. Modern observations have already proved many irregularities in the form of the ocean's mean level, making the ocean's surface to be far from a perfect spheroid. As this surface must, according to the laws of hydrostatics, be always at right angles to the direction of gravitation, it proves that, at various points of the earth's surface, the lines of gravitation do not pass through the same central point, even on places of the same latitude. As gravitation is a general property of matter, depending on its mass, it proves that the mass in the interior of the earth is not homogeneous nor of uniform density, and it is unequally distributed. As the interior is liquid, this distribution may be affected by cosmic influences, as for instance the relative position of the moon and planets; and any change effected in this distribution may react on the direction of gravitation on the earth's surface, and so on the form of the ocean, and thus slowly produce changes in its level, which may, in some cases, cause an apparent rising or depression of the land.

DELICATE TEST FOR THE VAPOR OF MERCURY.—M. Merget has discovered that by dissolving iridium, palladium, platinum, gold, or silver, in *aqua regia*, a reagent is obtained which is extremely sensitive to mercury, and which will, he believes, prove of great value in the solution of very many practical and theoretic problems. A paper impregnated with such a solution is marked with an indelible black stain as soon as it is brought in contact with mercury or mercurial vapor, no matter how small the quantity or how low the temperature may be. M. Merget also hopes to be able to throw great light upon the problem of a limited or an unlimited atmosphere, which was investigated without success by Wollaston and Faraday. He expects to be able to prove that mercury constantly sends forth a vapor, which ascends to the height of a mile at the rate of 550 feet per second. As a practical result of his research, M. Merget, by means of these test papers, exhibits the presence of mercurial vapor in all the workshops and warehouses where this metal is used or stored. If a workman passes but one hour in such an atmosphere, his clothing, face, hair, and beard become impregnated with mercury. If he but touches one of the prepared papers he testifies to the presence of the mercury by a well defined black mark.

RED HOT VAPOR.—The vapor of iodine may be heated to redness like a solid or liquid. It then emits the less refrangible luminous rays which furnish a continuous spectrum. A spiral of fine platinum wire is sealed in the interior of a glass tube eight millimetres in diameter. Pure iodine is then introduced, and the tube sealed after the air has been expelled. If the iodine be then volatilised and the wire ignited by a battery, the spiral appears surrounded by a flame of a very rich color which yields the well-known interrupted spectrum.

How Thunder Showers Come Up.

In order to convey a more definite idea of our theory, we will choose a certain locality which may serve the purpose of a diagram to our demonstration; and this locality shall be the region of Westfield river. This river takes its rise among the forests near the summit of the Green mountains, at a height of some 2,000 feet above the level of the sea, and, flowing southeasterly forty or fifty miles, empties into the Connecticut river about ten miles from the southern boundary of the State.

During a hot summer day the sides of the deep valley of this river reek with intense heat, and cause a flow of moist air upward toward the summit of the mountain ridge, from the valley of the Connecticut, and also from the sea. This moist air, meeting with the general current from the southwest, piles up an immense mass of cumulous cloud, of many square miles in extent. So long as the great heat lasts the cloud increases in size; grows blacker with its dense vapor, and casts a gloomy, lurid glare over the face of nature, darker than that of any eclipse. The vapor, pushed up by the ascending currents of heated air, attains to a great height above the sea, where the temperature is very low. But finally, at the hour of the afternoon when the heat begins to decline, the accumulated vapors, no longer supported or sustained by heated air from the valley below, fall in rain.—*Popular Science Monthly.*

VANILLA AS A WASTE PRODUCT IN THE MANUFACTURE OF PAPER.—We take the following interesting suggestion from a recent number of *Dingler's Journal:* In the preparation of wood pulp for paper, fine wood is treated to a solution of caustic soda under high pressure in iron boilers. After the operation the solution contains the soda salts of resinic acid, humic acid, and carbonic acid, and some other resinous bodies. In this solution the soda salt of vanilla must also be present, if it has not been destroyed by the high pressure and temperature. The presence of this body is indicated by the intense vanilla odor which always appears on treating the above liquor with acids and allowing it to stand a few days. The writer above referred to has not yet succeeded in obtaining crystals of vanillin, and hence does not describe his process in full. If any of our readers possess sufficient quantities of this lye to experiment upon, we have strong hopes that their labors will be rewarded with better success than those of our German friend, and that America will one day boast of a vanillin factory.

INTERNATIONAL METEOROLOGICAL OBSERVATIONS.—The Signal Service Bureau has just issued the first bulletin of international meteorological observations, making another step in storm science. In accordance with the arrangements made at the Vienna International Meteorological Convention, simultaneous observations are to be taken twice a month in different parts of the world. The bulletin just issued gives the results of observations at thirteen stations in Austria, one in Belgium, eighty in the British possessions, six in Denmark, thirty in the French possessions, twenty in Italy, twenty-five in Russia and 150 in the United States. It inaugurates, for the first time in history, a regular international exchange of weather reports. The object of the exchange is to render practicable the publication of a daily weather map, embracing within its limits the entire Northern hemisphere and permit the study of atmospheric movement, which, not limited to any one continent or sea, may enable storms and disturbances to be traced from wherever they arise until they disappear.

A NEW FEATURE IN TEMPERED GLASS.—It is being found that De la Bastie's glass, which is, undoubtedly, hardened by tempering, loses its molecular cohesion, under a repetition of blows, and then fractures like ordinary glass. Tempered glass, submitted to hammering, presented an appearance on fracture similar to that of *fatigue* steel, a molecular disintegration having taken place. It is feared that this alteration of structure and loss of temper may not only follow from shock, but may happen spontaneously from interior change in the lapse of time.

BLEACHING ACTION OF CHLORINE.—M. A. Boillot, in the *Comptes Rendus*, points out that the bleaching action of chlorine is not a property inherent in the gas itself, but a secondary result of its power of abstracting the hydrogen from water in organic compounds. On allowing chlorine to act on any animal or vegetable matter, it decomposes a certain quantity of water and seizes its hydrogen, forming hydrochloric acid. The oxygen set free by this reaction is transformed into ozone, which in its turn lays hold of the hydrogen present in organic matters.

A VERY HIGHLY ILLUMINATING OIL.—The *English Mechanic* gives this recipe: Pound in a mortar two ounces of camphor, slightly moistened with alcohol; add a pint of sperm oil, and stir till dissolved. Light the wick, after being thoroughly soaked, and let it burn for a few minutes; then blow out and retrim with exactness, in order to secure an even, smokeless flame, which can be better done after the wick has been slightly charred.

SCIENTIFIC BEQUEST.—The Cincinnati Society of Natural History has received an absolute and unconditional bequest of $50,000 from Mr. Charles Rodman, of that city.

A NEW EMERALD GREEN—NOT POISONOUS.—Any pigment which approaches in beauty the fearfully poisonous Paris green certainly deserves attention. One of these is said to be an hydrated oxide of chromium, prepared in a peculiar manner and known as Guignet's green. It may not be altogether innocuous; but it is, at all events, far more harmless than Paris green, or any other arsenical color. It is prepared on a large scale by fusing together, on the hearth of suitably constructed flame furnace, at a dark red heat, three parts borscic acid to one part bichromate of potash. The mass swells up, much oxygen gas is evolved, and the substance is finally converted into a beautiful green double salt, a borate of chromium and potash. By repeated washing and very fine grinding, this oxide of chromium has a most beautiful shade of color, covers well, stands the air and light and is only attacked by boiling concentrated acids. On a small scale, this green pigment may be prepared in a porcelain crucible.

ELECTRO-PLATING ON PORCELAIN.—M. Hansen has recently patented in France, the following process for electro-plating on a non-conducting material. Sulphur is dissolved in the oil of *Lavendula spica* to a syrupy consistence. The chloride of gold or the chloride of platinum is then dissolved in sulphuric ether, and the two solutions are mingled under a gentle heat. The compound is next evaporated until of the thickness of ordinary paint, when it is applied with the brush to such portions of the china, glass, etc., as are desired to be covered with the electro-metallic deposit. The objects are baked in the usual way before immersion in the bath.

DETECTION OF PICRIC ACID IN BEER.—For this Brunner recommends acidulating the beer with hydrochloric acid, and plunging therein a fragment of woolen thread, and digesting the same in a *bain marie*. After the thread is removed, it is heated with a solution of ammonia. The latter is filtered, evaporated in a *bain marie* to small volume, and a few drops of cyanide of potassium are added. The presence of 0.015 grain of picric acid in a pint of beer is determined by a red color being produced, due to the formation of isopurpurate of potash.

NOT long ago a New York lady gave $1,000 to the American Association for the Advancement of Science to expend at the discretion of a committee of the association. That committee has devoted the money to the publication of "A monogram of all that is known of fossil butterflies."

OXYVITIC ACID.—MM. A. Oppenheim and S. Pfaff announce the discovery of a new acid named as above, and having the formula $C_6 H_2 (CH_3, OH, COOH, COOH)$. It results from the action of chloroform on acetic sodic ether.

ASTRONOMICAL OBSERVATORY FOR CHINA.—The astronomical instruments sent by the French Academy to China for use at the transit of Venus, are to remain at Pekin, and perhaps a permanent observatory may be established there.

MECHANICAL PROGRESS.

HEAVY VS. LIGHT TOOLS.—The great end at which all improvements aim is the maximum of power combined with the maximum of material and weight. A man shoveling dirt with a shovel one pound heavier than it should be will lift 6,000 pounds more in a day of ten hours than he would do with a suitable shovel. All this strength is wasted. The same is true of machinery. So simple a thing as an unlubricated pulley is felt in the furnace; and the cost of the coal is augmented. Every useless pound in a truck or carriage takes vitality from the horse which draws it, and costs the owner many extra dollars for his keeping. The man who pulls an oar in the great boat races at Saratoga puts himself in training and reduces every ounce of surplus flesh. The racing horse carries not one extra ounce of fat to burden him in the effort to win. Yet workmen will carry through half their lives fifty pounds more flesh than is needed for the best working condition, a burden which tells against their efficiency and personal comfort through many years of their industrial life. These may seem little things; but whatever wastes power, increases expenses and burdens the laborer, is not a little thing.

BRIGHTENING IRON.—A Bavarian serial contains a method of brightening iron recommended by Boden. The articles to be brightened are, when taken from the forge or the rolls, in the case of such articles as plates, wire, etc., placed in dilute sulphuric acid (1 to 20), cleansing the articles, which are then washed clean with water and dried with sawdust. They are then dipped for a second or so in nitrous acid, washed carefully, dried in sawdust and rubbed clean. It is said that iron goods thus treated acquire a bright surface, having a white glance, without undergoing any of the usual polishing operations. This is a process that those interested can easily test for themselves. Boden states that the action of the sulphurous acid is increased by the addition of a little carbolic acid, but it is difficult to see what effect this can have, and it may very well be dispensed with.

TO FORM PERFECT SQUARES.—Squares can be tested with the dividers by drawing two circles, one within the other, from the same center, of sixteen and twelve inches diameter, respectively; then set the mark and the point exactly where a circle dividers to ten inches, insert one point in any of the outer circles (drawn with the dividers in this position) would intersect the inner circle; now draw a straight line through the center of the circles and through the point marked in the inner circle; and through the outer one, another line starting from the point where the dividers were inserted in the outer circle through the center of the circles, until the outer circle is reached. If this is done exactly, the points where those lines intersect the outer circle will form the corners of a perfect square whose side is 11.3137 inches. If the square is correct, it will fit the square thus formed and also the lines in the center, which divide the circle into four equal parts, and the angles must be ninety degrees. This is based on the rule for finding the hypothenuse of a right angle triangle, thus 36 square = 38 and 8 square = 64, sum 100 the square root of which is ten. This is sometimes called the six, eight and ten rule for squaring buildings.

FORCE OF THE WAVES.—The construction of marine works, especially artificial breakwaters, has led to some interesting discussions relating to the force and action of the waves of the ocean. According to French investigations, the dynamic exerted by sea waves is greatest at the crest of the wave before it breaks, and its power in raising itself is measured by various circumstances. Numerous cases have occurred in which waves have raised a column of water equivalent to a pressure of from three to five tons to the square foot. It is also proved that the velocity of waves depends on their length—waves from three hundred to four hundred feet in length from crest to crest travel with a velocity of twenty to nearly thirty miles an hour, and this, too, whether they are five or fifty feet in total height. The result of observations made on the force of waves with reference to the construction of marine works shows that such force amounts to one and one-half tons per square foot for the German ocean, and three tons for the Atlantic.

NEW ANTI-FRICTION COMPOSITION FOR BEARINGS.—A new composition, being a bad conductor of heat, is recommended by M. S. Coline a French engineer, for the bearings of all kinds of machines, wheel and axles, as not requiring any lubrication. The following is the recipe for the composition: Take about twenty-five per cent. of asbestos, and the same of plumbago, and mix them very intimately and carefully together; then add sufficient liquid silicate of soda or potash to reduce the whole to a half dry paste. The paste must then be submitted to the action of a hydraulic or other press, till it is converted into a solid mass, which is afterwards dried, either in a furnace or exposure to the air, until all moisture has disappeared. The bearings may either be turned out of the block or molded from the composition while in the moist state. When the bearing is finished it is steeped in hot melted paraffine, mineral wax, or in a solution of paraffine, benzole, or other mineral oil, until all the pores in the composition are filled up.

STEEL MAKING.—A new method of steel making has recently been patented in France, which is as follows: (1) Of employing ammoniac and carbonated hydrogen gases in certain proportions for the cementation of iron on a large scale, the gases acting simultaneously, and at the moment of their production, by the decomposition at a high temperature of a mixture of sal ammoniac and a substance supplying proto or carbonated hydrogen; (2) for the making of cast steel from scraps of iron, cemented by the process above described, and melted by the same operation; and (3) the fabrication of steel by the fusion of cemented iron sponge produced by the reduction of ores, forge scoria, etc., by means of gas derived from peat or hydrogenous matters.

AMERICAN INVENTIONS ABROAD.—Among the great American inventions, which have been adopted all over the world, are the following: 1. The cotton gin, without which the machine spinner, and the power loom would be helpless. 2. The planing machine. 3. The grass mower and grain reaper. 4. The rotary printing press. 5. Navigation by steam. 6. The hot air (caloric) engine. 7. The sewing machine. 8. The india rubber industry. 9. The machine manufacture of horse shoes. 10. The sand blast (for carving). 11. The gauge lathe. 12. The grain elevator. 13. The artificial manufacture of ice on a large scale. 14. The electro-magnet, and its practical application, by Henry and Morse.

NEW WAY TO PREPARE IMITATION LEATHER.—A substitute for leather, is described in a French journal, in which the grain of all well-known varieties of real leather is produced with great accuracy. A real skin of any desired kind is taken as a mould, and from it impressions obtained on sheets of fibrous pulp. The artificial material is cheap, strong, waterproof and not easily soiled.

PENTAGONAL WIRE.—A Belgian manufacturer, L. Chelot, manufactures five sided wire, which gives a better grip than wire with a cross-shaped section, the advantage claimed being twenty per cent. in pine and thirty per cent. in oak.

MINING SUMMARY.

THE following is mostly condensed from journals published in the interior, in proximity to the mines mentioned

California.

AMADOR.

THE KENNEDY.—Amsdor *Ledger*, Sept. 18: We sre pleased to learn that a large vein of fine pay ore has been struck in the extreme north end of the works in the above named mine, which bide feir to he lasting and valnable. The new strike wee made st near 1100 ft in depth, and the vein discovered being hetween 7 and 8 ft in width. The ore preeents a very fine appearence, exhibiting free gold and rich appearing eulphurets, and as far as work has progressed on the vein, it preents sll the appearance of dnrability. Evidently a chimney has been struck, which will prove of great valne to the owners of the mine. The depth at which the new vein wae discovered gives sssurence of a regular chimney formstion. The rock is that known as the ribbon rock, pecnliar to the great mother lode of the county and npon which the Kennedy is loceted.

THE LADY BENFORD. — Amsdor *Dispatch*, Sept. 18: A friend st Enterprise sends ne the following items of news from that place: Messrs. Von & Condo, the owners of the Lsdy Bedford mine, have heen at work for the lest 5 or 6 monthe einking and running a level and stoping out rock. The shaft ie 175 ft deep and the level 36 ft in length, the vein in which is 18 or 20 inches thick, and of better rock than they have ever had before; aod besides; the ledge ie more uniform in eize. They hsve taken out 125 tons of rock up to this time, and will stope out rock until the rsin sets in, when the intend to sink 50 ft more. We have 3 mille near Enterprise, sll rnn hy water, and of course we csnnot get any rock crnshed until water comes in. The owuers of the Bedford, desiring to know whst their rock would pay, built a horse arsstra and a screen to separate the cosrse and fine rock and piepare it for crnshing. They cruehed 5 tons of the rock which paid $55 per ton, and it is thought that the rock ou the dump will pay $25 or $30 per ton. A 5-stsmp mill will probably be erected in conuection with this mine.

CALAVERAS.

WEST POINT DISTRICT.—Calaverse *Chronicle*, Sept. 11: Lsst Tueeday the new hoisting works of the Cheeno mine were completed. Sinking the main shaft below water level has continued eince then, and ie apt to for some time to come. The former portable engine of the Wolverine, skillfully improved hy adding friction gear, etc., furnishes the motive power. Six years ago two Mexicans extracted some $30,000 from this vein in a very ehort time, above wster level. Through improvidence snd ignorsnce the mine has been idle until now. F. Novells & Co., of San Francieco, ownere; M. D. Baker, mine superintendent. The Champion and Josephine have heen idle for some time, ae there is not sufficient water to propel their respective hoisting worke. The beaming countenance of the commonly surly superintendent of the Mina Rica vonches for the extrsordinary favorable developmente in that mine. The main shaft is being pushed downward with the ntmost dispatch. Some 50 tons of fine ore are lying on the dump of the Lockwood. The old tnnnel of the Vslentine ie heing reopened.

GWIN MINE.—The sinking for the 1100-ft level in the Gwin mine is completed, hut owing to the fact thst the supply of water sdmite of the rnnning of only a few of the bstteries the level has not heen commenced. A powerfnl eteam engine, formerly in .use st the Petticoat mine at Railroad, hss been purchaeed snd ie now being put in poeitiou at the Gwin to he brought into requieition in caee of a failure of the water eupply in the future. The 1000-ft stopes coutinue to yield good ore and some of the batteries are kept constsntly employed.

FRESNO.

MINERAL KING DISTRICT.—Antioch *Ledger*, Sept. 18: Mr. R. Shipley returned to Antioch from the Mineral King miuee on Wednesday last, where he has been engaged eince Msy last in doing the requisite amount of labor reqnired npon hie claims. He epeaks with great confidence of the extent and richness of the district and its future promise. The preeent obstacle is the want of a road to the district from Visalia. The assays of ore are highly eatiefactory, and he ssye there is no qneetion hut the mines will prove to he all that hss been snticipated. The weather dnring the snmmer has been plesssnt, but at the time of leaving, Snnday last, the nights were oold with frost and ice. Mr Shipley speaks very highly of the New England tunnel and smelting company and says thst with proper management the company will have a valuable property. He estimates the cost of constrncting a road to the mines at $40,000. Mr. Shipley ie well know in this vicinity and is not given to exaggeration nor does he indulge in flights of fancy.

INYO.

UBEHEBE DISTRICT.—*Independent*, Sept. 11: This is the nsme hy which the new district in the vicinity of, if not including, the Rose Springs district is now known. It is the esme where Messrs. Hunter & Porter have been operating for a long time past, and where we are sstisfied from all accounte there sre numeroue silver ledges ss promising as any in the whole country. Amoog them are the Nellie Grsnt, belonging to Hunter & Porter; the Garahaldi, belonging to the Nossno Bros., snd meny others now pretty well known. Besides a fine silver ledge recently discovered by Mr. Porter, there is an immense copper ledge over 80 ft in width, and cropping holdly out for thoussnds of feet in length, lately located by Hunter & Porter and others. Mr. Porter, who ie a practical metallnrgiet, hes been experimenting considerably in reducing thie copper ore, ann is eatisfied it csn he readily and profitably smelted right on the ground. He hes now gone to San Francieco to see what can be done about erecting works for this purpose.

THE SUNRISE MILL.—Panamint *News*, Sept. 15: This mill made its second ehipment of bullion on the 11th inst., consisting of two bsrs and a fraction, valued at ahout $3,000. The hullion wae 950 fine. The ore which they are now running through the mill yields $100 per ton, a portion of which comes from a ehsft 30 ft in depth. The ore taken from thie shaft, if worked hy iteelf, wonld probably yield $300 per ton, hut ss there has been no levels rnn as yet from the shaft, they cannot teke the ore ont fast enough to snpply the mill, and the deficit ie snpplied with lower grade ore from the surfsce, thns reducing the yield to $100 per ton. This shsft hss yielded eome heantiful nuggets of native eilver, in the pset week, weighing from 1 to 3 onnces each. It is slso sbnndant in ecalee and wires of eilver, bnt eeems to he confined to a etreak of csle spar rnnning through the vein. From present indicstions thie company will be able to turn out from their mill, in the next 30 days, over $30,000, which we think is pretty good for a 5-stamp mill.

MONTEREY.

PREPARING TO WORK.—Sslinas *Index*: The Consolidated Wonder quicksilver mining company, whose minee are locsted in San Benito county, sre making preparations looking to the vigorous prosecution of work in the direction of the speedy development of their property.

NEVADA.

MINING ITEMS.—San Juan *Times*, Sept 18: The North Bloomfield Co's. mine, near Malakoff, will soon he in a situation to fully compensate its owners for the immense outlay of money expended by the compsny in openiug and developing the miue. The compsny are hard at work washing off the face of the mine for the purpose of getting down to the tunnel. The opening will he in the neighborhood of 200 ft deep, which will bring it down very nearly to the hedrock. From all indicatione, when once the indefatigable owners can get a fair chance at the immense body of gravel in sight, look ont for big psy.

The mines at Columbia hill are being worked by the Enreka Lake ditch company, which ownes pretty much all the ground, to good advantage. A tunnel, now in sbout 1,000 ft, is in process of running, which, when completed, will enable the mine owuers to wssh away the rich deposits known to exist on the hill. Owing to waut of sufficient fall, the mines csnnot he worked to advantsge. On Chimney hill the mines there are paying pretty well. Every inch of water that can he secured is nsed moet effectually in working them. Jndging from reports, they are paying well.

At Cherokee no work is going on. It is well known that the mines at Cherokee are of great vslne, bnt to enable them to be worked so as to be made to psy, a tunnel from the Badger hill side will hsve to be run so se to get st the bottom of the bssin, wherein the rich deposits are. To ruo a tunnel will reqnire a large sum of money. It is rumored that a company of capitalists is abont to be organized, to nndertake opening np these claims, which, if done, the old brisk times of onr neighboring town would return two fold. We wonld rejoice to see it.

No work is doing on the San Juan hill. All of the best mines have long eioce been washed away, snd what ground is left will not pay for working, at the present rates of water.

A FAILURE.—Nevsda *Transcript*, Sept 17: A Mr. Green wss reported to have a process for working Mesdow lake ore, which was ssid would save a very lsrge per cent. of the precious metals. Works were erected at Oseaville, and a thorough test has been made the pset snmmer, and the result has proved a fsilure, so it has been absndoned. Fryer ie the only one who can unlock the golden treasures of that district.

NEVADA MINE. — Superintendent Berry, of the Nevada mine, some time since made a contract with some mioers to take out rock on ehares. The ledge is four feet thick, is easily worked, aod the men made considerable over wages dnring the time they worked. The rock paid $19 in free gold. The same parties have taken another contrect, and feel confident of making a good thing.

NEW QUARTZ MILL.—Hamilton McCormick is erecting a mill for crnshing the quartz taken out of the ledge owned by him, near his reeidence. The ledge was discovered while piping off the surface dirt in his hydraulic diggings. The rock oo the surface was very rich, and we understand shows so well as it is sunk npon, that the owner feels justified in pntting up a mill.

KEITH'e QUARTZ MILL.—Keith has lately pnt in an eight-horee power engine, at his mill near the Plaza, for the purpoee of rnnning the mill when the water gets too low to run the same by water power. He informs ne that the mill is kept busy day and night cruehiog custom rock, most of which comes from the Gold Rnn mine on Gold Flat. We underetsnd some of the rock yields $25 per ton.

PLACER.

ST. PATRICK.—Placer *Herald*, Sept. 11: During the lsst run the St. Patrick mill crushed 430 tons of ore, which yielded 1,090 ounces of gold, or abont $17,500, a little better thsn $40 per ton.

THE Rieing Sun mine, near Colfax, recently cleaned up $11,000 after s twenty-three days' run, an average of $58.75 per ton. The lest cruehing from this miue averaged about $55 per ton, from which will be eeen that the yield of the miue ie gradually incressing.

PLACER county qnartz mines are looking up. We csn name four, at least, the Crater, the Green, the Julian and the Rising Snn, which bid fair to soon rank upon the beet in the State.

SAN DIEGO.

THE HELVETIA.—*World*, Sept. 18: The Helvetis mine of Julisn dietrict is tnrning out, at a depth of 300 ft, the finest specimen rock ever taken from the mine. Ore enough is now in eight to keep their mill running for the next two months. The mill is undergoing thorough repsirs and improvements before beginning on the Helvetia rock.

THE JULIAN MINES.—San Diego *Union*, Sept. 15: From Mr. T. L. Neemith, who hss been spending eevers! weeke at Julian, we have a good report of the outlook in our mountain region. Thst portion of our county is not only rich in mineral, but in agricultural resources. The mines are being developed with a good deal of energy by their owners. The Owens, Helvetis, and Tom Scott are sinking succesefully. The Resdy Relief and Oriflamme, when Mr. Nesmith left, were einking, and crushing sstisfectory ore. The Chariot was lying on its oars, waiting for the return of Mr. Whitney. The Stonewell was running ten etamps. The Ella mine hsd a crushing recently, which yielded $150 per ton. The Hubbsrd was crushing at the Whitney mill, with favorable results. The DeFrees mill, owned hy Count snd Messrs. Schuyler and Bartlett, was undergoing repairs and making great improvements. Mr. Schuyler is on the spot, and no doubt everything will soon be ready to recommence orushing. This mill is located in a beautiful little vslley, ahout a mile from Julian, that hss a charming stream of water running through it. There is no doubt at all that these mountains are filled with the precious metals and thst the mines will draw a large population there at no distant day. As it is, few quartz miuing regions on the coast csn present as fine a record as this. The scenery in and about Julian is charming. The sir is dry; the weather generally clesr and delightful; the water pure and delicious. The agricultural and horticultural improvements going on in the vicinity are worthy of specisl note. The vegetshle gardens are nnmerous. Mr. Wileon, in San Felipe canon, hss a fine vineyard and his grapes were for sale at the frnit etore in Julian. Mr. Brady has recently put ont an orchard near Julian; and every one whe has lately visited this region has heard of, and moet persons have no doubt seen the orchard of Mr. James Madieon, whose blackberries, peaches, apples, grapes and almond trees are a marvel. He has enceeded with his fruit trees and vines beyond his most sanguine expectations. There is good land around Julian for hundreds of theee thrifty and besutiful mountain orchards. We recommend San Diegans to visit the mining section more freqnently; they will see a rapidly growing country.

SANTA BARBARA.

IMPORTANT DISCOVERIES — Santa Barbara *Index*, Sept. 18: We have word of important mineral discoveriee in the country north of Ssnta Barbars, beyond the Nsjalsyegua and San Marcos grants, the particulars of which we will soon he permitted to give to the pnblic. The specimens shown us are strong indications of valuable eilver-bearing ledges.

SONOMA.

MINING NOTES.—*Russian River Flag*, Sept. 16: The Mt. Jackson mine is now working four gangs of men in the tunnels; sbout 300 tons of ore are on the dump; the mine is looking well; plenty of ore is in sight; the new furnace will he fired np in a few dsys. Twenty-six men sre employed. W. S. Canan, president of the company, is acting superintendent.

The Grest Eastern, adjoining the Mt. Jackson, continnes to turn ont from three to five fiasks of matal a day with its five retorts. The mine had shipped, up to lset Friday, in a rnn of forty-eight days, 226 fiasks of quicksilver, worth, st the preeent price, $12,000. Thirty-five men are employed, and 1,050 ft of tnnnel have been run. About four tons of pay rock a day are taken out. Six hnndred tons are on the dnmp. The rotary retort furnace, called the Eames & Waldbridge fnrnsce, which is being constructed adjoining the bench of retorts, hy Henry H. Eames, will make a trial rnn in a few days. The inventors claim that it will rednce ten tons of ore a day at a cost of only $2 50 a ton.

The owners of the Tiger mine, near Guerneville, have for over a year heen qnietly rnnuiog a tunnel. It will cut the ledge at right angles, and has now pierced the hill 380 ft. It is believed that the ledge will soon be tapped. The croppings on this mine are excellent and abundant.

For the week ending September 11th, the Great Western mine ahipped through Calistoga sixty-two fiasks, and the California horax company eighty-one flasks of qnicksilver.

TUOLUMNE.

THE NONPAREIL MINE.—The owners of the Nonpsriel olaim, in Deer Flat district, hsve been for the last five or six years running a tuunel in search of the mother vein. The work has been accomplished to a great extent through eolid rock, and is now completed as the vein hss been struck, paying as fully as much as was anticipated. The work of crushiog the rock, which was done at J. J. Du Prat's mill, was continued for two or three weeks, until the water running in the ditches of the Golden Rock water company lessened to such an extent that they conld do so no more. The yield, however, was perfectly sstisfactory. Work will commence again as soon as wster can he obtained.

Nevada.

WASHOE DISTRICT.

CON. VIRGINIA.—Gold Hill *News*, Sept. 16: Daily yield, 600 tons of ore. The ore extracted is, if anything, of a richer qnslity than sny thst has heretofore been extracted. The mine is looking splendidly throughout, and there appeere to he no proepect of the least cessation of the present rich yield of bullion for many months, and perhsps yeers, to come. The mills are all steadily running, and the yield of bullion will certainly not be less for the present month than thst of August, $1,650,000, Sink the C. & C. shaft is making rapid progress. The new pumping engine is about ready to steam up, which will do away with the smsll pumps and hoisting tanks and admit of a much hetter rate of speed. The hoisting engines are aleo rapidly advsncing toward completion. The frame of the hoisting works building is up and the erection of the whole rapidly approaching completion.

OPHIR.—Daily yield, 200 tons of ore. The yield of ore lset mouth gave a return of $217,000, which will be increased dnring September to nearly double that snm. This favorable showing in the yield is entirely owing to stesdy increase in the valne of the ore extracted, and it now begins to look as if it would not be long before the long cherished hopes of the stockholders would be realized, and Ophir again take her former position as a first-class dividend paying mine. This etate of affairs is greatly encouraging, and proves more and more thst, with perseversnce and a judicious investment of mesns, the return of any of the Comstock mines to the payment of dividends is only a matter of time and industry. The mine ie looking well throughout, and the ore prospects of the 1700-ft level were never more flattering than at the present time. The erection of the pnmping and incline machinery is steadily approaching completion. The new air compressor has started up, and everything is now ready to set the Burleigh drills to work in the main incline and drive it downward at a very rapid rate. In the meantime the cross-cntting of the 1700-ft level will be energeticslly prosecnted and the value of the ore vein fully developed at that point.

BELCHER.—Having a large surplus of ore on hand, tha opportnnity is being improved by the putting up of a new hoisting frame and the making of other necessary improvements. The ore bresste and stopes sre looking well throughout the entire mine, and work is progressing well on all the levels. There are no changes or new developmente to report for the week st sny point. The sir shaft is completed to the 1300-ft level.

LADY BRYAN.—Sinking the main shaft ie being pushed energetically downward, the bottom still in soft ledge matter. Driving the north and south drifts on the 380-ft level is making steady progress, bnt as each of these drifts are ontside of the ore vain and no cross-cutting has yet been done, there are no changes of intereet to report.

BULLION.—Sinking the incline goes steadily ahead without change of interest to report. The face of the main north drift on the 1700-ft level of the Imperial, is still in quartz and ore of a very encouraging character. The new combination drift on the 2000-ft level of the Imperial is steadily advancing toward the Alpha grounds.

EUROPA.—Sinking the shaft is suspended for the present, pending the putting in of a station and the starting of a drift to cross-cut and prospect the ledge. Several fine seams of qnartz were encountered near the bottom of the shaft, and there eeems to be bnt little doubt that at the increased depth, good developments will be made.

CROWN POINT.—The want of water on the Carson river is still depreciating the qnantity of ore extracted and milled. Prospecting on the 1600-ft level goes steadily on without any valnable developments to report. On the 1700-ft level nothing of valne has yet been found. The main ledge will probably soon be reached.

SAVAGE.—Drifting north on the 2200-ft level shows no changes since onr last report. Sinking the main incline is making fair progress. Sinking the south winze below the 2200-ft level is also making good headway. Nothing new of the other prospecting operations of the mine.

HALE & NORCROSS.—Driving the south drift from the bottom of the north winze on the 2200-ft level, to connect with the north drift from the 2200-ft station, is making good progress. The main west drift, on the 2200-ft level is steadily advancing.

IOWA.—The main west drift, on the 400-ft level, is steadily advancing with increasing prospects of soon developing a paying ore body. The seame and feeders of ore appear to be more concentrated and solid than heretofore. No changes in the upper tunnel drifts.

BALTIMORE AND AMERICAN FLAT.—Sinking the main incline is making excellent progress the rock in the bottom working finely. Preparations sre being made to open the ore bodies

alrssdy developed, and to commence ths extraction of ore for milling purposes ahont ths 1st of October next.

Gould & Curry.—The enlargement of ths connecting drift with the Best and Belcher on the 1700-ft lsvel is nearly completed, so that cross-cutting the 1700-ft level can be reaumad. Everything in and about the mins is again fast assnming a prosperons bnsinsss-like look.

Senator.—The gronnd in the face of the south drift, on ths 400-ft level, is still qnite soft, and requires close timbering, the lagging having to be driven in advance of the workmen in order to secnre the advancement of the work.

Dayton.—The water tank below the third station, and the lowering of tha pumps, are fast approaching completion; so that it will be hut a very few days loager before the watsr will be drained and the sinking resnmed.

Yellow Jacket.—Sinking the north and sonth winzes on tha 1700-ft lsvel show no changes of value for the week. The east crosscnt on the same level is still advancing. Everything in and abont tha mine looking finely.

Best & Belcher.—Ths oompletion of ths connecting drift on the 1700-ft level, with the Gonld & Cnrry mine, is steadily cooling ths level, and will soon put it in excellent condition for cross-cutting.

Mint.—Sinkiag the shaft is making ths usual good hsadway. Ths material penetratsd at the hottom of tha shaft gives grsat enconragement, snd the sinkiag is being pushed ahead with great vigor.

Sutro.—The flow of watsr from the face of the main wsst tunnel continues strong, with every prospect of soon reaching the ore vein. Good headway is being msds with the dritt.

Rock Island.—Still driving the main shaft downward at a very favorsble rate of progress. Nothing new to report of the prospecting opersations on the 450-ft level.

Mexican.—Sinking ths winze on ths ore vein below the 1465-ft level is making steady snd favorable progrsss. No changes of importancs in the charscter of the vein.

Amazon and Glasoow.—Sinking the main shaft is making steady and favorabls headway. It is now down ssvsnty-fivs feet below ths first station level.

Niagara & Monumental.—Sinking ths main incline is making rapid headway. The grond in the hottom is qnite soft and works well.

Sucoor.—Driving ths main west drift to cross-cut on ths 550-ft level as usual. No changss of importancs.

Knickerbocker.—The pumps are gaining slowly on the flow of water, which still continues quite stong.

Chollaa-Potosi.—Owing to a need of repsirs to the foundations of the ore dump, no ore was taken from the mine from Saturday last until yestsrday morniag, whsn the usnal mining operations on ths old npper levels were resumed. Prospecting on the 1150, 1250 and 1300-ft levels is making the usual good progress. The main sonth drifts on each of these levels ars steadily advancing to the southward, and whenever everything is is readiness, the ledge will probably hs cross-cut on each of thess several lsvels ahout ths same time. This will afford a large scope of new and virgin ground, and the indications are that some favorable developments will be made. Sinking the new combination shaft is making favorable headway. It is now down 265 ft. The erection of the new hoisting works building is fast nearing completion.

Overman.—The face of the main south drift on the 1900-ft level is in very favorable ledge matter. It hss been advanced twenty feet dnring the week. The face of the main west drift on the 1100-ft level, is in hard blasting rock, bnt is making good progress. The drift sonth from the bottom of the winze on the 1100-ft level, is in a very promising character of ledge formation, and strong hopes are entertained of finding a paying hody of ore.

Imperial-Empire.—Stoping ore between the 1850 and 2000-ft levels goes steadily ahead, the ore body opening out even hetter than was at first expected, the ore is of a good milling quality, average assays of whioh range from $60 to $85 per ton. The east cross-cut on the 2000-ft level is still hsing pushed ahead with a little more favorable proapect than at any time in the pest. Otherwise nothing new to chronicle of the prospecting operations.

Leo.—Good progress continues to he made in driving the main north drift from the bottom of the winze; it is iu a distance of 56 ft today. The ground is still quite favorable for working; it shows a little more wster, but not enough to impede explorations. The face of the drift is still in a very promising character of ledge matter, carrying veins of ore of a fair quality and other favorable indications.

Sierra Nevada.—Sinking the new shaft is making the usnal good progress, the rook in the bottom blasting out finely. The west drift, at the 1100-ft station, is steadily advancing toward the ore vein, the rock belng somewhat harder than at onr last report. The north and south prospecting drifts, on the 700-ft level of the old shaft, are still driven vigoronsly ahead without change of valne to relate.

Caledonia.—Sinking the new shaft is making good progress. The flow of water at the hottom is still atrong, bnt is kept under good control. As soon as the necessary steam pipe arrives, which will he in a very few days, the connection between the boilers and the engines will he completed and the new machinery started into fnll operation. Sinking the old incline is making good progress.

South Comstock.—The cross-out is in 160 ft to-day, running in very favorable looking vein matter. No water. Face of drift shows indications of soon rnnning into good ore next to the hanging wall. From what has been met with thns far, it is evident that planty of good psy ore might ba found concentrated at a lower level.

Justice.—The old south mine is showing considerable improvement, and good bodies of pay ors being developed which promiss to be extensive. Mors quartz is being met with in th face of the maln sonth drift of the 800-ft level, and altogether Jnstice is looking up.

Buckeye.—Still draining watsr in shaft preparatory to resume the sinking of ths shaft. The new pumps are working finely and the watsr will now soon be drained. The new hoisting works bnilding is nearly completed.

Sullivan.—Sinking the new shaft proceeds at a lively rate under the sfficient direction of Saperintendent Kelsey. Rock hard but blasting well. Grading for the hoisting works also going forward energetioally.

North Cons. Virginia.—The water tank at the 400-ft station is ahout completed, ready to resume siaking. Everything in and about ths mins is in the best of shape for good progress as soon as the pumps are lowered.

Phil Sheridan.—The erection of the new hoisting machinsry is rspidly advancing toward completion. When once in good rnnning order, soms good results may he looked for.

Woodville Cons.—Owing to a strong flow of water sinking the shaft has been suspended pending the pntting in of a tank station and lowering of the pump, all of which is making rapid progress.

Nevada.—The ore developed by ths east cross-cut from the main south drift at ths lower tnnnel lsvel sbows continued improvsment and promises to be a valuahle acqnisition.

Union Cons.—The north drift on the 1300-ft level has cut duriag the wesk ssveral feeders and stringers of rich ore with strong prospects of the development of a fine paying hody.

Lady Washington.—The chamber of the pump tank at the 260-ft level is completed, the tank put in, and on Monday next it is proposed to commence lowering the sections of the heavy new Cornish lift-pump into position. The immense new pump engine with all its powerful and massivs gearing and accompanying machinery is arriving to-day and will all be here to-morrow, ready to be placed in working position forthwith. This engine is a duplicate in every respect of that recently procured for ths famous C. & C. shsft, Virginia City, and which has besn named ths "Big Bonanza" in honor of the big bonanza far down in the howels of the earth, which it is to so powerfully assist in developing. Who knows but this twin sister to the "Big Bonanza" may develop another hig bonanza at this snd of the lead, in the Lady Washington mine. Last Thursday, just befors this ponderous bit of machinsry was shipped from San Francisco, the *Alta* says, it was inspected by a nnmber of ths leading mining gentlemen connected with ths Comstock mines, and admitted that for size and beauty of dsign, splendid workmanship and completeness of detail has never been approached on this coast. The engine is a direct actiog pumping one, of 40 diameters, 8 ft stroke, with Davey's valve gear, made from the designa of W. H. Patten, a distinguished engineer of Virginia City.

California.—The main north drift on the 1550-ft level is steadily advsncing. Sinking the winzs from cross-cut No. 3 on the north 1500-ft level to connect with the north drift on the 1650-ft level is making fair progress. It is now down 48 ft, ths bottom in ore of an exceedingly rich character. In fact as rich, if not richer, ore than any that has yet heen developed in the mine. Cross-cutting and connecting the cross-cuts, by means of lateral drifts on the 1500-ft level, is still vigorously prosecnted. The main north drift on the 1400-ft level is still pressed vigoronsly ahead toward the Ophir line, The cross-onts on the 1500-ft level are opening up fine hodies of ore, and there seems to he no let-np to the valuable developments of the mine. The erection of the batteries and pan mill is going steadily forward without interrnption; everything advancing at as rapid a rate as is consistent with the durability and perfection of the work.

Utah.—Sinking the shaft is again being driven ahead with all possible vigor. The rock in the bottom works finely, but tbe flow of water is very strong. The new pnmps ountinns to handle the heavy stresm of water with the most perfect ease, and good speed is being made. No changes of interest in any of the prospecting drifts on the 400-ft level.

The machinery in the shop of the Wilmington manufactnring company is now in splendid running order, says the *Enterprise*. Work has commenced npon plain furnitnre, and as soon as the lumher is hetter seasoned, we expect to see some specimens of handioraft tnrned ont that will make all confess that Wilmington has taken a creditable position as a manufacturing town.

The wharf is complete at Santa Monica; four miles of trsck is laid; the locomotive is being pnt together; trains will he rnnning to Los Angeles in thirty days; the telegraph line is finished; the water pipes are being laid; and a weekly paper is to he issned some time this month nnder the title of the Santa Monica *Tribune*.

Clay suitable for the manufactnre of pottery has been fonnd on the Santa Barbara islands.

It is proposed to hridge the Los Angeles river pelow the mouth of ths Arroyo Seco.

An "Editorial Excursionist" Heard From.

In a recent number of the Spriagfield *Union*, we get the first rsgular invoice of editorial correspondence from onr friends, the Eastern exonrsionists, who parted from ns in this city a few weeks since. The letter allnded to is from C. W. Bryan, editor of the *Union*. We give the opening paragraph, as expressing a very fair and correct vlew of our somewhat imperfectly understood city:

"We havs now been a week and a day in snd abont San Francisco, and the rapidly passing days and nights have been crammed full of enjoyment ln looking at soma of the most prominent features of life oa the Pacific coast. We arrived hers at nine o'clock, on the svening of Friday, ths 16th, and after one of the refreshing night's rest, which tho climats of San Francisco is so famous for furnishing, we were ready, on Saturday, to look about ths city quietly and leisnrely. San Francisco is most thoroaghly cosmopolitan, both in its population and habits of life. Nesrly all nations, trihes and kindreds are represented hsre, and tne general propensity is to "go it alone," and for sach one to look nfter him or hersslf and to leavs one's neighbors to do the same. It is hard work to find ont from one person where another ona lives or what he is doing. Inquiries at the hotel offices ars almost sure to he responded to by a frank, "I really don't koow, sir," and in the stores and shops the city directory is quoted as containiag all that is or shonld be known abont the city or its peopls."

Ths Scientifio Press, in itsa accounts of visits to Cakland and other places with the editorial excursionists, took occasion to allude to the surpriss manifested by our Esstern friends at the floral display which the country spread hefore them. It is proper now that Mr. Bryan speaks for the party throngh onr colnmns, giving their impression of California flowers:

"L'ke everybody else, I had heard much of the marvelous beauty and wealth of blossom of the flowers of California, snd although the ssason of their glory and pride is far advanced, I was not prepared to ses such wonderful sxhibitions and floral display as was spread out on all sides, upon taking a drivs into the residence portion of the city, on the afternoon of the first day of our stay here. Onr carriage load of Eastern travelers had none of them heen to ths Pacific coast before, and one might well have thought that we were all jolly gresn in the mattsr of flowers, upon hearing our exclamations of surprise and admiration, as we drove abont the city. Such fnchsias, trained up to and covering the second story windows of the houses, or standiag out in trees of many feet high, and weighted with richly colored huds and hlossoms. Snch vines of ivy geranium, one solid mass of leat and flowsr. Snoh roses of every imaginable name and kind. Such ivies, with leaves largs enongh for mother Eve to have covered hersslf with quite comfortably if they grew as large in her day. Such heds of verbenas and snch patches of heliotrope. I thonght I had seen fins spscimsns of all thess beauties before, hut I had nsvar seen anything like these, and I shall look at my own little handful of flowering plants and shrubs, which I have heretofore tended with so much gratification, as most feeble attempts at the cnltivation of flowers. A sight of the flowers of California cannot hut have the effect of seriously dwarfing the home productions of those who havs seen the floral products of the Pacific coast, at least as far as regards size of vine and wealth and profusion of hlossoms. The gersninms, which flourish equally well here with other flowers, a few of which I have named, and scores of others as rich and heantiful, not enumerated, are past their prime, and now fadiug in hlossom, bnt after a short respite, they will again renew their life when the rainy season commences, and tbns keep up their round of almost perpetual bloom aud heanty."

In a still later nnmber of the *Union* the touring editor has a long and very interesting letter devoted to an account of a visit to the mines of Virginia City, Nevada. As a mining letter it is far more appreciative than most of the correspondence of transient visitors from the East. It is perfectly candid in tone, the style is qnite attractive, and it will no doubt add much to the interest of the excellent paper for which it was written. Still some allowauces are called for when our late visitor undertakes to portray the moral, or rather the immoral aspects of a mining camp. The ways of California and Nevada miners are not the ways of the people of the farming and manufacturing districts of New England. In fact they are so dissimilar that neither is qualified to sit in judgment on the other in matters of propriety. Even California and other new country farming has been imperfectly nnderstood by Eastern agriculturists, just as *they* are misnnderstood by those of England; but mining belongs to a still farther advanced stage of pioneer life and has, accordingly, suffered even more than American farming at the hands of the semi-classio critics. We only wish our Eastern friends could have passed twelve months instead of twelve hours in one of our first-olass mining camps, so that they could have learned something of the real character of onr miners.

Instead of retaliating hy turning the magnifying glass npon the social defects of our Eastern and foreign neighhors, we will relate for their edification a circumstance which occnrred in a rnral district where we resided a good many ysars ago. An old Scotch lady called upon anothsr old lady of the same nationality, and after devoting the early part of her visit to a scrutinizing survey of her husy neighbors' ceilings, she rendered the following decision in a cool, self-sstisfied manner: "Ys dinna find cob-webs in *my* house, Mrs. Mac?" "Hoot!" exclaimed the indignant Mrs. Mac, "*I dinna come to your house to find cob-webs.*"

"Solid Silver."

Exhibit of Messrs. Schulz & Fischer.

Among ths noticeabls things to he seen at the Mechanics' Institnte Fair we mnst mention the exquisite works exhibited by Messrs. Schulz & Fiseher, which attract much attention, and furnish striking svidence of the perfection to which ths manufactures in the precious metals have been carried in this city. We have in this exhibit a union of art and manufacture; a combination of the imagining of ths artist, and the embodiment thereof hy the skilled artificer, shown to good advantage.

That which naturally first strikes the sye of the beholder is an elegant center piece, surmounted with a chased figure, and having a square foot with a satin finish. The figare supports two elegantly wrought bowls—ons on sither side, and designed for holding frnit. The piece is further ornamented on either side with figures of a dragon or sphynx.

Near this is another center piece, round in construction, ornamented on either side with a bird flying to its nest, in which are conspicuously displayed its complement of eggs. This piece has a chased foct, and stands abont eightesn inches high.

We have next a beautiful nnt dish, ornamented with silver whits water lillies, having golden stamens. Near by is seen a satin finished caster artistically engraved. There ars also shown pitchers, goblets, cups, fish knives, pie and caks knives, together with a general assortment of silver table ware.

How Such Ware is Made.

The curions observer, not acquainted with the manipulations of ths silver manufactnrer's art, is desirous to learn how such exquisite forms and tracsry are wronght out from solid silver. The modes of manufacture; the shaping of the metal; ths embossing, chasing, sngraving, etc., cannot, of course, he fully described within ths limits of a nswspsper column. A few points only can he hrought ont, from the study of which ths reader may possibly form a more or less distiact idsa of how these and similar exquisite productions are hronght out.

The stamping of a spoon, knife or fork from the rolled siver plate is readily nnderstood. The smbossing and figaring npon ths surface of such articles is readily accomplished by running thsm between properly preparsd rollers. Bnt how are these elegant centsr pieces, pitchsrs, cnps, etc. produced, whose form does not admit of their bsing thus passed between rollers.

All such pieces of silvsr ware are hnilt up in sections. The ornaments are more or less advanced on these sections before they ars soldered together; hnt ths finishing tonches are of conrse made after the form of the artiole is completed. In the varions processes of embellishment, various devices aie employed. The shape of an article is hrought out, where possible, by stamping; but when ronnd forms are desired, and those not often repested, solid wooden forms are first prepared, upon which the thin rolled sheet of metal is placed, and gradually molded into form by pressure applied hy smooth, blunt hand instruments. A lathe is used where practicable. Square and oval work is all hammered into shspe hy hand, upon iron tools.

Whenever figures are to he brought ont in relief upon articles where stamping cannot he applied, the work is accomplished hy an instrnment working hy pressure npon the inside, while tiny chisels or chasing tools are employed upon the ontside. In other words, the figures are literally hammered into shape. It is aston ishing to observe what delicate tracery and figures can be thus hrought ont. The art is a most exquisite one, and proficency therein is attained only by much practice, aided by an an artistio eye and superior skill.

When indentions alone are required, the vessel, if hollow, is filled with a composition of pitch and plaster of paris, whioh is extremely hard when cold. When thus filled, the vessel forms a slightly yielding, solid hody, capahle of receiving most delicate impressions upon its onter surface with tiny hammers and smooth, hlnnt chisel points. These operations are known as chssing and embossing, and carried on without removing or cutting away any part of the metsl.

Eograving, as well known, consists in cutting away portions of the metal by whioh certain figures are made to appear as cut into the same.

Of oourse much machinery and numberless tools, dies, etc., are called into requisition in carrying on the silver manufacturers' business. A visit to the establishment of Messrs. Schulz & Fischer furnishes abnndant evidence of this fact. It is wonderful, also, to those who can recollect the imperfect appliances of the olden time, to witness the improvements which modorn mechanism and late inventions have introduced. As an illustration, we may remark that twenty-five yesrs ago two dozen table forks, or spoons, was considered a good week's work for an expert workman, for whioh he received $12; while to-day no man would he considered a good workman who was not ahle to turn out three dozen a day of an eqnally elaborate article—an increase of 900 per cent. in tho economy of labor.

(Continued from Page 194.)

standard British ounce. The equivalent quotation in New York for fine bars is 1 21 to 1.22 per standard ounce, which is the lowest point ever reached. The price indicates that the ratio of the value of gold to silver is as 17 to 1. The price in United States gold of the quantity of bullion contained in a dollar of our new coinage is 88.0—or to state it in other terms, the silver bullion price of gold—the silver unit being 25 grains 9-10 fine—is 113.6. At the time the London quotation was made, the gold price of United States silver coin was quoted in New York at 92 to 95 cents, showing the silver coin price of gold to have been from 108.7 to 105.3, according to the fineness of the coin ascertained by the date of the mintage and also by abrasion. The greenback price of gold was quoted at the same time at 117, showing the gold price of greenbacks to be 85⅞. Since these prices existed greenbacks have advanced and silver has declined, so that the former are really at a higher rate than the latter, and it would seem that silver would prove more profitable for circulation as money at home than for use in the arts or for exportation for coinage abroad.

Orange Culture.

We devote a portion of our space this week to the valuable essay on orange culture, delivered before the Agricultural College of the University on Friday, September 10th, by our esteemed correspondent, Dr. Strentzel, of Martinez:

In treading the dim vistas of Greek mythology, he said, the golden fruit of the Hesperides captivates our attention according to our experience with the rugged climate of the northerly zone. No other tree spreads that halo of desire to roam under the shade of its umbrageous foliage, glistening with the full vigor of life, its virgin, pure and fragrant flowers, and its richly colored fruit filled with delicious cooling juice, or so vividly leads our imagination along the banks of Pharphar and Abania, the oriental abode of the blessed. California, blessed with a most congenial climate for the development of physical nature, with a soil rich in all essentials of fertility to support plant life, calls as to renewed efforts to deck every sunny nook of our favored land with this growing glory of Pomona's realm. Happily, our experience already gained, enables us to accelerate the pace of our progress in that direction, and we can proceed with magisterial perspicuity to guide the new comer in his toil.

The family *Citrus* claims her home in tropical Asia, but has spread in the wake of civilization to the other quarters of the globe with remarkable rapidity, occupying its fairest and choicest parts. To the active commercial intercourse of the Moors, at a time when other nations were sunk under the barbarism of the feudal ages is ascribed the introduction of the bitter orange into the countries bordering on the Mediterranean. Subsequently, the Portuguese, through their early communication with China, where sweet oranges were cultivated from the earliest antiquity, introduced into Portugal a successful propagation, the stock of those varieties which spread over Spain and thence were transplanted to America by the early followers of Columbus. Considering the tardy interchanges of those days, it is surprising how soon the orange took possession of the warm zone of this continent and the adjoining islands, which can only be accounted for by the inherent vitality of the plant, and its adaptation to varied climatic conditions. Thus we are justified in hoping that with the present knowledge of pomology and the facilities of disseminating valuable varieties, we shall be able not only to improve on the best now cultivated here, but to extend the area of its culture, at least, as a house plant, to every homestead in California.

Varieties of Orange Fruit.

The early horticultural writers found numerous varieties of the genus *Citrus* which they grouped under several divisions as the orange, the lemon, the lime and the citron. I feel myself justified in asserting that this family of plants claimed under the eighteenth class of Linnaeus, *Polyadelphia polyndria*, could be properly subdivided into two species, easily distinguished and identified by unmistakable characteristics. First, the orange, *Citrus Aurantium*, with dark colored, irregular serrated leaves, flowers entirely white, fruit globular, orange-colored rind, and the pulp of acidulous and bitter or sweet and spicy flavor. The essential oil contained in the leaves, fruit and rind, is easily distinguished from that of the lemon by its milder and more agreeable perfume; whereas, that obtained from lemon carries a turpentine odor. Second, the *Citros-Citrus Lemonum Medica*, or *Limetta*, with pale, green leaves, deeply, obtusely serrated and wingless, the white flowers mostly tinged with purple on the outside, the fruit oblong, the pulp pale and often insipid or acid,

Every county in California possesses bearing orange trees reported as doing well. It does not follow, however, that they can be grown profitably on any and every spot we may choose for an orangery. Favorable conditions must be considered, as shelter from heavy winds and cold currents of air, exemption from hard freezes, rich, deep, mellow soil, free from stagnant water, and also a plentiful supply of water for irrigation during the dry season. Experience and observation must be the guides in selecting these thermal spots. They abound along the foothills of the Sierra, through the central plains, and the innumerable sheltered little valleys of the Coast range, and around the bay of San Francisco.

It will be well to notice that the lemon, lime and citron are more sensitive to frost than the orange, which, when full-grown, will withstand a lower temperature, several degrees below the freezing point, if anyway sheltered afterward from the rays of the sun. If not so shaded, the sap expands suddenly in the sun heat, the bark splits along the branches, and they wither and die. In Italy and Spain young trees are planted along walls and embankments, furnishing facilities to adjust movable sheds and screens as economy may suggest, to be moved on the advent of steady warm weather. In California small trees are sufficiently sheltered by placing bushy branches of evergreens around and over them. Old grain and potato sacks will answer, or the shelter can be more ornamental as fancy or ample means may dictate. A copious showering of water at sunrise after a freezing night, is extremely beneficial in saving larger trees. Should the frost be too severe, and the foliage be killed, it is best to cut the top down at once to a point apparently sound, and new sprouts will soon renovate the tree and come into bearing. If a bearing tree is thus frost-killed, the green fruit should be gathered and dipped in water, then placed in the shade, and when dry, packed in flat, covered boxes. It will soon ripen and become quite palatable.

Protection of Orange Groves.

Noticing the beneficial effects of windbreaks—a shelter by evergreens—I have heretofore suggested the planting of alternate rows of eucalyptus, on account of their most rapid growth. This was objected to by some on the ground that the Australian giants would reach a stature of several hundred feet and smother the nurselings. That very tall and upright slender growth would be just the thing, the towering tops condensing moisture, thus counteracting sudden atmospheric changes and affording the most efficient and economical means at hand to ward off the effects of ice and frost. Some kind of shelter, either from the burning rays of the sun or a sudden depression in temperature, is recognized by every horticulturist as necessary to promote the growth of many varieties of trees, especially evergreens. The orange culturist should never omit providing ample means of protection against destructive extremes of temperature, which, though possibly occurring only at long intervals of time, are still most serious when they do happen, destroying the labor of many years in a few hours. It appears that during dry winters there are more intensely cold nights and mornings than during seasons of abundant rainfall.

The orange tree requires copious watering during the dry season. It is a surface feeder. The numerous rootlets spread in the ground, forming a spongy mass of fibers, which exhaust moisture rapidly. The curling up and wilting of the leaves denotes a deficiency of moisture, which causes also a shrinkage of the fruit. The large quantities of fruit raised on full grown trees impoverish the soil, necessitating a liberal supply of well decomposed manure. This should be applied during the winter months, thus promoting its decomposition and providing a supply of nourishment during summer growth.

A thrifty tree makes a luxuriant spread of shoots thickly covered with foliage, which afford some protection to the body of the tree during winter, so the pruning of crossing branches should be delayed until the spring growth is evolved; and on bearing trees still later, until the tiny blossom buds begin to show, that the process may be done with discrimination, saving the blossom buds and thinning out barren branches. The long thorny spikes should also be clipped off, thus avoiding injury to the fruit and promoting the growth of bearing wood in their place.

Precaution Against Overbearing.

Thinning of the fruit is often required to prevent injury from overbearing, one of the main causes of decay in lemon and orange trees alike, which shows itself at once in the topmost branches, by the leaves turning pale and yellow. The bark at the same time shrinks and is covered with discolored blotches, similar to those on overbearing peach trees, and the fruit is stunted. Such branches should be shortened in or pruned out at once, and the ground at such distance from the stem as not to injure the roots, should be loosened up with a pick or a pronged hoe and the whole surface mulched.

Profits of Orange Culture.

In locations favorable to growth and perfect ripening, the yield of fruit and its market value are almost fabulous. The Floridians claim 300 bushels and upwards to the acre—an Australian St. Michael is reputed as bearing twenty thousand oranges in a season; our growers report one to three thousand per tree. Multiply these numbers by the price according to market quotations for large assorted fruit, and the result is astounding. Good judgment and well directed labor are required to insure success, even in turning the Golden Apple of the Hesperides into drossy gold. The prize is great, but it must be won by honest toil.

General Hints on Orange Growing.

In planting, select the plumpest seed and plant it fresh in boxes with perforated bottoms, the sides about eight inches high, filled up with rich, mellow soil that will not bake, dropping the seeds five inches apart and covering them one inch. Keep the box in a warm room and the soil damp. When the young plants appear, give them plenty of air and sunshine, and sprinkle them every evening with slightly tepid water. If no frost is apprehended, and the nights are warm, keep your boxes out of doors sheltered from the winds and burning sun. The seedlings should attain the hight of twelve or eighteen inches during the season, but be not too ambitious to stimulate exuberant growth, rather shorten in, the rampant shoots and secure a stocky symmetrical growth. During the winter keep them in a dry, airy place with a temperature never under 33 deg. and not much over 60 deg., and in the spring transplant them to larger and deeper boxes. This is the time to graft them over. If you know of a tree bearing superior fruit, even if it is a seedling or a particular foreign variety from which you could obtain scions, do so at once, as these early grafted trees make a healthier and more rapid growth than those grafted when the tree is older. Except in very favorable locations the young trees should remain in boxes, the second year affording a greater facility for sheltering during the winter, and be transplanted to the open ground the third year. The distance between trees planted in a grove will be controlled by the space at command; if twenty or more feet is required in large plantations and a Southern clime—a small grove will do well if planted twelve to fifteen feet apart, as it will require ten to twelve years to fill that space. The orange is a rapid grower under favorable conditions, but may remain stationary if treated inconsiderately. Holes for the reception of the trees should be at least four feet in diameter and as many deep. The bottom of the hole, if covered several inches deep with broken bones, charcoal, etc., would facilitate drainage. Young orange trees can be transplanted at almost any time if known precautions are observed to move them with the adhering ball of earth covering all the roots; plant them about six inches higher than the surface had to allow for gradual settling of the loosened soil. Deep planting should be cautioned against, as it sickens the trees and retards their growth.

Following the general directions as here given, is all that is required to realize your dream of winning this last and best of Pomona's gifts, and the tree clothed ever in living raiment, star-decked and crowned with gold.

Taking an Advantage of Nature.

There is, in the machinery department at the Mechanics' Fair, a model of an improved derrick, though exceedingly simple in construction, is very ingenious in design. Its object is to provide means whereby the guys may be more readily adjusted, and the old laborious way of swinging the derrick more easily accomplished. By simple force of gravitation the weight becomes the means to swing the derrick.

The heel of the upright support or derrick is set on a pivot on a horizontal eccentric, so that by turning the small crank the main support is thrown slightly off the center and the weight on the pulleys naturally seeks the lowest place. By this means after the weight to be moved is raised from the ground on the derrick arm, by throwing the support one way or the other off the center, the load swings to the lowest point by force of gravitation. In this way the force of nature is taken advantage of and the load deposited in any direction.

This improvement may be applied to any derrick now in use, and will facilitate the labors of quarrymen, foundrymen, bridge builders and all interested in the use of derricks and cranes. The man who rases the load with the windlass also moves it to its position without leaving the windlass, so there is no necessity of any one going under or near the weight to move it. With the old style arrangement the guys were always troublesome. As the load was moving round the strain on one guy would be suddenly transferred to another with a surge, which oftentimes, with a heavy weight, would pull the whole structure down. In the case of this arrangement the strain is gradually and slowly transferred from one guy to another, there being no possibility of the load swinging otherwise than directed by the movement of the crank which operates the eccentric.

TEACH BOYS THE USE OF TOOLS.—It is to be regretted that there are not schools to teach boys the initial principles of working hand tools, since this knowledge is essential to the proper understanding of how to use them. Simplicity in the form of an implement by no means implies facility in its use; indeed, it may be said that the more simple the tool, the greater is the skill required to use it properly and with maximum effect. Not every operator excels with pocket knife, axe, or saw; and, with the use of every tool, there is involved the demonstration of a definite principle.

THE enormous locomotive, "Modoc," on the Pennsylvania road, which is capable of drawing eighty loaded cars over the average grades of that road, has been eclipsed by another engine lately finished for the same road which is seven tons heavier and is believed to be equal to hauling one hundred cars with average loading.

ANCIENT MACHINERY.—One of the latest discoveries in Pompeii is a small woolen factory, situated near the house where the fresco representing Orpheus was recently discovered. Several charred fragments of tapestry were found in this place, besides various machines for carding and weaving wool.

Machinery at the Mechanics' Fair.

Among the largest contributors at the Mechanics' Fair, in the line of machinery, are Messrs. Gregory & Co., and they deserve special mention for the interest they have taken in the success of this Exposition, and for their fine exhibition of machinery which occupies so important a position in this development of the interests of our coast. The wood working machines, several of which are in operation, are manufactured principally by Messrs. J. A. Fay & Co., of Cincinnati, Ohio, who are said to stand at the head of the list in their specialty. This progress which they have made in the last few years is certainly wonderful. Compare for instance the old fashioned fort mortiser, or the more recent but still crude power machines, with the beautiful compound bed automatic reverse motion machine on exhibition. The Pacific planer and matcher—a machine made expressly for use on this coast, and calculated to work rustic and stick mouldings if required—deservedly attracts much attention. It is to be regretted that lack of space prevented Messrs. Gregory & Co. carrying out their original intention to exhibit *all* of their machines in operation. This new moulding machine seems to possess many points of excellence over similar machines of other makes, and the regret is universal among mechanics that it is not in operation.

We note great advancement also in the other sash, door and blind machines exhibited by the same manufactories. The sawing machines of various kinds in which Fay & Co. have always maintained a supremacy, seem as near perfection as possible. The new machine called the "Wood Worker," seems capable of an endless variety of work, and is particularly adapted to planing out of wind, surfacing straight or tapering work, rabbeting door frames, etc., rabbeting and facing inside blinds, jointing, beveling, gaining, chamfering, plowing, making glue joints, squaring up bed posts, table legs, newels, etc., raising panels either square, bevel, or O. G., sticking beads, working circular molding, ripping, cross cutting, tenoning, etc.

The exhibition of Tsnite emery wheels and machinery by the same firm is also interesting. The emery wheel within the past few years has worked an entire revolution in the foundry and machine shop, the file in some instances having almost become a thing of the past. They are also rapidly making a place for themselves in the saw and planing mills. They may truly be called labor saving machines, and ere long will occupy a prominent position in every shop worthy of the name in the country. The Sturtevant blower, the pioneer among fans, still keeps up its ancient reputation for efficiency and noiselessness; besides the No. 8 on exhibition with the rest of the Messrs. Gregory's machinery, one of the smaller sizes may be seen further down the hall driving the large Turbine windmill, which in turn drives two force pumps. Walking down among the pumps, we find a fine assortment of Blake steam pumps also exhibited by H. P. Gregory & Co. We note particularly a large double acting plunger mining pump, 20 in. steam cylinder, 10 in. plunger, and 24 in stroke; this pump did not arrive from the East in time to be put in operation. The removable cylinder mining pump, also attracts its share of attention as well as the large fire pump in operation; although at present discharging through a 3 in. nozzle through but one of its outlets, it is capable of throwing four powerful streams simultaneously.

We understand there is to be a test of steam pumps before the close of the Fair, to be conducted by a committee of scientific and practical engineers. This is as it should be, for without such a test no satisfactory determination can be arrived at as to their respective merits. The tests should be thorough and exhaustive. The people of this coast, who are such extensive users of steam pumps, have the right to know what they are buying.

The Blake steam pump is made specially for miners' purposes, and is so well known on the coast as to need little description from us: the novelty in this pump is the removable water cylinder. In places where space is so limited as not to admit of a plunger pump being used a piston pump is the only substitute. Owing to the gritty nature of mine water, objections have been advanced against the use of piston pumps, on account of the rapid destruction to which the cylinders are subjected; thence the introduction of a removable cylinder that may be detached from the pump, almost instantaneously, without disturbing any other part of the pump—a matter of vital importance, when a pump in a mine cannot be stopped more than half an hour without flooding the gangways and resulting in heavy loss. With one of these pumps supplied with a duplicate cylinder a mine is safely protected against such disasters. Any sized cylinder may be used in this pump—as an illustration: as a shaft is deepened it becomes necessary to increase power, which may be readily accomplished by reducing the diameter of the pump cylinder. By the use of this patent cylinder a 14 inch cylinder may be reduced to 4 inch, or any desired diameter in a very few minutes. Each part of these pumps being manufactured to a uniform guage enables the ready substitute of a new part in the place of one that has been injured or worn out.

THERE are twenty-three miles' length of pneumatic tubes now in operation in London, used for sending telegraph messages.

Useful Information.

Fifty Dollar Recipe for Tanning Fur and other Skins.—Remove the legs and useless parts, soak the skin soft, and then remove the fleshy substances, and soak it in warm water one hour. Now take for each skin, borax, saltpetre and Glaubersalt, of each one-half ounce, and dissolve or wat with soft water sufficient to allow it to be spread on the flesh side of the skin. Put it on with a brush thicker in the center or thickest part of the skin, and double the skin together, flesh side in; keeping it in a cool place for twenty-four hours, not allowing it to freeze. Then wash the skin clean, and take sal-soda, one ounce; borax, one-half ounce; refined soap, two ounces; melt them slowly together, being careful not to allow them to boil, and apply the mixture to the flesh side as at first. Boil up again and keap it in a warm place for twenty-four hours; then wash the skin clean again, as above, and have saleratus, two ounces, dissolved in hot rain water sufficient to well saturate the skin; take alum, four ounces, salt, eight ounces; and dissolve also in hot rain water; when sufficiently cool to allow the handling of it without scalding, put in the skin for twelve hours; then wring out the water and hang up for twelve hours more to dry. Repeat this last soaking and drying two or three times, according to the desired softness of the skin when finished. Lastly finish, by pulling and working, and finally rubbing with a piece of pumice-stone and fine sand paper. This works like a charm on sheepskins, fur-skins, dog, wolf, bear-skins, etc.

The Silk Harvest of the World.—According to a report, just published by the Syndicate of the Lyons union of silk merchants, the silk crop of last year was, in round numbers, 9,050,000 pounds of raw silk, while there were exported from Asia 11,500,000 pounds, making upwards of twenty and a half million pounds of raw silk available for European consumption. The countries included in the report are Italy, France (with her dependencies, Corsica and Algeria), Spain, Greece, the Turkish Empire, Georgia, Persia, India, Japan and China. The first and the last together supply four-fifths of the silk used in Europe. China, exported, chiefly from Shanghai, upwards of 8,000,000 pounds. The crop of Italy amounted to 6,300,000 pounds. France supplied 1,600,000 pounds; Spain, about 310,000 pounds; Greece less than 30,000 pounds; the Turkish Empire, 1,180,000 pounds; Georgia and Persia together, 880,000 pounds; India (from Calcutta), 935,000 pounds; Japan, something over 1,200,000 pounds.—*Scientific American.*

An Ancient Tunnel in Algiers.—Several civil engineers, engaged with the surveya for a water conduit from Touja to Bougie, have made a very interesting and important discovary. A mountain which was situated in the proposed line of the conduit was to be tunneled for a length of 500 yards; and in searching for the most suitable place the engineers discovered an ancient tunnel six feet eight inches in hight, and nineteen feet eight inches in circumferance. It is supposed that this is the same tunnel mentioned in an epigraph found at Lambaec, according to which the tunnel was built in the reign of Antonins Pius, the plans being proposed by a veteran of the Third Legion named Nonius Datus. Finding works like this after a time of two thousand years, we cannot but be greatly astonished at the power, energy and genius of a nation which produced, with the limited means available at those times, such gigantic structures.—*Stummer's Ingenieur.*

An Easily Made Ice Box.—To make a cheap refrigerator, procure two dry goods boxes (or make them), one about eight inches smaller than the other. Procure some thoroughly dry and clean sawdust, sift it and pack the space between the boxes therewith as solid as possible, making a cover (and packed it also) to shut tightly; put a small pipe from the bottom of the inner box to the outside of the outer one, to draw off the water as the ice melts. On the inside box nail cleats on which to place racks made of lath. The ice is placed at the bottom, and whatever you wish to keep cool, such as butter, fresh meat, cream, etc., is placed upon the racks. Such a box is also excellent to keep articles of food in when there is no ice in it.

To Prevent Splitting of Handles.—All carpenters know how soon the butt ends of chisels split, when daily exposed to the blow of a mallet or hammer. A remedy suggested by a Brooklyn man consists simply in sawing or cutting off the round end of the handle so as to make it flat, and attaching by a few small nails on the top of it two round disks of sole leather, so that the end becomes similar to the heal of a boot. The two thicknesses of leather will prevent all further splitting, and if in the course of time they expand and overlap the wood of the handle, they are simply trimmed off all around.

An Example Worth Following.—Last fall twenty young men and woman of Springfield, Mass., who wished employment, associated themselves together, paid in a small capital, hired a workshop and boarding house, and began manufacturing toys, table mats and baskets. They laid aside one-fourth their wages to accumulate as capital, and in six months saved $1,427 from their wages and $350 in board and washing, making a total saving of $1,874 by this system of self support.

Wonderful Shooting by a Japanese in England.—One or two anecdotes about the wonderful Japanese marksman at Wimbleton may be selected from the vast number which are going the rounds. At Hythe, Major Muretta was pitted against one of the most celebrated musketry instructors in the camp, an officer who can, to use a familiar phrase, "face the target," that is, can say where he is going to place his shots, and then do it. The Japanese major saw everything that the English lieutenant was able to perform, and immediately proceeded to cut him out in a manner that amazed all beholders. At Ash, near Aldershot, he was purposely misinformed as to the distance of a range, the number of yards being given him as 800, whereas in reality it was 1,000. Major Muratta said nothing, but calmly sighted his rifle, and firing, hit the bull's eye. This he did again and again, and when he was told that he had been deceived in the distance, his reply was that he had not been deceived at all.

Chinese Ingenuity.—The Chinese take a curious method to prevent their pigeons from being attacked by birds of prey while circling over the cities or moving from place to place. This consists in the employment of small, short cylinders of reed pipe, in groups of three or four, or more. These are attached to the back of the bird, and so adjusted that as it flies through the air a very sharp sound is produced. Varying lengths of the bamboo give variety of tones to this instrument; and when large numbers of birds are flying together in a flock, as is frequently the case, the sound produced by them is distinctly audible for a great distance. It is said that rapacious birds are effectively repelled by this precaution, so that the pigeons make their flights with perfect safety from one point to another. Varnish is used for coating these bamboo whistles to protect them from moisture. This practice is said to have been in vogue among the Chinese for a great many years.

Farmers' Paint.—Farmers will find the following profitable for house or fence paint; skim milk, two quarts; fresh slacked lime, eight ounces; linseed oil, six ounces; white Burgundy pitch, two ounces; Spanish white, three pounds. The lime is to be slacked in water, exposed to the air, and then mixed with about one-fourth of the milk; the oil in which pitch is dissolved to be added, a little at the time, then the rest of the milk, and afterwards the Spanish white. This is for white paint. If desirable, any other color may be produced; thus, if a cream color is desired, in place of part of the Spanish white use the ochre alone.

Copper Amalgam which Adheres to Glass or Porcelain.—To produce this take from twenty to thirty parts of copper in powder obtained from the oxide, either by means of hydrogen or by precipitation of the sulphate with the aid of zinc; mix this with sulphuric acid and with seven parts of mercury, and mix all together with great care. The acid must then be washed away with hot water, and the amalgam be allowed to dry. At the end of ten or twelve hours the mass will be sufficiently hard to take a brilliant polish. We are told that while the amalgam becomes soft with heat, it does not contract from the effect of cold.

Good Health.

Learn about the Pulse.—Every intellectual person should know how to ascertain the state of the pulse in health; then by comparing it with what it is when he is ailing, he may have some idea of the urgency of his case. Parents should know the healthy pulse of each child—as now and than a person is born with a peculiarly slow or fast pulse, and the very case in hand may be of that peculiarity. An infant's pulse is 140; a child of seven, about, 80; and from twenty to sixty years it is 70 beats a minute, declining to 60 at fourscore. A healthful grown person's pulse beats 70 times in a minute; there may be good health down to 60; but if the pulse always exceeds 70, there is a disease; the machine is working itself out; there is fever or inflammation somewhere, and the body is feeding on itself; as in consumption, when the pulse is quick—that is, over 70, gradually increasing, with decreased chances of cure, until it reaches 110 or 120 when death comes before many days. When the pulse is over 70 for months, and there is a slight cough, the lungs are affected.

Inoculation for Bee Stings.—Mr. G. Walker gives an interesting account in the British *Bee Journal*, of a series of experiments on inoculation by bee poison. The method of procedure was to permit a bee to sting him on the wrist, care being taken to obtain the largest amount of poison. On the first day this operation was performed twice. The effect was a severe superficial erysipelas, with the ordinary symptoms of inflammation. After a few days, these symptoms having disappeared, he caused the insect to sting him three times in quick succession. Though the erysipelas inflammation was not so severe, a stinging sensation extended up to the shoulder, and an enlargement of lymphatic glands in the neck showed that the poison had been absorbed into the system. A few days after wards he again received three stings, which were attended by symptoms of less intensity. After the twentieth sting, there was only a slight itching sensation for a short time in the immediate vicinity of the wound, and the effects of the inoculation appeared to be satisfactory.

Beans in Punctured Wounds.

A physician in Lynn, Mass., having been asked his experience in the treatment of punctured wounds, thus gives it in the *Medical Investigator*:

More than thirty years ago, when the writer was a little lad, he was standing upon a load of hay, fork in hand, when the horses gave a sudden start. I made a violent effort to prevent falling off the load, and in so doing drove the tine of the fork into the top of my foot. The boot at the instep was cut open, so the foot received the whole force of the blow. It was a bad wound. My father feared I would be a cripple. One of the laborers was a backwoods man, a sort of a botanic doctor, who agreed to cure me that day, and related the following case as a comforter: "Last year I saw a man fall from a load of hay, fork in hand. The handle of the fork stuck into the ground, and one tine through the man's thigh, suspending him from the ground. He was taken off the fork, carried to the house, and a common white bean split open and the flat side of each half bound dry upon either wound. The man could walk the next day; and in one week was again at work in the field." I was was placed in bed, a bean split open, and one-third bound dry upon the wound. For an hour I was still with pain (I was actually crazy), but finally went to sleep, and after about two hours of sleep awoke, with the foot well.

The cases from practice under my care are as follows: Miss ——— was running across the garden, in the spring, when she stepped upon a garden (iron-toothed) rake which had been housed under the snow, running one tooth through her shoe and great toe, splitting the nail both ways. It was removed, the wound washed, and the half of a bean bound upon the top and bottom of the toe, and she kept about her work every day, though all her friends were sure she would have "lock-jaw."

M. stuck a rusty nail into the bottom of his foot. Two hours later I saw him, with his foot very painful, top of foot badly swollen, and he was having frequent chills. I gave him some remedy, cannot tell now what, and applied the split bean. For several hours he was almost wild with pain, but he went about his business three miles from home next day, and had no more trouble. I might relate other cases, but wait for others.

Reducing Obesity.—M. Philbart, a French scientist, proposes an improved system of reducing obesity, the basis of the regime resting on the prevention of the introduction of carbon into the body, or on favoring its transformation, and augmenting the amount of oxygen; the food, therefore, to be non-nitroganous, varied with a few vegetables containing no starch, and some raw fruit. The temperament of the patient is also to be kept in view; the lymphatic to have a red diet, such as beef, mutton, venison, bare, pheasant, partridge, etc., and the sanguine a white diet, like veal, fowl, pigeons, oysters, etc. Vegetables not sweet or farinaceous, are allowable; also grapes, gooseberries, apples, etc., but sugar, butter, cheese, potatoes, pastry, rice, beans and peas, are prescribed. The hygiene consists, in this system of treatment, in favoring the action of the skin, in wearing a tight roller to support the walls of the abdomen, in taking plenty of exercise on foot or on horseback; also playing at billiards, fencing, swimming, gymnastics and kindred diversions. In some slight respects only does this method of M. Philbart differ from others brought forward of late years, but great merit is claimed for it.

Cure for Ivy Poison.—The Ohio *Farmer* has this cure for ivy poison: It is to dissolve sugar of lead—a bit the size of a hazlenut—in half a teacup of sweet milk or warm water. Apply as warm as can be easily borne with a soft, linty rag. Three or four applications are sufficient to effect a cure. If the poison is on the face and nearing the eyes or mouth, this astringent wash may be constantly employed. It is a marvelous cure, and by watching closely one can see the fevered blisters turn white to yellow during the application. This remedy for ivy poison should prevent a great deal of suffering. It is well where a member of a family is easily poisoned, to keep sugar of lead in the house all the time. Let it be labeled and kept where it can be found the moment it is wanted. Keep it well wrapped up, that it may not lose its strength.

The anæsthetic effects of alcohol are sometimes manifested in a surprising manner. An old case is that of a drunken man who lay down near the top of a lime kiln, with one foot resting on a lump of lime stone. The fire crept through the furnace until his foot became a blackened cinder, but his sleep was not interrupted, and the first intimation he received was when he awoke at daylight and attempted to stand. Lately a similar circumstance has been reported from England. A drunken man laid down before a fire and remained there until the front part of his body was literally roasted. He died in a few hours after being found.

An English life insurance company has kept a record of the mortality between teetotalers and moderate drinkers, and ascertained that the mortality of the former class was twenty-six and one-half per cent. less than among the latter.

Domestic Economy.

Condiments—What are They.

According to Dr. Lethehy, "they are mainly stimulants of the digestive organs, promoting the flow of saliva, gastric juice and other intestinal secretions, and increasing the peristaltic movement of the viscera. Thus they aid in the processes of digestion, and by giving flavor to the food they whet the appetite and so increase the relish for it. Food is made more palateable, and digestion promoted."

Many eschew condiments entirely, and to manifest advantage. William Cullen Bryant, in a letter published a couple of years ago in the *Herald of Health*, said: "Even with my food I do not take the usual condiments, such as pepper and the like."

They contain no nutriment. Where used, they should be free from adulteration, of the best quality, and of the finest kinds. Pot herbs are often used for condiments, especially for broths and soups. The best of condiments used in moderation are doubtless useful, though not essential to high health. Flint, in his great work on physiology, says of them: "The refinements of modern cookery involve the use of articles which cannot be classed as alimentary principles. Pepper, capsicum, vinegar, mustard, spices, and articles of this class, which are so commonly used, with the various compound sauces, have no decided influence on nutrition, except in so far as they promote the secration of the digestive fluids. * * * The various flavoring seeds and leaves, truffles, mushrooms, etc., have no physiological importance, except as rendering articles of food more palatable."

In addition to the above we give the following from Prof. F. W. Newman. It appears in a recent number of the London *Dietetic Reformer*. "In the writings of several leading vegetarians is it noticeable that they profess to take no condiments but salt. Mr. G. Dornbusch does not even take salt. I feel that this subject needs more light thrown on it. Salt being a mineral seems, at first sight, to need a justification. I find it in the fact that horses and cows love grass which has a taste of salt, and the American bisons make long pilgrimages to lick the salt rocks; it is a notorious fact that it kills worms in children. Hence it may be inferred that a certain portion of it is healthful, and preservative from ailments. When instinct and common sense point to a conclusion it is satisfactory to have corroboration from science. And here we find that the gastric juice is reported to us as containing muriatic acid, for which salt, being muriate of soda, gives a supply. Besides, salt is one of the ingredients of blood. Thus salt is really food, though any excess of it is of course mischievous.

"But that vegetarians should sweepingly renounce *vegetable* condiments comes to me as a paradox. So much of condiments as tends to thirst I warmly deprecate, and with difficulty hear a very minute taste of cayenne pepper or curry. But are we to forswear mint, sage, mace, cloves, cinnamon, caraway, ginger, pepper and all spices? Where shall we stop? What of mustard and cress, and watercress, celery, orange and citron peel? As a special example, rice is so tasteless that the hardiest rustics (Turks and Arabs) reject it unless some condiment be added. Salt and butter are their ordinary demand, and they call it *pilau* (pronounced *pilow*). The English generally expect milk with it, or milk and sugar. All watery vegetables seem to need *some* condiment. Salt may suffice, but it is difficult to understand why other tasty articles are to be banished from our tables."

Egg Preserving Pickle Recipe.—An agent of the Scientific Press reports the following: Three quarts lime, tablespoonful cream tartar, one cupful salt and water enough to fill a five gallon tin can, after seventeen dozen eggs have been carefully placed within the can. To the water add the other ingredients, stir up well and pour it on the eggs and keep them in a cool place entirely covered by the pickle.

The lady subscriber who furnished the above keeps her eggs perfectly sweet with the above treatment, and by special request, after writing the above recipe, she boiled me an egg that had been in pickle four months, and I found it perfectly sweet and free from all shadow of taint or any objection of any kind, and would trust them fully as soon as the freshest eggs in any of our markets. She usually gets the highest price of fresh eggs, and does not sell till they are about fifty cents a dozen.

Cooking Okra.—Have ready two quarts of good beef stock; cut up one quart of tender okra, two quarts of tomatoes after they are skinned, half-pint of lima beans, half-pint of corn cut from the cob or grated, one or two carrots cut into small pieces or grated, an onion, if desired; season with pepper and salt; a few cloves some think an improvement. Let it boil for an hour and a half, stirring frequently. Just before serving thicken with a tablespoonful of flour and one of sugar. If the stock is not rich, add a lump of butter. The okra, tomatoes and carrots should boil the longest; chop up a handful of parsley and put into the tureen before serving.

Boiled Grape Juice.—The syrup resulting from boiling down grape juice will keep well and is very palatable. It can be used to great advantage with stewed fruits and preserves.

MINING AND SCIENTIFIC PRESS.

W. B. EWEB.....SENIOR EDITOR.

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San Francisco:

Saturday Morning, Sept. 25, 1875

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NAVAL ARCHITECTURE AT THE SOUTH.—A ship of upwards of 1,400 tons is being constructed at Charleston, South Carolina—a before unheard of event. The introduction of manufacturing industries and the mechanic arts is the lever which alone can lift the South from its present state of depression, and place it on the same plane of prosperity as that occupied by the North. This fact is now being universally recognized by our Southern brethren, and they are wisely directing their energies accordingly.

A SECOND bridge across the East river from New York to Brooklyn has been authorized. The bridge will be divided into two spans—the central pier resting on Blackwell's island. The largest span of this bridge will be but 800 feet—just half that of the bridge from the Park.

THE stock of oil in the Pennsylvania producing region, July 31st, was 4,386,720 barrels, against 4,502,896 barrels on June 30th—thus showing a very even production and no foundation for the late attempt to "bear" the market.

A MINING BOARD FOR NEW YORK.—Strong efforts are being made to organize a mining stock board in New York. The people of that city are anxious to share with San Francisco in the glories and profits of big "bonanzas."

MR. CHESNUT, who has the contract for repairing the suspension bridge at Grass Valley has sent below for material, and will commence work next week. It will be completed before wet weather sets in.

Rich Strike in the Carson Hill Melone's Mines.

We are informed that extremely rich rock has been struck in the Morgan mine, Calaveras county, on Carson hill, adjoining the property of the Melone's Consolidated Mining Co. This belt of mines was worked to great profit in early days, but became involved in costly and embarrassing litigation, in which it was held for many years. Now the whole property on the Carson hill has been covered by United States patent, and the title is clear.

From the Morgan mine, the one from which this rock is now being taken out, over a million and a half dollars were extracted. It has not been worked for many years, because of law suits. One piece of rock taken from this mine in 1852 or 1853, was exhibited at the London exhibition. It weighed 120 pounds, and yielded 82 pounds of pure gold. The new shaft is 50 feet below the tunnel which leads to the old works, and it is from this shaft that the rich rock is now being taken out. It is being worked in hand mortars and arastras, and we are informed is massive with gold.

The fact of this net-work having been struck in this old abandoned mine, augurs well for it and the adjoining property, which also bears the reputation of having yielded immensely. It has only been worked about six weeks, and the Melone's consolidated company have just started up their works also. They have two mills on the property, and now that they can work the rich telluride ores which the mines produce, will commence a vigorous campaign.

The Morgan mine used to belong to "Jim Fair," of bonanza fame. He contended for its possession for many years, and at last got it. Meantime, however, he had begun to coin money so fast in the silver mines of Nevada, that he neglected the California property. He instructed some friend or relations to pay certain amounts due on it, which he had failed to do. The mine was sold to the present owner by the sheriff, for $15, so it went out of Mr. Fair's hands in default of payment of that sum. He can stand it, however, if any man on this coast can. We are glad to hear of the good fortune of the present owner, and are assured that since this mine has commenced panning out so well, the old Carson Hill mine—known as "Melones" by French investers—will be vigorously worked as well as the Morgan itself.

The State Fair.

Our reports from the Fair up to the time of going to press are necessarily incomplete. The race as usual form the chief attraction to this sensational element represented there.

General Sherman and party arrived on the grounds Tuesday morning, and met with an enthusiastic reception. He expressed a lively interest in the races, and declared his intention to participate in the enjoyment of all the races of the week.

The stock parade on Tuesday morning was over a mile in length and unusually fine. The attendance on this occasion was very large.

In the sheep and goat department the display is fully equal to that of last year. Mr. R. A. Brunton has a good exhibit of French merinos. Mrs. Blacow, of Alameda county, also has on exhibition some representatives of her fine herd of French merinos. Mr. G. W. Leet has a pen of yearlings of the same kind of sheep.

Our old friends, Severance & Peet, of Niles, Alameda county, have as usual a fine selection from their valuable herd of thoroughbred Spanish merinos.

Fred. Cox has a Spanish merino buck, called 'Long Wool," which attracts considerable attention. J. B. Hoyt exhibits some good specimens of pure Shropshire and Shropshires crossed with Spanish merinos. S. B. Emerson and Wm. Fleming have on exhibition specimens of Cotswolds. Mr. Sullivan Treat exhibits a Silesian ram, "Longfellow," and a Spanish merino yearling, "Golden"; so named from the goldsu appearances of his fleece. Amos Adams, of Sacramento, has two fine pens of sheep.

Angora goats are represented at the Fair by members of the choice stock of Landrum & Rodgers, of Watsonville, and by some of the herd of the Gilmore Angora goat breeding association, of El Dorado county. C. P. Bailey, Dr. Thomas and J. G. Gell also have Angora goats on exhibition.

The swine department is not what it should be at this time, when there is evidently more call for increase and improvement in our swine than in any other department of farm stock. This is not to be understood as disparaging the quality of the exhibit, for the few breeders who have come out have brought animals that are fully up to the requirements of the time. Messrs. Sprague, Comestock and Entrican have each fine specimens of the Berkshire family. But there is manifestly a growing unwillingness on the part of breeders of all classes of stock to subject their favorite animals to the severe penance which such an exhibition implies. This will not surprise any one who properly considers the actual cash value of the animals, and the risks involved in the transit back and forth, and in ten days subjection to the depressing heat and bad water of Sacramento. And, aside from the actual risks involved, the considerate kindness and real affection, even, which the true breeder feels for his animals, makes him loth to expose them to such discomforts.

Notices of Recent Patents.

Among the patents recently obtained through Dewey & Co.'s SCIENTIFIC PRESS American and Foreign Patent Agency, the following are worthy of mention:

A MACHINE FOR COUNTING STOCK.—William Jeans and D. H. Bailey, Fernalde, Humboldt county, Cal. This invention is an ingenious arrangement for automatically counting and registering stock, such as goats, hogs, sheep or cattle. This is accomplished by causing the animals to pass through a narrow passage or gateway, so constructed that but one can possibly pass through at one time, and in doing so a lever is moved which is connected with an indicator which registers the passage of an animal at each vibration of the lever. Numbers above one hundred are registered on an indicator attached to the first registar. It is often desirable to divide stock into different lots, in the interests of different proprietors. This is accomplished by the inventors of this machine by an ingenious arrangement of registers which can be set at any number required, and a bell connected with the lever and actuated by it is struck by a hammer and sounds the number in tens, twenties, or any subdivision desired. The animals are separated into different corrals as necessary by an ingenious arrangement of gates. The inventors claim that the swinging gateway is so arranged as to be entirely accurate in its movements and must be opened and closed by the passage of each animal, whether it walks, runs or jumps through.

IMPROVED PARLOR GAME.—Henry Darnell, San Francisco. This invention by our fellow-citizen, Mr. Henry Darneel, is known as "the chase," and is said to be the equal of chess in its capacity for intricate calculation, and yet so popularized as to be more fascinating to the general player. It is played upon a board similar in construction to a chess or checker board, except that three colors are used instead of two. In the center of the board is a square made of a different color from the other squares This is known as the "covert." Its purpose is to serve as a retreat for any piece which is being pursued by another, as, according to the rules of the game, no piece can be taken as long as it remains in the center square or "covert." A portion of the playing pieces are made to represent hunters, while the remainder are made to represent animals of the chase or game and the object of each player is to capture all of the game of the other party. In playing the pieces which represent the animals of the chase or game are placed in the row of squares on the outer edge of the board next to the players. Upon the next row of squares in front of the game, the pieces which represent the hunting force are placed. Each piece has its peculiar move similar to the mover of the pieces in playing chess, but the pieces which represent the game cannot capture the pieces which represent the hunters. When a piece enters the "covert" or center square, it cannot be taken so long as it remains there, but it can be forced to leave the "covert" by jumping it with one of the hunters. By making a "covert" or peculiar square in the center, the game of chase can be played upon an ordinary checker board, but the board provided by the inventor is larger, has more squares upon it, and is altogether preferable.

Peat as Fuel.

That cheap fuel will tend to promote the manufacturing and industrial interests of California, is a recognized fact by those best acquainted with the resources of the State. The California peat company have been engaged for some time in manufacturing peat for fuel at their works, at Roberts Landing, San Joaquin county, and are now turning out from 50 to 100 tons of fuel per day. They have seven samples on exhibition at the Mechanics' Institute Fair, and on Wednesday last a trial of its flame-producing properties was made in the furnace of the main driving engine in the Pavilion. A number of invited spectators were present, including representatives of the Press, and much interest was manifested in the result. The match was applied to the fuel at precisely twelve o'clock, noon, and in forty minutes steam was up. The trial was a thoroughly satisfactory one, and we are very much inclined to think, that peat as fuel, will ultimately prove a success in California.

CONCENTRATING.—Mr. Ruegger's article on Concentrating Works, a continuation of those in previous numbers, is unavoidably deferred this week, in order to prepare an engraving to accompany it. In the article on the "Concentrating Works at Falun," in our issue of September 18th, several per cent. statements were misprinted. The errors are two-thirds, one-half, four-fifths per cent. and four-sixth fold, and should read: two to three per cent., one to two per cent., four to five per cent., and four to six fold respectively.

Metallurgy of the Copper-Silver Ores of Inyo County—No. 4.

[Written for the PRESS by SAMUEL PURNELL.]

Leaching.

The roasted ore is sifted into wooden boxes or tubs provided with a false bottom, on which is stretched coarse canvas, the latter answering for a filter, Fig. 3. The boxes should be coated with pitch on the inside. A box 12 ft. long, 5 ft. wide and 2½ ft. deep will hold from five to ten tons of roasted ore, according to the kind of ore under treatment. Generally it should not be spread more than fifteen inches deep, but very porous ore may allow of leaching when twenty-four inches deep. The top of the ore should be spread evenly, always leaving at least six inches space from the top for the reception of the water. It was formerly customary to leach altogether with hot water; but at present cold is generally used, unless considerable chloride of lead is present, in which case, the lead being soluble in hot water may thus be gotten rid of and the silver extracted purer. Hot water, however, dissolves the base chlorides more easily than cold, and the filtering proceeds more rapidly. The water is next allowed to fill the tank, and when full a leaden cock below is opened and the water highly charged with metallic salts and showing a green color from the copper contained, is conducted by a rubber hose into another tank for subsequent treatment. The water is kept running in a continual stream for a couple of hours or more, till upon a test with an alkaline sulphide no precipitate of copper or other sulphides is thrown down. When all the soluble salts are removed the leaching with water is suspended and the ore is ready for the next operation.

Extraction of Silver.

A dilute solution of hyposulphite of lime is now led into the box to dissolve the chlorids of silver remaining. The manipulations are substantially the same as the leaching with water. The clear, cold and sweet liquor from the tank, containing a double salt of silver and lime, is conducted into precipitating tubs. Only two parts of the lime salt are required to dissolve one part of silver, while sixty-eight parts of common salt are required. The hyposulphite must not be concentrated and strong, else it will dissolve various base metal oxides remaining in the ore. This leaching may continue from eight to twenty-four hours according to the amount of silver present. The end of this lixiviation is ascertained in the same way as the preceding. Besides the silver chloride the hyposulphite will dissolve any chlorides of lead and antimony, or chloride or subchloride of copper remaining, and these metals may thus contaminate the silver. Subchloride of copper is not soluble in water. The silver chloride is first dissolved, and, therefore, the first part of the outgoing solution is the richest.

Precipitation of Silver.

The silver is precipitated from the double salt by adding to neutrality or saturated solution of sulphids of lime. It is poured in until all the silver is supposed to be precipitated, and the liquor is stirred vigorously to secure a quicker settlement of the black sulphids of silver. The exact neutrality of the liquid being ascertained and maintained, this operation is finished. These manipulations, though seemingly very delicate and complicated, can readily be performed by common workmen after a few days' instruction. The time required for precipitation is only about fifteen minutes.

At this stage of the process the oxygen of the air acts on the neutral solution and hyposulphite of lime is regenerated, which is immediately ready to be used on the next lot of ore. There is no waste of hyposulphite, but, on the contrary, a continual increase in strength and quantity; so much so that it frequently has to be diluted with water. After sufficient time has elapsed to allow all the small silver particles to settle, the slimy sulphids is drawn off into canvas filters, where it is washed with hot water to remove any solubls salts mixed in. The silver cake is next pressed and dried, and then calcined in a small reverberatory furnace, or a muffle. In this most of the sulphur is burned off at a dark red heat in one or two hours, and the cakes are reduced to a mixture of sulphids and metallic silver. The refining is usually done by smelting in plumbago crucibles with metallic iron and borax. According to the quality of the ore, and the character of the manipulations, the silver will be from 900 to 950 fine. The extraction of silver is very close; with good work the tailings will not assay more than three or four dollars a ton. There is no difficulty in chloridizing to 90 or 93 per cent. One pound of good quick lime and one and a third pounds of sulphur give a solution of sulphids of lime that will precipitate about half a pound of silver.

[The conclusion of this chapter on "Leaching" will appear next week, with engravings showing the details of the operation. The crowded state of our columns prevents us giving the whole chapter in one number of the PRESS.—EDS. PRESS.]

MORE dwelling houses are wanted in Petaluma.

A New Method of Determining Positions of the Sounding Boat.

Application of the Two-Point Problem to Hydrographic Surveying.

At the last meeting of the California Academy of Sciences, the following paper was read by T. J. Lowry, of the U. S. Coast Survey:

This is called the age of practice, the inventive age. And undoubtedly the prevailing tendency of the science of this age is synthetic. The problem it places before itself is not so much to discover isolated truths, as to combine, to harmonize, to generalize, to utilize those already found out. Instead then of indulging in ineffectual wanderings in the labyrinths of analytics, let us pause for a moment in the field of synthetical geometry—where Euclid, Newton and Bessell deigned to labor—and see if there are not "seed fallen by the wayside, among rocks and in stony places," which we may cause to yield profitably for the exact arts.

The increased traffic and travel on the rivers, bays, lakes, gulfs and oceans within the last half century, have made the accurate mappings of the topography of these water-basins of the earth, commercial, national necessities. The civilized nations of Europe have long felt and acted upon these demands of navigation and commerce, nor has the United States been left in arrears, for already has she executed a system of hydrography—even extending her researches into the Gulf stream and kindred interocean rivers, securing results which challenge at once the wonder and admiration of the scientific and navigating world.

The hydrographic chart is the lamp to the navigator's path over the intricate windings of the waters of the earth, the revealer of rocks, shoals, reefs hidden beneath smiling seas, and therefore the secret to a safe navigation and, hence, successful international commerce; does it not then gentlemen behoove us, as a scientific body, to make all possible improvements in the theory and practice of hydrography?

Hydrographic surveying was reduced to a real, a practical entity by the discovery of the three-point problem, by Pothenot. This problem being wide in its application, accurate in its determinations, and yet most simple in its graphic solutions, has, from the first, stood the grand central truth of practical hydrography. But to fix a position by this problem is required, on three known points, two connected angles observed simultaneously. And with only two known signals in sight it utterly fails to fix a position. Now it is to remedy these defects, to fill up these gaps left open by the three-point problem, and thus enable the hydrographer to determine his position under a wider range of contingencies, that I propose the application of the two-point problem to hydrographic surveying.

In determining positions of the sounding boat, equal in accuracy, and second only in point of usefulness to the three-point problem, is the two-point problem, which, with its many varied phases and fewer known points, greatly increases the hydrographer's capability of ascertaining his position under every contingency. The problem determines any two points on an unknown range (or inter-range) if at each of these points are measured the (two) angles contained by this range and two known signals. The boat's path may either coincide with the range or inter-range (see Fig. 1), or cross it at two or more points (as shown in Fig. 2). In the first case we can fix the position of the boat at any two or more instants by "angling" at those instants on two known signals ("*A*" and "*B*"), and the undetermined range. When the boat only crosses the range at two or more points, its position can be fixed by this problem only at these points, and that, of course, by "angling" at the very instants of crossing the range. The better conditioned the quadrilateral, formed by the two known points and the two places of observation, the better will these places be determined; and will be wholly undetermined when the right line, through the places of observation, prolonged traverses either one or both of the observed signals.

Where ranges are ready prepared for us—as when adjacent to cities with their flag-staffs, chimneys and spires, or where the country rises into highlands and mountain peaks back from the shore—the determination of a boat's position by this problem is alike easy and expeditious. And even where nature does not offer such ready prepared facilities, we can readily supply them, where the water is comparatively shallow, by dropping temporary spar buoys (a pole with rock to one end,) One buoy will furnish a stern range, if we have another visible stationary object directly astern, or an inter-range if directly ahead. But if there is no such stationary object visible, then continue the line of soundings, and drop further along a second buoy, and at the same instant measure the angles contained by two known signals, and the first buoy, and from another point on the range of these buoys, catch the angles between this range and any two known signals, and the soundings are determined. By cutting on a third point on shore, from two or more of these determined positions of the boat, it can be fixed in position without visiting the shore or even stopping the sounding boat; other signals may thus readily be substituted for those swept away by storms, etc.

The buoys thus dropped being determined fixed points, may serve as signals for carrying a hydrographic triangulation further on out off shore. This problem will thus prove most useful in the survey of off-shore shoals and reefs, and in the location of buoys, where only two signals are in sight. And it may, moreover, be found especially serviceable in the surveys of those large shallow bodies of water which abound along the Atlantic and gulf coasts of the Southern States, where the low shores and hazy atmosphere render it extremely difficult to keep three signals in sight.

The geometrical construction of this problem is accomplished in the following obvious manner: On *A B*, in Fig. 3, describe segments containing respectively the angles, *A M B* and *A P B*, draw the chord, *B y*, to cut off segment, *B A M y*, containing the angle, *B M y*, and another chord, *A x*, cutting off segment, *A B P x*, containing the angle, *A P x*. The points, *x* and *y*, will be in the same right line with *M* and *P*; join *x y*, which produce both ways till it cuts the circumferences in *M* and *P*, which will be the required places of observation.

The trigonometrical analysis furnishing the readiest means for computing this problem, is that known as the indirect. Thus let any number as 10 or 100 represent, *m p*, in Fig. No. 1. Then in the triangle, *A m p*, are known the angles, *A m p*, (= *A M P*), and *A p m* (= *A P M*), with side, *m p*, from whence, *A m*, may be found. In the triangle, *m p b*, are known angles, *m p b* (= *M P B*), and *b m p* (= *B M P*), with *m p*, to find *b m*. Now in the triangle, *A m b*, are known angle, *A m b* (= *A M B*), and the sides, *A m* and *b m*, from which *A b* may be found. And now from the similarity of figures *A b* : *A B* :: *m p* : *M P*, and by like

Fig. I.

Fig. II.

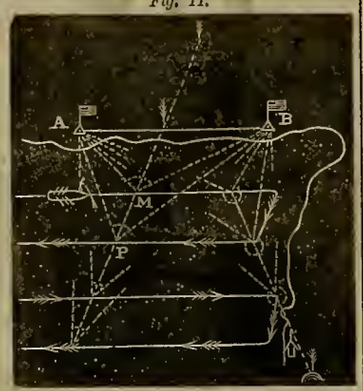


Fig. III.

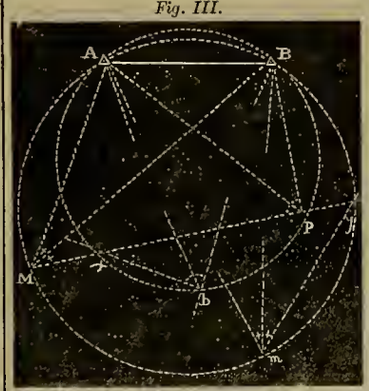
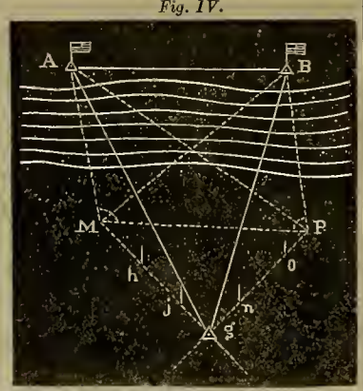


Fig. IV.



THE TWO-POINT PROBLEM IN HYDROGRAPHY.

proportions any other of the required sides may be found.

The two-point problem finds a ready graphic solution by laying off each set of observed angles on a separate piece of tracing paper, and shifting these two papers until the lines of sight traverse each its proper point, then prick the vertices of these angles onto the sheet, and they are (*M* and *P*), the required points of observation.

But a better graphic solution, based upon very obvious geometrical considerations, is found in the three-arm protractor;—with the angles measured at *M* (see Fig. 3) set off on the proper limbs of the protractor, cause its left and middle arms to traverse *A* and *B*, and draw a line along its right arm. Shift center of protractor to some point as *m*—taking care to keep *A* and *B* bisected by left and middle arms—and draw another line along right arm and *y*, the point of intersection of these lines, will be a point in the right line through the places of observation, *M* and *P*. Now set off the angles observed at *P* on the corresponding limbs of protractor bisect *A* and *B* with the fiducial edges of the middle and right arms. Draw line along left arm—shift center of protractor to some point as *p*, and with middle and right arms still bisecting *A* and *B*, draw line along left arm, and *x*, the point of intersection of these two lines, will be a second point in right line through *M* and *P*. Draw an indefinite right line through *x* and *y*. Now with the angles observed at *P* on the protractor, cause its middle and right arms to traverse *A* and *B* while the true edge of its left arm coincides with line through *x* and *y*, dot its center and we have *P* one of the places of observation; and, in like manner, find *M* the other place of observation.

These are the solutions of the case of this problem where only two known signals are involved. There are, however, two other cases: First, where from one position of the boat signals *A* and *B* are visible but from the other only *B* and *C* are seen; here the boat's positions are equally well determinate, and the geometrical construction and graphic solutions are the same as above given—but the trigonometrical analysis varies slightly (see Narrien's Geodesy). And in the second case, where first position of boat sees only signals *A* and *B* and its second position only *C* and *D*, these positions are still determinate, and the graphic solutions and geometrical construction are identical with those already given, but the trigonometrical analysis is different as shown by the writer on page 19, vol. 2, of "The Analyst."

The two-point problem may, moreover, be found most serviceable in restoring lost stations. Suppose the case illustrated in Fig. No. 4—where (the surface mark of) station *G* is lost and its restoration is desired. Having an approximate idea of the position of the lost station, *G*, choose two such points, *M* and *P*, as make at once the quadrilateral, *A B P M*, and the triangle, *A M G*, *B P G* and *G M P*, "well conditioned." Then at *M* and *P* successively measure the angles, *B M A*, *B M P*, *A P B* and *A P M*, and find—either by construction or computation as above shown—the unknown sides and angles of the quadrilateral, *A B P M*. Now from the original triangulation are known the sides *G A* and *G B*, and angles *G A B*, and *G B A*; and the angle, *G B P* = *P B A* − *G B A*. We hence have two sides, *G B* and *P B*, and included angle, *G B P*, to find *P G* and angle, *B P G*, the distance and direction of the lost station, *G*, from the point, *P*. But if no linear measure is available, then mark the direction of *G* from the point, *P*, by range poles, *n o*, and shift the theodolite to *M*. Find angle, *A M G*, in like manner to that which found angle, *B P G*. Then cover *A* with telescope, turn it in azimuth equal to angle, *A M G*, and mark the direction of its line of sight with poles, *i h*. We then have marked out two ranges, *i h* and *o n*, intersecting at "the lost station," *G*.

And equally applicable when on land searching for a lost station with three signals in sight, is the manœuvre so well understood in hydrography of taking from the sheet the angles subtended by the three signals at the lost station, setting them off on two one-angle, or one two-angle sextant, and shifting the position of the observer till the images of these signals coincide in his horizon glass, when he will be close on the "lost station."

AMERICANS AHEAD IN JAPAN.—The *Ironmonger* (English,) for August, says: "In Japan the Americans have been too sharp for us. Before the English cutlery found its way there, the American factor was in the field. The Japanese are a shrewd race, and if they do not find the American cutlery equal to their expectations, or in some measure proportionate to the representations of their merchants, they will soon turn to the English cutlery. But for the present the Japanese markets are scarcely considered in the calculations of Sheffield manufacturers."

THE new gas works in Santa Barbara are nearly completed.

Vulcanized Rubber Fabrics.

Few people have any adequate conception of the variety of uses to which rubber is put, or the number of different articles which are made from it. Ever since the famous vulcanizing improvement was made the difficulties which previously prevented its wide introduction no longer interfered, and now we see rubber adapted to thousands of purposes which were before entirely out of its sphere. It has been made available to the comforts of life in the shape of woven textures, substitutes for leather, etc., many of which it supersedes, in a great measure, in point of durability and resistance to atmospheric influences, in decorative art, and for many scientific uses, it offers great facilities, which, at the present day, could not well be dispensed with. To the chemist it is of paramount importance, enabling him to arrange at little expense complete apparatus of all kinds. In surgery it has a place reserved for its exclusive use, especially in the construction of instruments requiring suppleness and flexibility. It is now adapted to mechanical purposes of all kinds to a very great extent. In fact, the enumeration of all its applications would be a work of time, and would contain a list sufficient to fill this paper.

It is only recently that a factory for the manufacture of rubber goods has been started on this coast, and there is only one this side of Chicago. This was established in San Francisco about a year and a half since by Weaver, Taylor & Co., 501 Market street, who carry on the most extensive trade in this class of articles on the coast. It started as a very small concern, has been increased in capacity, and the proprietors are about increasing it again. At this factory rubber goods of all kinds are made to order. They are prepared to make mold work of every description, including car and wagon springs, valves of all sizes and descriptions, cylinders and gaskets of every shape and size, rings for fruit jars and all other articles made of rubber which the trade may demand. They make a specialty of covering rollers for wringing machines. The old rollers are recovered with rubber, making them as good as new, thus saving the expense of purchasing a new machine. Inventors desiring articles made of rubber can be accommodated and advised by the above mentioned firm.

Articles manufactured by Weaver, Taylor & Co., at the factory in this city, may be seen at the Mechanics' Fair, among the rubber goods exhibited by them. Among other things they exhibit steam, conducting, oil, petroleum, steam fire engine and suction hose, car and wagon springs, valves for pumps and steam engines, corrugated rubber for steps and for flooring, pure sheet rubber for packing, rubber clothing, saddle bags, fishing stockings, caps gloves, mittens, and a variety of small articles too numerous to mention.

Messrs. Weaver, Taylor & Co. are agents for the Gutta Percha and Rubber manufacturing company, New York, carholized hose, belting, packing, etc.; Goodyear's india rubber glove company, rubber clothing and fancy goods; Hazard powder company, sporting and blasting powder, and Amoskeag manufacturing company, steam fire engines; Trump Bros., Wilmington, Del., Fleetwood machine saws. They keep a large stock of every possible variety of rubber goods on hand, and make for the trade here all special articles, such as are not kept in an ordinary stock of rubber goods. The list of rubber fabrics adapted to mechanical purposes is very large; rubber hose, carholized hose, steam and oil hose, suction hose valves, packing, tubing, fire buckets, rubber belting of all sizes, clothing, ladies' and men's gloves and mittens, hose covers, carriage aprons, combs, toys, mechanics' aprons, fishermens' pants leggings, jackets and boots, bath tubs with frames, gun and hat covers, door springs, piano covers, air pillows and beds, whip sockets, rings, submarine armor, etc. A very great variety of small articles are kept, too numerous to mention. Of course, at the Fair only a very few of the articles dealt in are exhibited, and those mainly such as are used for mechanical purposes.

A GREAT COAL CARRIER.—It is said that the Ohio river is the greatest coal carrier in the world, notwithstanding the fact that it is frozen up during most of the winter, and nearly dried up a large portion of the summer. A "run" of coal is said to have been made during the month of July last, when 375,928 tons were shipped in forty-eight hours! This amount would have loaded over 37,000 eight-wheeled cars which would have had to have been made up into about 1,000 heavy freight trains. It is nearly equal in tonnage to the entire shipment of wheat from this State during a full year. The cause of such a big "run" is the uncertain stage of water in the Ohio. When there comes a season of low water the coal is collected in barges at Pittsburg and held until a good stage of water comes, when it is all run out at once as above. The greatest "run" recorded took place in April, 1872, when 582,300 tons were shipped in about the same length of time.

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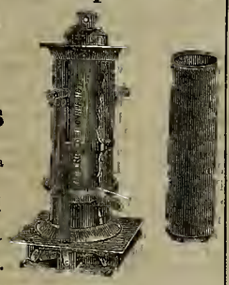

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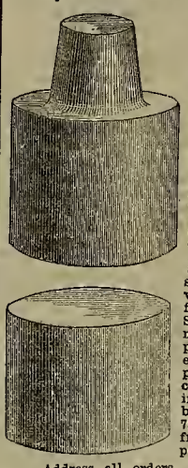

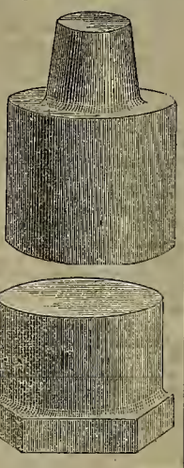

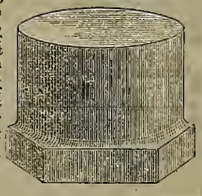

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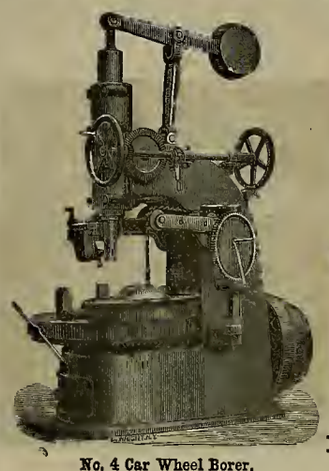

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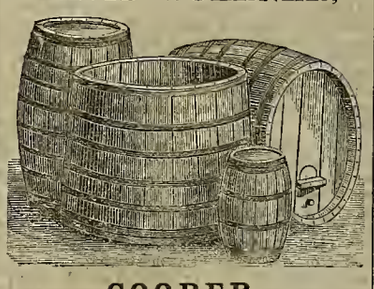

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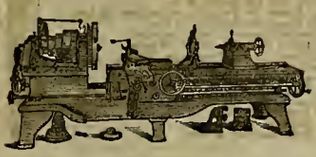

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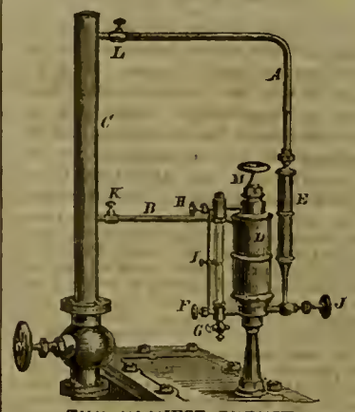

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These Lubricators are acknowledged by all engineers to be superior to any they have ever used; feed constantly by pressure of condensed water, supplied by pipe A, regulated under the oil by valve J, and forced out through check valve and pipe B into the steam pipe C; it then becomes greasy steam, passes to all the valves and cylinder at every stroke of the engine; glass tube I indicates amount used per hour. Packing on rods and stems lasts longer, and the rings on the piston will not corrode. One pint of oil will last from three to six days, according to speed and size of engine; I, sliding gauge; K, valve to shut off when engine stopps; H, F, valves to shut off in case of frost; steam does not enter the cup; it is always cool; warranted to give satisfaction. Patented February 14, 1871. Manufactured by California Brass Works, 125 First street, S. F. 24v23

The Ingersoll Rock Drill.

This Drill is used extensively in the Eastern States and all Foreign Countries.

IT CAN BE RUN WITH

LESS POWER, LABOR AND REPAIRS,

—AND—

DO MORE WORK

THAN ANY OTHER DRILL IN THE MARKET. THE

Automatic Feed

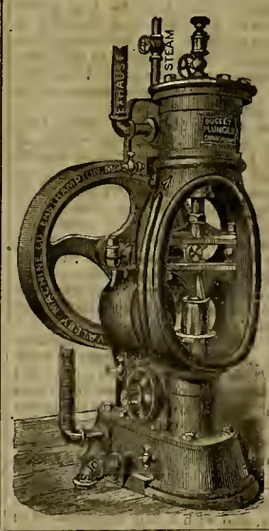
Is an important feature, as it saves labor. We ask for a trial against any competitor. For information regarding the same, send for circular to

JUDSON & SHEPARD, Agents,

Cor. Clay and Front streets, San Francisco.

PARKE & LACY,

310 California street, San Francisco



Sole Agents for WRIGHT'S

BUCKET-PLUNGER STEAM PUMP.

ALWAYS RELIABLE.

SAN FRANCISCO

Pioneer Screen Works,

Removed to 32 Fremont Street, near Market.

SCREENS

J. W QUICK.

Manufacturer of perforated sheet metals of every description, at reduced rates. Mill owners mining Battery Screens extensively, can contract for large supplies at favorable rates. This is the only establishment on the Coast devoted exclusively to the manufacture of screens

San Francisco Cordage Company.

Established 1856.

We have just added a large amount of new machinery to the latest and most improved kind, and are again prepared to fill orders for Rope of any special lengths and sizes. Constantly on hand a large stock of Manila Rope, all sizes; Tarred Manila Rope; Hay Rope; Whale Line, etc., etc.

TUBBS & CO.,

e20 611 and 613 Front street, San Francisco

An Immigrant Depot.

At the present writing, over fifty thonsand immigrants have located permanently in California since the firet of January. We find in connection with this important matter, many causss for congratnlation. Asids from the gain to the State by this immigration, and the advantagss derived by the immigrants, have we not reason to bs, at leaet, eatiefied with the incidentals connected with it? Notwithstanding ths nnceasing vigilance of the Press of our own State, always ready to expose imposition upon etrangers, and though the Eestern Press have been on the alert to make capital of any and everything that could possibly he nsed ae a wet blanket on emigration, how little has been brought to light concsrning California's improper treatment of her new citizene! Philanthropy, and even common hospitality, have been placed in euch low repnts by those who have stolen their livsry to serve thsir own purposes in. thet we will not claim for California eny credit on those scores; hut, without appeeling to the immigrant of 1875 as "a man and a brother," we wonld ask him, or thoee who presume to speak for him, if, ns a fellow citizen, he has not received setisfactory treatment here?

And, we wonld ask our own people, is there any occasion for a radical change in our method of rscsiving and d:eposing of ths probably increassd immigration of the coming year? Or, to bring the matter down to a still simpler form, had we not bstter continue our let-alone policy, and abstain from all interference with the affairs of our new neighbors?

Among the castles in the air that the philenthrophy of the day is devising, is an immigraut depot, with snch connections and surroundings as would effectuelly protect the newly arrived immigrant from the land sharks that await his arrival; something that will be to San Francisco what Castle Garden is to New York. Now we wonld like to impreee upon the minds of our officious friends the fact, that California immigration ie not made np of "shoale and nations" of ignorent maeses from the hogs or ovsr crowded fields of Enrope, at the mercy of enthusiasts or tricksters; to be plented in colonies and to be provided for or fleeced by a few irresponsible individnals; they are mostly shrewd, practical, ventnreeome Yankees. They are bent on trying their fortune here; if they don't like it they will go somewhsre else; though thers is more probability thet *they* will be the permenent occupants of the conntry and that those whose bowels are now yearning over their fancied wrongs will retire before them.

Peopls who do not fathom ths true Americen character—and it is really a matter of wonder how few thsre are who do comprehend it—will persist in the belief that these immigrants are coming here like flocks of sheep; ready to be driven or lead hither and thither as individuals or orgenizetions may desire.

There are indications thet ths next Legislature will be called npon to devise some meane by which the State can provide for fnture immigration, "as a hen gathereth her chickens under her wings;" but it is to be hoped that our legislators will not allow even the milk of human kindness to dilute and submerge plain common eense and simple jnstice in this matter. In our opinion, such action is not only uncelled for by surrounding circumstancss; it would prove a sonrce of general evil.

It is apparent to the observing public thet much that has been urged for the welfare of the immigrant, hae been with a visw to bsnefit speculators and there hirelings, and not to provide for the new comsr. We believe we speak for a largs portion of the community when we declare that we would rather our friends on their arrival in San Francisco fall into the hands of hackmen and hotel runners, who make no pretensions to philantropy than of those who are hired by specnlative land owners, to give the supposed simple immigrant "a bit of friendly advice."

This matter has been treated too leniently thue far. We would put our friends on their guard ageinet this new confidence game; and would teke thie occasion to assure them that they can with more safety truet to the honor and generous sympathy of California at large, than to any self-praising commnnity that claims to have more intelligence or more purity than its neighbors.

AT THE PAVILION.—Notwithstanding the State and other fairs, and with a full complement of other attractione to compete with, the Industrial exhibition at the Pevilion, still holde its own. Thousands congregate there every day and evening to view the wondere in art and mechanism, to promenade the gay and buay scenes of the mammoth building, to loiter through that charming retreet the conservatory, or to sit in some of the many pleasent places provided for such casee, and read the MECHANICS' FAIR DAILY. The cash box in tho office ie a pretty reliable thermometer by which the public interest may be teeted. This still marke up to a eetiefactory point among the thousande. On Saturday night of laet week the receipte were in excess of any occasion since tne opening of the fair. The time for closing the fair is not definitely settled yet. It will certainly continue two weeke longer.

THE citizene of Santa Ana and vicinity lately held a meeting to consider the feasibility of building a narrow gange road to Newport, a distance of eight miles. The road and necessary rolling stock will cost about $75,000.

The Mining Share Market.

The resnlt of the resnmption of businss by the stock boards and the opening of the new Nevada bank, whish will occnr on the 4th proximo, is lookad forward to with a strong degree of interest by every one at all intereeted in mining shares. Thoss who are moet familiar with etock transactions, state that the affairs of the brokers are in a very fair condition. The San Francisco Stock Board has publishsd the basis upon which its members will be compslled to adjust all contracts left nnadjosted at the time the Board ceased its seesione. Most of them have already been satisfactorily adjusted. The California Board has been in operation and done a flouriehing buciness throngh the past week. Wednesday the morning sales aggregated 5,000 sharse. The following wsre the prices of some of the leading stocks on Wednesday: Andes, $3 50; Beet & Belcher, $36; Belcher, $17.75; Crown Point, $22; California, $53; Ophir, $45; Union Conealidated, $8.12½; Yellow Jacket, $57.

The following assessments have been levied since our last: El Dorado, Glasgow, Carrie Hale, Juniata Con., Amezon Con., Wells-Fargo, Sunrise, Dayton, Iowa.

The Black Bear quartz mining company have declared their regular dividend of 25 cents per share, payable after September 13th.

Reports continne favorable from the mining districte, as will be seen by consulting our Mining Summary.

PATENTS & INVENTIONS.

A Weekly List of U. S. Patents Issued to Pacific Coast Inventors.

FROM OFFICIAL REPORTS FOR THE MINING AND SCIENTIFIC PRESS, DEWEY & CO., PUBLISHERS AND U. S. AND FOREIGN PATENT AGENTS.]

By Special Diepatch, Dated Washington, D. C., Sept. 21st, 1875.

FOR WEEK ENDING SEPTEMBER 7TH, 1875.*

ELEVATED RAILWAY.—Wm. H. Harrison, Livermore, Cal.

SIDE HILL PLOW.—Robt. J. Knapp, Half Moon Bay, Cal.

PROCESS OF TREATING RATTAN.—Carlton Newman, S. F., Cel.

FORCE PUMP.—Frederick W. Clarke, S. F., Cal.

SPRING POWER REGULATOR.—Orrin Collier, Sacramento, Cal.

HARROW.—Jas. B. Green, Elliott, Cal.

BURIAL CASE.—David W. Hunt, S. F., Cal.

AMALGAMATOR.—Chas. H. Aaron, S. F., Cal.

JOINT FOR HYDRAULIC NOZZLES.—Jno. J. Crawford. S. F., Cal.

GATE.—Chas. C. Redmond and Henry H. Rhodee, San Joee, Cal.

A WRONG CUSTOM CORRECTED.

It is qnite generally the custom to take etrong liver stimulants for the cure of liver complaint, and both the minsral and vegetable kingdoms have been diligsntly searched to procure the most drastic and poisonons purgatives, in order to produce a powerful effect upon the liver, and arouse the lagging and enfeebled organ. This system of treatmsnt is on the same principle as that of giving a weak and debilitated man large portions of brandy to enable him to do a certain amount of work. When the stimulant is withheld, the organ, like the syetem, gradually relapses into a more torpid or sluggieh and wsakened condition than before. What then is wanted? Medicines, which, while they cause the bile to flow freely from the liver, as that organ is toned into action, will not overwork and thns debilitate it, hnt will, when their use is discontinued, leave the liver strengthened and healthy. Such remedies are found in Dr. Pierce's Golden Medical Discovery and Purgative Pellets.

A CURE OF LIVER DISEASE.

RUSK, Texas, May 10th, 1873.

Dr. R. V. PIEBOE, Buffalo, N. Y.:

Dear Sir—My wife last year at this time was confined to her bed with Chronic Liver Diseaee. I had one of the best doctors to see her, and he gave her np to die, when I came npon some of your medicine. I bonght one bottle of it and commenced giving it. She then weighed eighty-two ponnds; now she weighs one hundred and forty ponnds, and is robust and hearty. She has taken eight bottles in all, so you eee I am an advocate for yonr medicine.

WILLIAM MBAZEL.

FROM THE NOTED SCOUT, "BUFFALO BILL."

HOLLAND HOUSE, Rockford Ill., April 20, '74.—Dr. R. V. PIERCE, Buffalo, N. Y.: *Sir*—I have now taken four bottles of your Golden Medical Discovery in connection with your Pellets, and must esy that nothing I have ever teken for my liver hae done me as much good. I feel like a new man. Thsnke to your wonderful medicine.

W. F. CODY. ("Buffalo Bill.")—Com.

THOUGHTLESSNESS.—Persons sometimes return thei paper, marked "stop this paper." Their name being pasted on the sheet they thiuk that is all we need to he able to cross their names off. Now that is thoughtlessness. Your P. O. address is needed as much as your name. We have thousands of names srranged only according to locality. Our mailing clerk does not know where everybody lives.

WOODWARD'S GARDENS embraces an Aquarum, Museum, Art Gallery, Conservatories, Tropical Houses, Menagerie, Seal Ponds and Skating Rink.

MINING SHAREHOLDERS' DIRECTORY.

Compiled every Thursday from Advertieemente in the Mining and Scientific Press and other S. F. Journals.]

ASSESSMENTS.—STOCKS ON THE LIST OF THE BOARDS.

Company.	Location.	No.	Amt. Levied.	Delinq'nt.	Sale.	Secretary.	Place of Business.
Alpha Cons M Co	Washoe	7	1 00	Aug 12	Sept 17	Oct 7	Wm Willis	419 California st
Alta S M Co	Washee	2	50	Aug 23	Sept 27	Oct 19	Wm H Watson	302 Montgomery st
Amazon Cons M Co	Nevada	1	10	Sept 20	Oct 22	Nov 12	W R Townsend	330 Pine st
Andes S M Co	Washoe	5	25	Sept 10	Oct 18	Nov 8	M Landers	507 Montgomery st
Arizona S M Co	Nevada	2	1 00	Aug 20	Sept 24	Oct 15	Wm Willie	419 California st
Baltic Cons M Co	Washoe	2	25	Aug 13	Sept 16	Oct 8	Theo C Kibbe	419 California st
Buckeye G & S M Co	Nevada	15	25	Sept 13	Oct 16	Nov 5	C A Sankey	331 Montgomery st
Caledonia S M Co	Washoe	14	3 00	Sept 3	Oct 8	Oct 28	R Wegener	414 California st
Cosmopolitan M Co	Washoe	2	25	Aug 11	Oct 10	Oct 25	M Landers	507 Montgomery st
Crown Point G & S M Co	Washoe	23	50	Sept 4	Oct 8	Oct 23	Mae E Elliott	419 California st
Dayton G & S M Co	Nevada	4	1 00	Sept 15	Oct 19	Nov 8	W B Dean	419 California st
Empire M & M Co	Waehoe	20	50	Sept 4	Oct 6	Oct 26	W F Dean	419 California st
Globe Cone M Co	Washoe	6	75	July 20	Sept 9	Sept 29	Joseph Maguire	419 California st
Gold Mountain G M Co	Cal	6	25	Sept 10	Oct 20	Nov 10	J P Cavalier	513 California st
Hale & Norcross S M Co	Washee	47	5 00	Aug 21	Sept 24	Oct 15	Joel F Lightner	438 California st
Imperial S M Co	Washoe	24	1 00	Sept 4	Oct 8	Oct 28	W E Dean	419 California st
Iowa M Co	Washoe	4	5	Sept 16	Oct 18	Nov 12	A D Carpenter	605 Clay st
Jnstice M Co	{$5 on old stock and $1 on new}	16	6 00	Sept 15	Oct 18	Nov 14	Jas S Kennedy	Merchants' Ex
Knickerhooker M Co	Nevada	13	1 00	Sept 7	Oct 16	Nov 5	J H Sayre	Slevenson's Build'g
Lady Washington M Co	Washoe	5	50	Aug 19	Sept 22	Oct 12	H O Kibbe	419 California st
Leo M Co	Washoe	4	50	Sept 6	Oct 8	Nov 5	W R Townsend	330 Pine st
Mammoth S M Co	Nevada	19	15	Aug 18	Sept 29	Oct 26	D A Jennings	401 California st
Mint G & S M Co	Washoe	11	20	Sept 7	Oct 12	Nov 4	D A Jennings	401 California st
Nevada S M Co	Nevada	11	50	Sept 14	Oct 19	Nov 9	Wm Willis	419 California st
New York Cone M Co	Washoe	15	83½	Aug 31	Oct 4	Oct 23	H O Kibbe	419 California st
New York M Co	Waehoe	6	50	Aug 31	Oct 4	Oct 23	H C Kibbe	419 California st
Original Gold Hill G & S M Co	Washoe	4	50	Aug 25	Sept 30	Oct 18	W M Helman	309 California st
Phil Sheridan G & S M Co	Washoe	3	50	Aug 6	Sept 8	Sept 29	W R Townsend	330 Pine st
Phoenix S M Co	California	3	3 00	Sept 8	Oct 16	Nov 8	Chas E Elliott	419 California st
Piocha S M Co	Ely District	10	1 00	Aug 13	Sept 21	Oct 12	Chas E Elliott	419 California st
Poorman G & S M Co	Idaho	3	1 00	Aug 25	Sept 30	Oct 21	Wm Willis	419 California st
Rocky Bar M Co	Washoe	3	10	Aug 6	Sept 16	Oct 6	J P Cavallier	513 California st
Ex Exch Cons M & M Co	Nevada	4	50	July 30	Sept 6	Sept 30	D F Verdenal	400 California st
Senator S M Co	Washoe	12	50	Aug 27	Oct 2	Oct 21	J J Sayre	331 Montgomery st
Silver Central Cons M Co	Nevada	2	10	Aug 3	Sept 8	Sept 29	Lucien Hermann	320 Pine st
South Monnta n Cons M Co	Idaho	1	2 00	Aug 9	Sept 14	Oct 4	Wm Willis	419 California st
S Overman S M Co	Washoe	3	1 00	Aug 6	Sept 7	Sept 27	David Wilder	Merchants' Ex
Stark King S M Co	Nevada	12	15	Sept 6	Oct 6	Oct 23	Louis Kaplan	Merchants' Ex
St Patrick G M Co	Cal	11	50	Aug 12	Sept 15	Oct 7	D F Verdenal	400 California st
Succor Mill & M Co	Washoe	12	50	Aug 18	Sept 22	Oct 13	Wm H Watson	302 Montgomery st
Sunrise S M Co	Cal		50	Sept 14	Oct 16	Nov 8	T H Wingard	318 California st
Surprise Valley M & M Co	Inyo Co Cal	1	20 00	Aug 30	Oct 4	Oct 23	W R Townsend	330 Pine st
Victor Q M Co	California	1	25	Sept 2	Oct 5	Oct 26	John R Wilde	Merchants' Ex
Ward Beecher Cone M & M Co	Nevada	5	50	July 14	Aug 25	Sept 22	D A Jennings	401 California st
Wells Fargo M Co	Washoe	3	20	Sept 14	Oct 16	Nov 8	C H Boxart	402 Montgomery st
Woodville Cons S M Co	Washoe	3	1 00	Aug 21	Sept 23	Oct 11	W M Helman	309 California st
Woodville G & S M Co	Washoe	11	1 00	Aug 21	Sept 23	Oct 11	W M Helman	309 California st

OTHER COMPANIES—NOT ON THE LISTS OF THE BOARDS.

Annie Belcher Q M Co	Cal	2	25	Aug 17	Sept 20	Oct 7	J M Buffington	311 California st
Blue Jacket M Co		2	1 00	July 30	Oct 5	Oct 25	O J Easton	72½ Market st
Carrie Hale H M & W Co	Cal	2	10	Sept 18	Nov 1	Nov 20	F W Van Reynegom	531 California st
Cole S M Co	Washoe	27	5 00	Aug 21	Sept 27	Oct 19	Joel F Lightner	438 California st
Constitution M Co	Nevada	1	15	Aug 31	Oct 4	Oct 22	Frank Swift	419 California st
Coquille Black Sand G M Co	Oregon	1	10	June 8	Oct 13	Nov 18	F P Reynolds	111½ Leidesdorff st
Eagle Silver M & M Co	Nevada	2	50	Sept 11	Oct 20	Nov 10	H L Byrne	533 Clearny st
Edith Q M Co	Cal	5	20	Sept 14	Oct 30	Nov 20	Wm Sinart	113 Leidesdorff st
El Dorado State Co	Cal	1	40	Aug 19	Sept 21	Oct 9	Hugh Elias	416 Montgomery st
El Dorado W & D G M Co	Cal	11	20 00	Sept 21	Oct 22	Nov 8	Hugh Elias	416 Montgomery st
Georgia S M Co	Washoe	1	10	July 29	Oct 2	Oct 22	R Wegener	414 California st
Glascow G & S M Co	Nevada	1	10	Sept 20	Oct 22	Nov 12	W R Townsend	330 Pine st
Golden Chariot M Co	Idaho	14	75	Sept 2	Oct 7	Oct 26	Louis Kaplan	Merchants' Ex
Hayes G & S M Co	Nevada	7	20	Aug 18	Sept 28	Oct 25	Geo R Spinney	320 California st
Independent G M Co	Cal	9	50	Sept 11	Oct 12	Oct 30	Geo T Grimes	240 Montgomery st
Ophidia Cons M Co	Nevada	4	25	Sept 20	Nov 1	Nov 24	Chas S Neal	419 California st
Little Panoche Q M Co	California	2	10	Sept 3	Oct 7	Oct 29	Geo R Spinney	320 California st
Morse & Evans G M Co	California	2	10	Sept 6	Oct 15	Nov 12	Daniel Buck	331 Montgomery st
North Bloomfield G M Co	Cal		1 00	Aug 14	Sept 22	Oct 12	Thos Derhv	320 California st
Northern Cross S M Co	Nevada	2	10	Sept 7	Oct 14	Nov 5	A Van Bokkelen	419 California st
Oakland G & S M Co	Nevada	2	50	Sept 2	Oct 7	Oct 29	Wm H Watson	302 Montgomery st
Oro Fino M Co	Idaho	1	1 00	Aug 17	Sept 17	Oct 8	Frank Swift	419 California st
Panther M Co	Nevada	1	20	Aug 31	Oct 1	Oct 19	Frank Swift	419 California st
Picacho M & M Co	Cal	1	10	Aug 2	Sept 13	Oct 18	Ford H Rogers	330 Pine st
Pioneer Cons M Co	Nevada	1	10	Sept 14	Oct 19	Nov 9	Wendell Easton	419 California st
Prussian G & S M Co	Nevada	5	50	Aug 19	Sept 27	Oct 20	R H Brown	402 Montgomery st
Rattlesnake Q M Co	Cal	3	25	Aug 24	Sept 28	Oct 18	Andrew Baird	319 California st
San Francisco Copper M Co	Nevada	2	10	Aug 4	Sept 6	Sept 30	R De Clairmont	Front & Jackson st
St John G M Co	Kern Co Cal	3	5 00	Aug 30	Oct 4	Oct 23	W R Townsend	330 Pine st
Tiger M Co	Nevada	1	15	Aug 31	Oct 2	Oct 20	Frank Swift	419 California st
Weaverville D & H M Co	Cal	7	2 25	Aug 19	Sept 20	Oct 18	Ford H Rogerre	330 Pine st
West Point G & S M Co	California	1	25	Sept 6	Oct 8	Oct 25	Louie Kaplan	Merchants' Ex
Wm. Penn Cons G & S M Co	Washoe		6	Aug 7	Sept 11	Sept 30	John F Pope	424 Montgomery st

MEETINGS TO BE HELD.

Name of Co.	Location.	Secretary.	Office in S. F.	Meeting.	Date.
Baltimore Cone M Co		C A Senkey	331 Montgomery st	Annnal	Oct 7
Cosmopolitan M Co	Washoe	M Landers	507 Montgomery st	Annual	Oct 11
Eureka Cons M Co		W W Traylor	408 California st	Annual	Oct 11
Exchequer M Co		Jas S Kennedy	Merchants' Ex	Annnal	Oct 19
Niagara G & S M Co		W R Townsend	330 Pine st	Annual	Sept 28

LATEST DIVIDENDS (within three months)—MINING INCORPORATIONS.

Name of Co.	Location.	Secretary.	Office in S. F.	Amount.	Payable.
Black Bear Quartz	Cal	W L Oliver		25	Sept 13
Con Virginia M Co	Washoe	Chas H Fish	401 California st	10 00	Sept 7
Empire G M Co	Sierra Co Cal	O Collichon		5 00	Aug 17
Empire M Co	Nevada Co Cal	D A Jennings	401 California st	50	Sept 15
Eureka Consolidated M Co	Nev	W W Traylor	419 California st	1 00	Aug 5
Excelsior M & M Co		Frank Swift	419 California st	1 00	April 10
Gila S M Co	Nevada	W Anz Koapp	116 Leidesdorff st	25	Aug 16
Jefferson S M Co		C A Sankey	331 Montgomery st	50	May 15
Leopard M Co		R H Brown		50	July 15
Lyon Mill & Mining Co	Washoe	E F Stone	Hayward's Bldg	50	Aug 18
Manhattan S M Co	Nevada	Chas S Neal	419 California st	1 00	June 15
Northern Belle M & M Co		W Willis —	419 California st	1 00	Sept 15
Oneida M Co		L Kaplan	Merchants' Ex	50	Aug 21

METALS.

[WHOLESALE.]

WEDNESDAY M., September 22, 1875.

American Pig Iron, ₱ ton	38 00	@	39 00
Scotch Pig Iron, ₱ ton	40 00	@	44 00
White Pig, ₱ ton	— —	@	30 00
Oregon Pig, ₱ ton	— —	@	33 00
Refined Bar, bad assortment, ₱ ℔	— —	@	— 3½
Refined Bar, good assortment, ₱ ℔	— —	@	— 4
Refined Bar, No. 1 to 4	— —	@	— 4½
Plate, No. 5 to 9	— —	@	— 5½
Sheet, No. 10 to 14	— —	@	— 5½
Sheet, No. 16 to 20	— 5½	@	— —
Sheet, No. 22 to 24	— 6	@	— —
Sheet, No. 26 to 28	— 7	@	— —
Horse Shoes, per keg	7 50	@	8 00
Nail Rod	— 10	@	— —
Norway Iron	— 9	@	— —
Rolled Iron	— 6	@	— —
Old Iron for Blacksmiths, Miners, etc.	— —	@	— 4½
COPPER.—			
Braziers'	— 35	@	— —
Copper Tin'd	— 37½	@	— —
O'Neil's Pat	— 37½	@	— 40
Sheathing, ₱ ℔	— 24	@	— 40
Sheathing, Yellow	— —	@	— 25
Sheathing, Old Yellow	— —	@	— 12½
Composition Nails	— 24	@	— —
Composition Bolts	— 24	@	— —
STEEL.—English Cast, ₱ ℔	— 20	@	— 25
Anderson & Woode' American Cast	— —	@	— 18½
Drill	— —	@	— 16½
Flet Bar	— 18	@	— 22
Plow Steel	— 9	@	— 10
TIN PLATES.—			
10x14 I C Charcoal	11 50	@	12 00
10x14 I X Charcoal	13 50	@	14 00
Roofing Plate I C Charcoal	10 50	@	11 00
Banca Tin	— 25	@	— 30
Australian	— 25	@	— 30
ZINC.—By the Cask	— —	@	— 11
Zinc, Sheet 7x3 ft, No 7 to 10 ₱ ℔	— —	@	— 11
do do 7x3 ft, No 11 to 14	— —	@	— 11½
do do 8x4 ft, No 8 to 10	— —	@	— 12½
do do 8x4 ft, No 11 to 10	— —	@	— 12
NAILS Assorted sizes	— —	@	4 10
QUICKSILVER, per ℔	— 67	@	— 70

Gold, Legal Tenders, Exchange, Etc.

[Corrected Weekly by CHARLES SUTRO & CO.]

SAN FRANCISCO, September 22, 3 P. M.

LEGAL TENDERS in S. F., 11 A. M., 86 to 86¾.

GOLD in N. Y. 116¾.

GOLD BARS, 890. SILVER BARS, 6½ and 7½ per cent. discount.

EXCHANGE on N.Y., 60-100 per cent. premium for gold; on London bankers, 49; Commercial, 49½; Paris, five francs per dollar; Mexican dollars, three to five per cent. discount.

LONDON — Console, 93 to 93¾; Bonds, 102½.

QUICKSILVER in S. F., by the flask, per ℔, 65c.

LEATHER.

[WHOLESALE.]

WEDNESDAY M., September 22, 1875.

City Tanned Leather, ₱ ℔	26@29
Santa Cruz Leather, ₱ ℔	26@28
Country Leather, ₱ ℔	24@28
Stockton Leather, ₱ ℔	25@29
Jodot, 8 Kil., per doz	$50 00@ 54 00
Jodot, 9 Kil., per doz	63 00@ 72 00
Jodot 14 to 19 Kil., per doz	82 00@ 90 00
Jodot, second choice, 11 to 16 Kil. ₱ doz	57 00@ 74 00
Cornellian, 12 to 16 Ko	57 00@ 67 00
Cornellian Females, 12 to 13	63 00@ 67 00
Cornellian Females, 14 to 16 Kil	71 00@ 76 50
Simon Ulimo Females, 12 to 13, Kil	60 00@ 63 00
Simon Ulimo Females, 14 to 15, Kil	70 00@ 72 00
Simon Ulimo Females, 16 to 17, Kil	73 00@ 75 00
Simon, 18 Kil., ₱ doz	61 00@ 63 00
Simon, 20 Kil., ₱ doz	63 00@ 67 00
Simon, 24 Kil., ₱ doz	72 00@ 74 00
Robert Calf, 7 and 9 Kil	35 00@ 40 00
French Kips, ₱ ℔	1 00@ 1 35
California Kips, ₱ doz	40 00@ 80 00
French Sheep, all colors, ₱ doz	9 00@ 13 00
Eastern Calf for Backs, ₱ ℔	1 00@ 1 25
Sheep Roans for Topping, all colors, ₱ doz	9 00@ 13 00
Sheep Roans for Linings, ₱ doz	5 50@ 10 50
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Half-inch Battens, M	22 50		Dodo refnse, ₱ M	25 00
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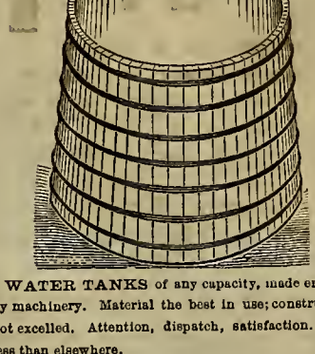

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Notice is hereby given, that at a meeting of the Board of Directors, held on the 3d day of September, 1875, an assessment of ten cents per share was levied upon the capital stock of the corporation, payable immediately, in United States gold and silver coin, to the Secretary, at the office of the company, No. 402 Front street, room 8, San Francisco, Cal.

Any stock upon which this assessment shall remain unpaid on the 11th day of October, 1875, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Saturday, the 30th day of October, 1875, to pay the delinquent assessment, together with costs of advertising and expenses of sale.

W. O. WILSON, Secretary.

Office, No. 402 Front street, room 8, San Francisco, Cal.

Hope Quicksilver Mining Company—Location of principal place of business, San Francisco, California. Location of works, Cinnabar Mining District, Sonoma County, State of California.

Notice is hereby given, that at a regular meeting of the Board of Directors, held on the 2d day of August, 1875, an assessment (No. 2) of Five cents per share was levied upon the capital stock of the corporation, payable immediately, in United States gold coin, to the Secretary, at the office of the company, Room 2, No. 408 California street, San Francisco, Cal.

Any stock upon which this assessment shall remain unpaid on the 9th day of September, 1875, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Thursday, the 30th day of September, 1875, to pay the delinquent assessment, together with costs of advertising and expenses of sale.

JACOB HARDY, Secretary.

Office, Room 2, No. [illegible] California street, San Francisco California.

POSTPONEMENT.—The date of the delinquency of the above assessment is postponed to the 8th day of October, and the date of delinquent sales to November 1st, 1875.

By order of the Trustees. J. HARDY, Secretary.

September 8, 1875.

Manhattan Marble Company of California. Location of principal place of business, San Francisco, California. Location of works, Oakland, Alameda county, State of California.

Notice is hereby given, that at a meeting of the Directors, held on the 6th day of August, 1875, an assessment (No. 8) of five dollars per share was levied upon the capital stock of the corporation, payable immediately, in United States gold coin, to the Secretary of the company, at his office, Nos. 13 and 15 Fremont street, San Francisco, California.

Any stock upon which this assessment shall remain unpaid on the 15th day of September, 1875, shall be deemed delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Monday, the 4th day of October, 1875, at 12 o'clock M., to pay the delinquent assessment, together with costs of advertising and expenses of sale.

L. L. ALEXANDER, Secretary.

Office, Nos. 13 and 15 Fremont street, San Francisco, California.

Mount Auburn Gold Quartz Mining Company. Location of principal place of business, San Francisco, Cal.

Notice is hereby given, that at a meeting of the directors, held on the 25th day of August, 1875, an assessment (No. 1) of twenty-five cents per share was levied upon the capital stock of the corporation, payable immediately, in United States gold coin, to the Secretary, at the office of the company, No. 402 Montgomery street, room 9, second floor.

Any stock upon which this assessment shall remain unpaid on the 27th day of September, 1875, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Thursday, the 28th of October, 1875, to pay the delinquent assessment, together with costs of advertising and expenses of sale.

C. A. JAMES, Secretary.

Office, 402 Montgomery street, room 9, San Francisco California.

Orleans Mining Company—Location of principal place of business, San Francisco, Cal. Location of works, Grass Valley Mining District, Grass Valley, Nevada County, Cal.

Notice is hereby given, that at a meeting of the Board of Trustees of said company, held on the 6th day of September, 1875, an assessment, No. 7, of one dollar per share was levied upon the capital stock of said company, payable immediately in gold coin of the United States of America, to the Secretary, at the office of the company, room 8, No. 315 California street, in the city of San Francisco.

Any stock upon which said assessment shall remain unpaid on the 7th day of October, 1875, will be advertised on that day as delinquent, and unless payment shall be made before, will be sold on the 28th day of October, 1875, to pay the delinquent assessment, together with costs of advertising and expenses of sale.

GEO. P. THURSTON, Secretary.

Office, room 8, No. 315 California street, San Francisco, Cal.

Silver Wave Mining Company—Location of works, White Pine Mining District, Nevada.

NOTICE.—There are delinquent upon the following described stock, on account of assessment (No. 12) levied on the 31st day of July, A. D., 1875, the several amounts set opposite the names of the respective shareholders, as follows:

Names.	No. Certificate.	No. Shares.	Amount.
A F Carmody, Trustee	574	250	$ 62 50
E Fisher, Trustee	552	250	62 50
W N Hawley	468	25	6 25
N Reynolds	545	20	5 00
E A Richardson, Trustee	499	100	25 00
E A Richardson, Trustee	520	100	25 00
E A Richardson, Trustee	566	10	2 50
E A Richardson, Trustee	572	100	25 00
W J Williams, Trustee	244	50	12 50

And in accordance with law, and an order of the Board of Directors, made on the 31st day of July, A. D., 1875, so many shares of each parcel of such stock as may be necessary, will be sold at public auction, at the office of said company, on Friday, the eighth (8th) day of October, A. D., 1875, at the hour of two (2) o'clock P. M., of said day, to pay said delinquent assessment thereon, together with costs of advertising and expenses of the sale. J. W. CLARK, Secretary.

Office, Room 2, 418 California street, San Francisco, California.

Yosemite Mining Company—Location of principal place of business, San Francisco, Cal. Location of works, Humboldt county, Nevada.

Notice is hereby given, that at a meeting of the Board of Directors, held on the 29th day of July, 1875, an assessment of twenty-five cents per share was levied upon the capital stock of the corporation, payable immediately, in United States gold coin, to the Secretary, at his office, No. 210 Battery street, San Francisco.

Any stock upon which this assessment shall remain unpaid on the 26th day of September, 1875, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on the 23d day of October, 1875, to pay the delinquent assessment, together with costs of advertising and expenses of sale. By order of the Directors.

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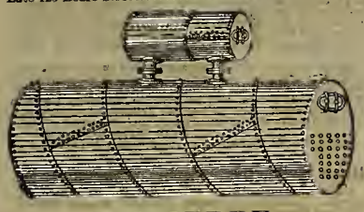

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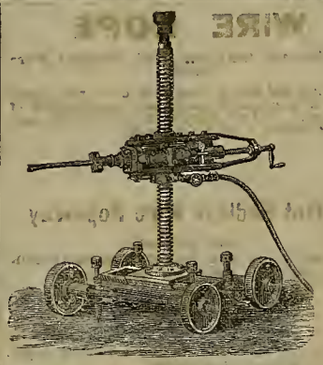

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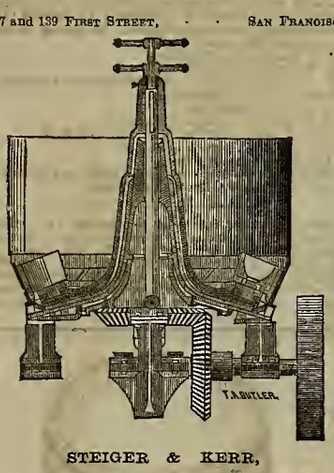

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All Kinds of Boiler and Sheet Iron Pipe.

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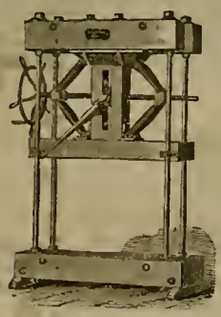

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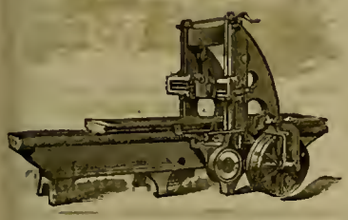

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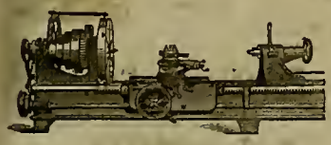

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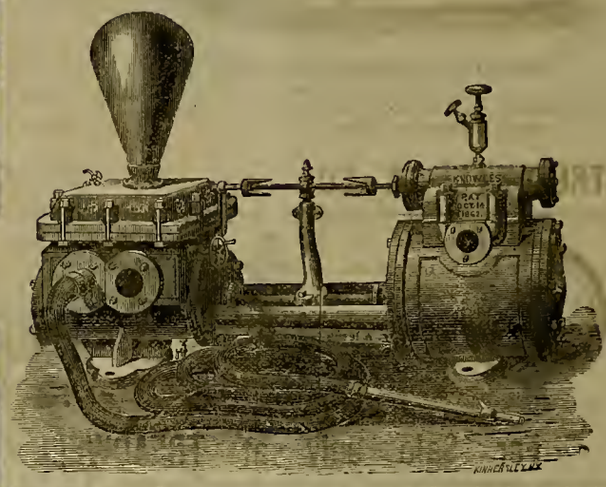

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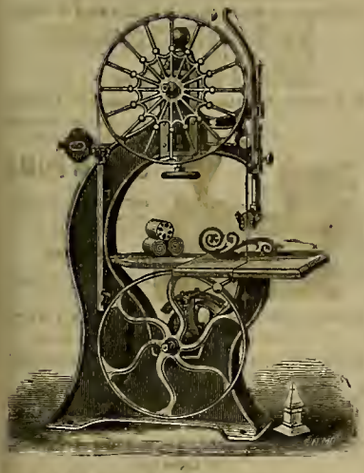

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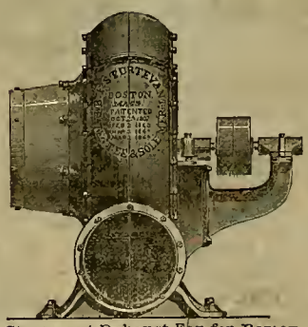

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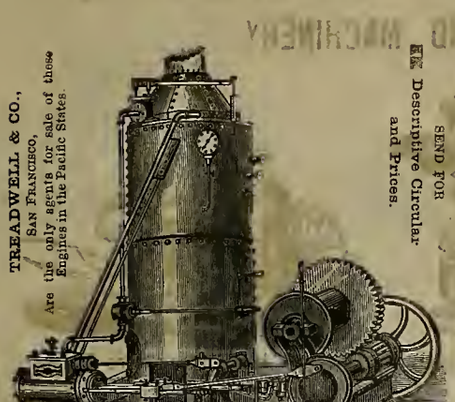
SEND FOR Descriptive Circular and Prices.



We have all sizes of COOK, RYMES & CO.'s Celebrated Hoisting Engines. These Engines are well known from Alaska to Mexico, and need no recommendation from us. They are made of the best material, and have been lately greatly improved with large drums and link motions.

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DOUBLE-DRUM MINING ENGINE,

MADE BY SAME PARTIES, IS THE MOST COMPLETE HOISTING RIG EVER INTRODUCED TO THE MINES OF PACIFIC COAST. THE PLANS AND SPECIFIOATIONS WERE MADE BY ONE OF THE FIRST MINING ENGINEERS AT VIRGINIA, NEVADA. THESE ENGINES MAY BE SEEN IN SUCCESSFUL OPERATION AT THE FOLLOWING MINES, IN VIRGINIA OR GOLD HILL:

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☞ We have three sizes of these Mining Engines, and are prepared to fill orders at short notice. Prices and full information sent on application to

COOK-RYMES HOISTING ENGINES,
5½x12—6x12—7x12—8x12—9x14,
Always on hand, with or without reverse motion, either horizontal or upright cylinders, and with or without trucks.

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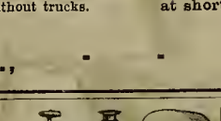

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Foot Scroll SAW.
A nice hand machine in all small work.

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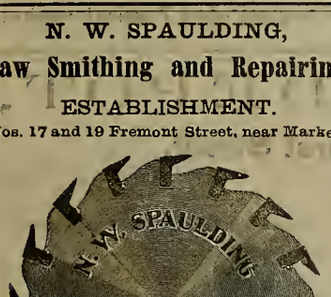

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SPAULDINGS'
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Each Saw is Warrantsd in every respect;
Particular attention paid to construction of
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At the lowest Market Prices.

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TO LUMBERMEN OF THE PACIFIC.

We were awarded the $100.00 *Gold Prize*, First Prize *Silver Medal* in the Great National Sawing Contest, had at Cincinnati, September, 1874, and *First Prize Silver Medal* for the *Best Cross-Cut Saw;* two First Prize Medals for the *Best Saw Swage* and *Cross-Cut Saw Attachment;* also the First Premium in the Great Sawing Match at the Provincial Fair, in Canada, and several First Premiums in State and County Fairs wherever any Celebrated Damascus Tempered Saws have been tested. Emerson's Patent Clipper Toothed Saws for heavy feed, and our Solid Toothed Saws of all descriptions, AT GREATLY REDUCED PRICES, and sold UNDER FULL WARRANTEE. We cannot afford to make a poor saw. *Only seven days by mail from San Francisco.* Send your address on postal card for illustrated circular and price list.

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A General Assortment of Engineers' Findings
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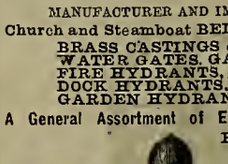
STEAM PUMP
☞ The Best and Most Durable in use. Also, a variety of other
PUMPS
For Mining and Farming Purposes.



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For Ventilating Mines and for Smelting Works.
HYDRAULIC PIPES AND NOZZLES,
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IMPORTER OF
IRON PIPE AND MALLEABLE IRON FITTINGS,
ALL KINDS OF
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16-tf AT LOWEST RATES.

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A Mining and Civil Engineer, of long experience, collected in Europe and America, well acquainted with correct management of mines and mills, practised in projecting and constructing mining and milling machinery, and especially *machinery for mechanical ore concentration*, is open for re-engagement, and would prefer the task of constructing works for mechanical concentration of low grade ores on a well developed mine, or of remodeling ineffective works in the ore milling line for successful operation. Apply to Messrs. DEWEY & CO., or this office, for reference.

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MINING AND SCIENTIFIC PRESS.

An Illustrated Journal of Mining, Popular Science and General News.

BY DEWEY & CO., Patent Solicitors.

SAN FRANCISCO, SATURDAY, OCTOBER 2, 1875.

VOLUME XXX Number 14.

The Hall Treadle.

The sewing machine has been considered as the great labor saving invention of the age. It has certainly accomplished wonders and revolutionized the work of the needle. But it is a question whether the great gains achieved in its introduction have not been nentralized to a cousiderable extent by the injurious effects upon the health of our women. It is an acknowledged fact that the action of the nether limbs made necessary in working the treadle of a sewing machine, causes in many cases, diseases of the spine and back. Two or tnree years of stesdy work on a sewing machine is pretty sure to use np the average woman and make her an invalid for the remainder of her days. To obviate these troubles, the Hall treadle was invented, and it has proved as much a health saver as the sewing machine is a labor saver. With this treadle the power is applied solely by the downward movement of the foot, which pivots at the heel instead of the instep, while the rate of speed is regulated by the strength of these movements of the feet, and not by their number. This renders nunecessary that rapid motion of the limbs, on the part of the operator, which causes the entire body to sway and vibrate. Among the advantages claimed on behalf of this invention, the following appear to be the most prominent:

1. The great variety of motion allowed to the feet. The machine can be driven by one foot or both, or either alternately, the two foot pieces being independent of each other. A slow, alternate motion is generally preferred, which permits one foot to rest while the other is being brought down.

2. There are no dead levels. By the aid of the "pawl-and-gib" movement, the crank is entirely dispensed with, and the machine can therefore always be started without the necessity of applying the hand to the balance wheel.

3. The ease with which it is worked. There being no power wasted, much less force is required to move this treadle. To express the actual difference in figures, it has been estimated that while the force required to accomplish 150 stitches by the old treadle is equivalent to that necessary to raise a weight of seven pounds 165 inches, the same work may be done by means of this treadle by the force necessary to raise two and a half pounds sixty inches.

A company for the manufacture of these treadles was incorporated in this city several weeks since, and the Hall treadle manufacturing company will soon be able to supply the constantly increasing demand on the Pacific coast for this excellent invention. The manager, Mr. C. P. Sykes, has taken space in the Mechanic's Institute Pavilion, where the operation of the treadle is watched daily by groups of interested spectators.

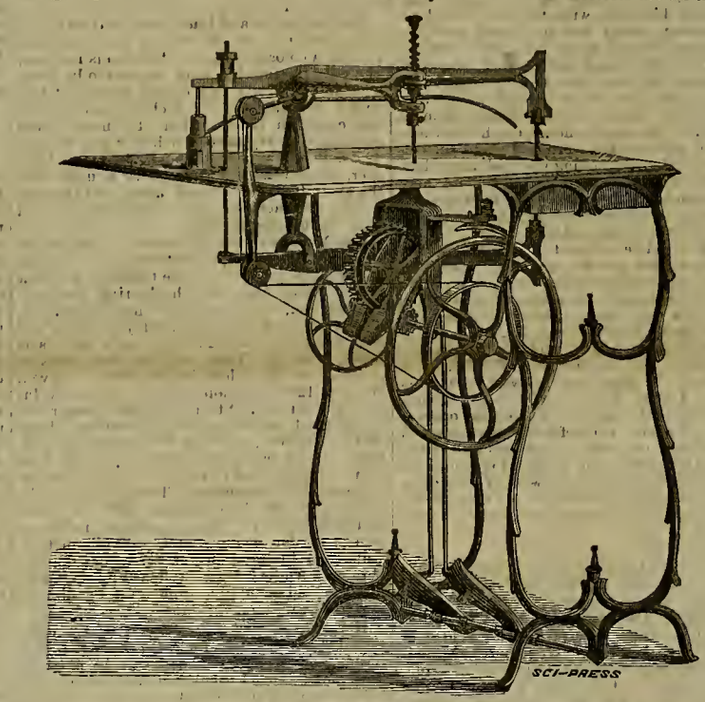
It is not to sewing machines alone that the Hall treadle can be applied. It drives with equal facility a jig saw and boring machine, and turns a grindstone with an ease that is difficult to imagine. The jig saw with treadle attachment for doing bracket and scroll work is particularly worthy of mention. We give an illustration of it on this page. As the lower and upper arm are alike, and the saw fastened in a spring head, and with a roller in the table back of the saw, a steady, upright motion is obtained, that leaves the work smooth, so that it requires no further finish. The saw-head is so arranged that any fine saw is easily adjusted, and requires no particular make of saws. An air pump or bellows drives the air through a pipe to where the sawing is done, and keeps the work free from saw dust, which would otherwise have to be dissipated by the breath of the operator. The boring attachment has all the adjustments usual in a boring machine. This saw works with ease; a lady can run it with a very little practice, in the same manner that she can run a sewing machine.

The grinding machine, of which we also give an illustration on this page, is a very handy thing to have about the house for grinding scissors, knives or tools, and to the farmer it is invaluable for sharpening axes and agricultural implements. Upon all of these grinding machines is a six-inch, solid Union emery wheel, which can be used without water, and does not heat or draw the temper from tools.

These several inventions are all deserving of notice, and we doubt not they will soon come into popular use.

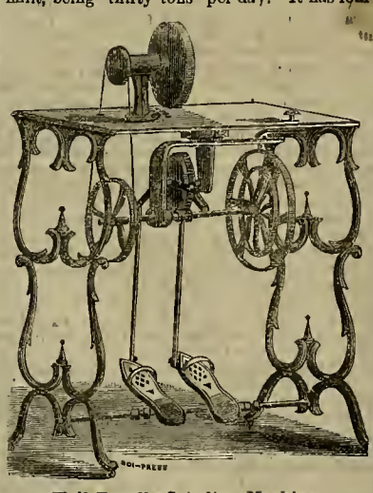
A Large Quicksilver Furnace.

They are now getting out the iron work at the Golden State iron works, in this city, for the largest quicksilver furnace ever built here.



HALL TREADLE JIG SAW AND BORING MACHINE.

It is a Knox & Osborne and Green furnace, modified by Mr. Winterburn; the condensers are of the Knox & Osborne pattern. The capacity of this furnace is greater than any yet built, being thirty tons per day. It has four



Hall Treadle Grinding Machine.

fires like the Green furnace, but they are put in differently. It is to go to the Wall Street mine, in Lake county, a few miles from the Great Western. Work has been carried on at the mine for the past twelve months, and the developments made warrant the outlay. The ore is not extremely rich, but they have plenty of it and think they can run one and perhaps two large furnaces continually.

The largest furnaces built here before this, were of twenty tons capacity, which, under favorable circumstances, could reduce twenty-five tons of ore per day. This, of thirty tons per day capacity, could be made to melt through thirty-five tons, or perhaps more. It is believed to be ahead of any quicksilver furnace yet built.

At this same foundry they are getting out two benches of retorts for mines in Trinity county. Three of these retorts are for the Altoona mine and five for the Boston. The Altoona is said to promise to become one of the leading quicksilver mines of the coast. With three small retorts they are now taking out 150 flasks of quicksilver per month. The ore is in sandstone, and is very rich and fine. In the upper diggings they wash out this fine stuff and concentrate it before retorting. With their extra retorts an increased reducing capacity will be given. It is the intention of the owners to erect a large furnace in the spring.

FRYER PROGRESS.—We understand, says the Nevada *Transcript*, of the 23d inst., that R. M. Fryer will have his machinery all in its place some time next week, and in about a week thereafter he will be in full operation upon his new process. The people will rejoice to learn this fact, as hundreds are waiting to hear that Mr. Fryer has proved all that has been anticipated. It is said the first lot of rock will be tried from the Providence—the biggest mine in Nevada county.

THE contractor has been experiencing considerable difficulty in driving the railroad tunnel at the Town Talk divide, near Grass Valley, owing to the amount of water encountered.

THERE are now about four hundred men employed on the Fulton and Guerneville branch road, and two and a half miles of track have been laid.

THE Petaluma *Argus* wants some enterprising parties to start a manufactory of agricultural implements in that town.

THE freight on a narrow gauge engine lately received from the East by the Stockton and Ione railroad was $1,800.

THE narrow gauge road between Alviso and Newark is now considered a certainty.

The Buckminister Drill and Air Compressor.

The Buckminister drills and air compressors are new candidates for public notice in the field of mining machinery. In both air compressor and drill, several new features are comprised, which are the inventions of Mr. Buckminster, of this city. One of each of these machines has recently been made by the Pacific iron works in this city, both being now on exhibition at the Mechanics' Institute Fair. On the drill, improvements are claimed on the turning and valve movements, and also on three different clamps. One of these clamps is for holding the drill on the tripod; another is for holding the drill tool in position; and the third for holding the weights upon the leg of the tripod. Ball and socket joints are also made on the two front legs of the tripod, making it very "flexible," so to speak.

The movement for turning the drill point, so as to present the cutting faces in a different position at each blow, is obtained by a notched sectional sleeve moving freely between two fixed heads of the piston, having two diagonal slots acted and operated upon by fixed lugs passing through the sides of the cylinder.

When the piston is on its down stroke the form of these notches allows the sleeve to turn full upon the piston. On the return stroke the faces of the notches slide upon each other, throwing the head out against the fixed head of the piston, and binding them sufficiently to turn the drill.

One of the clamps which is improved, is that for holding the sliding ways of the drill to its column on the tripod. This clamp is so constructed that the drill carriage can be turned clear round the column, and can also turn in a complete circle on the head of the clamp. The clamp is made with a hinge and hinged bolt, and has a sliding wedge, being so constructed that in turning upon this hinged bolt the clamp is made rigid on the carriage and also clamped rigidly on the column.

The drill chuck, or clamp, is peculiar, and needs to be examined to be understood. It holds the drill firmly in position, and, by relieving a bolt, the drill pulls right out by one turn of the nut.

Another improved clamp is that which holds the weights on the legs of the tripods. Usually the weights are secured with a key or screw. In this case an eccentric with handle is used, so that when the weight is moved up or down the eccentric relieves or secures it by a simple quick movement.

The air compressor is made compact and portable, and has several new devices. The principle of using water columns to compress air is an old and successful one. The features claimed by Mr. Buckminster are easily seen. He opens the induction valves mechanically and holds them open at the end of the stroke to obtain a full cylinder of air. Most machines open against the tension of a spring, and consequently the valve closes before it quite reaches the end of the stroke and before the cylinder is full of air. The eduction valves are equilibrium piston valves that work noiselessly. Another feature is a water governor to regulate the inflow of water to the machine, so that it will correspond in amount with the velocity of the machine. When running fast more water is needed to keep the air cool and keep the cylinders full of air.

The Pacific iron works have just commenced the manufacture of these drills and compressors. The outside of the drill presents a simple appearance, and the inside appears equally simple. The drill is so easily handled in the tripod with the new clamps that the inventor states it will put in holes in more difficult places than can be done by hand. Mr. Buckminster will be pleased to take the drill apart and explain its internal construction to those interested in such machinery. Its operation can be examined at the Fair, where it is being worked by the compressor described.

THE new tannery in San Diego is doing a successful business.

Gold Mining in Virginia.

A correspondent of the Richmond, Va., *Whig*, writes an interestiog letter to that psper, on the subject of "gold mining in Virginia." We make the following extracts:

The mining interests of this Stste are, in my opinion, of paramount importance to her people. A grand future ie certainly in store for Virginia, if the development of her mines only takes proper direction. While much may be done hy private enterpiise to give informstion and produce results in mining matters, yet this may prove too slow, and some other metbod should be adopted. Virginia should not wait for private enterprise to do everything when she has it in her power to help herself to a much greater edvantage.

In order to hring the subject of mining in this State advsntageously before the public, the Governor of this commonwealth should be authorized and directed by the next Legislature to appoint a commission of mining etatistics for the State of Virginia, with powers and duties similar to that of the United States commission of mines west of the Rocky mountains. It is not probahle that for years to come will Congress provide a similar office for that portion of the United States east of said mouuteins. Besides, it is too much area for one man attend to, if he is going to do it right.

States like Virginia, Pennsylvania, or North Cerolina, possessing as they do, such vast mineral resources, ought to have a mining commissioner of its own; and to do ample justice to the subject, each commissioner should have an aseistant, aud hoth should be competent men in every respect.

The reports of the United States Commissioner west of the Rocky mountains have done and are doing a vast amount of real good They furnish to the world a great deal of most valuable information that never would he obtained by private enterprise, except in the shape of costly books, or technical schools which can be reached hy only a few, comparetively.

A similar officer of this State could do more in two or three years to give publicity to the mineral resources of the Old Dominion, at less expense, and in a more effective way, than by any other course which, in my opinion, could be adopted. I earnestly hope that the next Legisleture will give that attention to the subject which its importance demands.

I will now proceed to give a brief, general history of gold mining in Virginia, noticing some of the principal oauses of failure in the past to make the orea pay a profit here as well as elsewhere.

Gold was discovered iu Virginia about the yeer 1831, and was firet obtained from "surface mining," as it is called here, and corresponds to the "placer mining" of Californie, and "gulch miuing" of Colorado.

Some Very Rich Deposits

Were found in the gravel beds along the streame, that paid well, and there can be no douht that there are more of euch deposits, ooly awaitiog discovery by the energetic applicstion of the inquisitive gold-seeker's pick and shovel at the proper points.

As is nsual, after such discovery the veius or lodes are found from which it is popularly supposed the gold is derived. Then commenced the introduction of macbiuery for the reduction of the ores, that promised well near the surface, which is usually the csse iu veins coutaining auriferous sulphurets. The same laws prevail here ss elsewhere in regard to the decomposition of the sulphurets in veins at or neer the surface, by which the larger portion of the gold is set free.

If the gold is modcrately coarse a good portiou of it may be saved by the older methods, involving the use of hides, blankets, shakingtables or sluices, but when the gold all occure in fiuely-divided particles it is more difficult to save, and eome other methods should be adopted to save the precious metal.

As water level is approaobed the sulphurets generally increase, and while there is as much gold in the ore, yet not so much in the free state, and the processes above mentioned fail to extract it satisfactorily. The sulphuret ores failed to yield bnt a very small percentage of the gold they were found to contain by assays. Various processes and devicee for seving gold more closely were tried. While some were very ingenious, they were not adapted to the purpose in view. The great point aimed at was to collect all the gold by means of quicksilver. Some olaim to have found out e method of saving nearly all the gold hy amelgamation, and I sincerely hope it may prove to be the case. Millions of dollars heve been expended in fruitless attempts to accomplish

This Great Desideratum.

The eame experienco was had in Californiia aud Colorado and otber Western mining sections in regard to processee for working sulphurets. There were very many failures, though the ore was rich. The people kept on trying faithfully, firmly helieving that a processa could he found that would succeesfully treat the large amount of rich ores that were wasting from the mille or were useless in the mines.

At last, in 1858, Mr. Deetken introducod the ohlorination procees ia Grass Valley district, and was very successful in working sulphuret and arsenicel ores, extractiug as high as 95 per cent. of the gold, as indicated by fire test. This may be considered the most succeseful prooose that hae been made public.

So far as I can learn no process hes been suocessful that is not hased on a thorough decomposition of the sulphurets, or arseniurets, as the oase may be, and this may he oonsidered as the mein oause of the feilures in working refractory ores both here eod elsewhere. Many methods were employed to hring the ores in contact with the quicksilver. Some aoted on the theory that the quicksilver would penetrate the sulphurets and combine with the gold, but they were doomed to disappointment. Some wasted the ore partially and then amslgamated, hut they did not produce the results so fondly hoped for. Even where the sulphurets are well decomposed by roasting, amalgamation does not succeed well

But useful information of some kind should always he gained from every failure in mining or metallurgical process. Some one is sure to he a loser in a fiaancial point of view, and some one ought to he a gainer of some useful facts. By investigeting the causes of failures valuable prsctical discoveries are often made, and by comparison of the differeut processes for the trestment of auriferous ores, we can fiud out the most economical and effective ones.

While in Colorado I nad an excelleut opportunity of comparing the results of the chlorination snd amalgemation processes separstely on on the same kind of ore, which contsined, when roasted, from three to five per cent. of copper. The psrty who made the experiment by amalgamation was an expert in the husiness, having had several years' experienee in California and Colorado, and was familisr with

All the Popular Methods

Of amalgamstion of gold ores, and he chose the "California hoiling process," as the one most likely to compete with or superoede chlorination, which I was tben working.

This expert weighed the ore very carefally snd was partiouisr to get it from the same mess where I did to fill my tanks for ohlorination. He ohtained a fine, large hall of amalgam, and was highly delighted with the reeult, and enthusiastically stated thet he would send the ohlorination works down the gulch. On examination it was found thet the nice, lerge ball of amalgam he had wae mostly copper, and when the gold was separated and weighed he found that he had not ohtained more than 40 per cent. of the usual amount hy chlorination. I did not near another word seid about the celebrated "California hoiling process" after that. The chlorination works treated all the ore there was on hand, and the mine being in litigation, the owners wisely concluded to raise no more ore until the case was settled.

I wish to relate a osse of inexcusable waste, which is another prolific source of failure io working ores containing precious metals. Some picked ore was seut from a Virginia mine to be treated hy a new amalgamator, for which the inventor claimed uuusual results. The ore in question contained iron and copper pyrites, some galena and was rich in free gold. The returu from the new machine was about $150 per ton. I asked for a sample of the tailings for assay, in order to see how close the ore was worked. I made a carefnl test, and obtained $188 per ton, coin value, which was lost by the new amalgamator. The parties for whom the ore was worked were not aware of the great loss aud seemed well satisfied, and thought the ore was good, and that the new machinery did very well.

Ventilating Coal Carooes.—The experience of the ship *Glory of the Seas* may be instanced es another case of the necessity of ventilating coal cargoes. This vessel arrived at Sao Francisoo lately, from Liverpool, with a load of Laucsehire coal, which, after a short time, presented startling evidences of spontaneous combustion. Her captain, being a practioal and observaut man, immediately adopted a system of ventilatiou, which, he asserts, was the only means of seving the ship. With open hatchee, together with takiug the precaution of having the ends of the lower snd middle decks open for thirty feet every three inches (she hae three decks), the coel was never so hot, even on the surfaoe, that it could not be handled It is thought, with some show of reason, that a more than usually lerge quentity of eulphur is present in this coal, ae eeveral ships laden with it, end houud to Pacifio ports, have recently heen destroyed hy fire. An intelligent recognition of the dangers of the sea, prudent provisions and vigilance, if not always able to obteiu the mastery over them, nevertheless serve to palliate disaster, wheu it comes.—*Nautical Gazette.*

One Effect of Bad Art.—One of the most obviously misohievous effects of had art is thet it leeds us to sec nature falsely. I have before me a beautiful hilly and wooded landscape of a peculiarly Americon type. I saw it for the first time not loug ago, and it has takeo me several deys of out-door life to see it as it should be seeu, and uot as the second-rate paintere have sceu it—not with a taint upon it of the conventional Americon landscape of the chromo order. The fact is that the painting of the chromo school does not really look like nature, although the distorted presentation iu it of some ooe phase of a landscape gives a certain falee air of likeness and reflects through the memory upon the original.

There was, lest night, over these hills a very beautiful moonlight. The moon was at the full, the sky was of a deep hlue, and the large clouds were tinged with rich and mellow color. But the pecnliar quality of the moonlight effecte, their veporous, unoertain messee and outlines, —this ie the very quality curiously absent from most of the pictures of moonlight effeot thet one sees in the galleries.—*The Old Cabinet; Scribner for October.*

Preparing for the Centennial—Progress of the Exhibition Buildings.

A oorrespondent of the New York *Tribune*, writing from Philedelphis under date of September 5th, says:

At the Centennisl grounds the work of construction coutinues to go forward with method and rapidity. The superetructure of the main building is all up, except the eastern fecade and the great central transept. Much of the glazing and painting has been done and the floor is partly laid. A system of decorating the columns, woodwork, and upper windows is being tested whioh promises brilliant effects, but is likely to err in the direction of too much color. The eye should not he diverted from the objects oxhihited hy showy ornamentetion of the buildiug. A method of lettering and numbering the iron oolumns that sustain the roofs has been adopted, and will serve as a directory to the plaoe of each exhibitor. The columns will be numbered lengthwise, and lettered crosswise. The address of exhibitors will be that of the column neareet to the street where their articles are displayed, and they will thus be readily found hy letter osrriers, telegraph hoys and visitors. For example, an exhihitor who gives his address as "Column D, 21," will be found in the fourth row from the side, and at the twenty-first column from the end of the building. This system has never been applied to any previous exhihition. The regular parellel gram form of the main building makes it perfectly practicable. Henry Pettit, the architect of this building and the Machinery hall, is its author. He has also perfected a system of accurately mapping out the floor space, so thet when the allotments are mede there will be no possibility of exhibitors clsiming the same territory.

All the granite aud brick work of the Art hall is finished, the iron skeleton of tbe dome supporting a colossal statue of America is iu place, and only the interior work remains to be done. The simple, quiet and chaste desigo of this edifice will delight the architeotural purists who oondemn tbe profusion of ornament and admixtnre of styles so much in vogue of late. The hall will appear to most advantage, however, when the huge temporary structures of the exhibitioo are cleared away, and its main front is seen across a broad level lawn covered with verdure and flowers.

The Maohinery hall is nearest to completion of any of the prinoipal structures. All the superstructure is up except the transept, and that is well under wey; and the flooring, painting, glazing, etc., are more then helf completed. The large room for the display of steam and rotary pumps and turbine water wheels is nearly fiohed. There will he eight lines of shafting extending lengthwise, seven to have a speed of 120 revolutions and one of 240 revolutions per minute. Steam and water power will be snpplied gretuitously to exhibitors. They will be required, however, to furnish such pulleys, counter shafts and helts as they need at their own cost, and to pay for erecting foundations for their machines. The latter must be finished hy the 1st of Maroh, 1876. A space will he reserved for steam hammers in operetion, and for heating aud working metels. Rules and information for exhibitors of machinery have just heen published by the Commission, and should he applied for by all prospective exhioitors.

Hortioultural hall now shows a nearly oompleted skeleton. In a fortnight more the iron outlines of ribs and columns will he filled in with glass. On Agricultural hall tbe work is still principelly prosecuted in the shops where the material is prepared. The foundation is ready, however, and the workmen have begun to put up the superstructure. The United States Government huilding, whioh ranks in size next to the four buildings named above, is already far advanced, and will be finished hefore winter. Bids for the erection of the Women's pavilion have been received, and the contract will he given out in a few days. The limit of cost is $30,000. The Jury pavilion, ooetiug $45,000, will also be soon under contract. It will contein, hesides rooms for jury meetings, a large hall for the use of scientific bodies, international congresses and other assemhlies, aad a uumber of rooms for newspaper reporters. A quaiat structure in the old Eoglish etyle of architecture—brick and heevy timber mingling in the walls—is going up at the foot of George's hill. It will be used hy the British Commission for offices. A drawing for a building for the Imperial Germsn Commission has been prepared by Mr. H. J. Swarzmenn, Architect of the Centennial Commission, and forwarded to Berlin for approval. It repreeents a handsome structure of a single lofty story, reeembling somewhet the pevilion of the Auetriau Emperor at the Vienna Exhibition. A number of State Commission buildings will line tbe road at the foot of George's hill. Penneylvania, New Jereey, Indiena, Illinois and Kansas have already made arrangements to put up offices for their Commissions, aud other Statee are expected to follow their example.

Conoessions for four restaurante have heen granted, all to be kept in hendeome and unique buildings erected expressly for the purpose. The Freres Provenceaux will establieh a branch of their Paris establiehment, and will have a rival in Frenoh cookery in M. Surdreau, of New York. P. J. Lauher, of Philadelphia will keep a German restaurant, and Mr. Meroer, of Atlanta, Ga., an Americon one, which will probahly he a sort of headquarters for Southern visitors. Several other applicstions remain to be acted upon. The Commission desire that there shell be at least one restaurant where all peculiarly American dishes will be cooked in the best manner and mede specialties on the hill of fare. Locations will be assigned in the course of the next two deys to a number of small structures—amoog them a Moorish villa, a Turkish coffee house, and two or three newspaper offices.

It has not yet heen decided whether the exhihitions of horses, cattle, sheep and swine will be held on tbe restricted grounds near tbe Agricultural building or in some ampler area outside of tbe park. The dete for opening the show of horned cattle is fixed for September 20th, 1876, and it will last fifteen days. From a circular issued by the chief of the Bureau of Agricultnre I learn that it is assumed that 700 head will cover all desirable entries, and upon that haeis will be caloulated the number of stalls which will be apportioned esoh breed. The scale divides the aggregate number into ten parts, and of these four-tenths are assigned to shorthorns, two-tenths to Channel Islands, one-tenth to Devons, one-tenth to Holsteins, one-tenth to Ayrshires, and one-tenth to animals of other pure breeds. The exhibition in each breed will comprehend animals of various ages, as well as of both sexes. Draft and fat cattle will he admitted irrespective of breed.

Ground for tbe competitive trial of reapers and mowers has been secured on the line of the Pennsylvania railroad, between Philadelphia and Trenton, near Schenck's stetion, an excellent site on account of direct rail communication with the Centennial grouods. American reapers and mowers have excelled st all competitive triels in Europe, and have control of all the markets of the world; it is therefore scercely probable that foreign machines will be sent here to compete with them on their own ground. In the steam plowing matches, however, the English will have the field to themselves. Three or four prominent msnufaoturers are expected to meke the most of this opportunity to introduce their machines, which are admirably adapted for Western prairies.

The Land of Horse.

A correspondent writes: The moment you enter the famoua Blue Grasa region you hear nothing but horse talk. The whole section lives upon pedigrees. The stahle boys hanter pedigrees in a nomenclature of their own. The men utter pedigrees with a volubility like the flowing of a never-ending stream. Even the ladies of polite society will chatter pedigrees, and talk as fluently of eire and dam as if they had received their accomplishments in the precincte of the breeding portions of the stock farms. Everywhere it is horse, mare, filly, foal, gelding. The stables are swarming with them, the streete ere alive with them, the fields are dotted with them like the cattle on a thousand hills; and the visitor, even though he came merely to see, hss a secretiveness and obstineoy more profound than the mysteries of the Sphinx, if he does not buy, before he comes away, some little equine specimen, for which he has no earthly use. There is a certain Freemasonry or brotherly love among the horse deelers of Kentuoky. If one breeder has nothing in the horse line to answer your demaods, he will furnish you with a saddle-horse and accompsny you for miles around the neighborhood to inspect stock whioh he is sure will just suit your fanoy. Their houses are thrown opeu to your entertainment. The rareet wine of corn and the freshest of mint, and the richest of Alderney cream and tenderest of spring chickens are offered with a princely generosity to feed the flame of your horse fever, which must not he allayed till you have left your money behind you on some of the stock farms. That is the logic of all the attentions and pedigrees and horse enthusiasm, and it is wonderful how the interest is kept up year after year, and how the surplus funds of our wealthy horse fanciers are poured, with an increasing volume, into the coffers of the stock raisers of the Blue Grass region.

The Hoosac Tunnel.—The Boston *Journal* has the following in reference to work at the Hoosac tunnl: "The enlargement of the little tunnel, to meet the requirements of the increased travel, was begun Maroh 1, and it is hoped to finish the work in two months, more: The objects of the undertaking are to lower the grade eight feet, to widen the roadwey eo as to accomodate two tracks, and to alter the direction in order to lessen the sherp curves of the road at both approaches. The new tracks will curve elightly through the tunnel, and the curves at the entrance will he reduced. The new width at the level of the tracks will be twenty-four feet, an increase of ten feet. The length of the tunnel is 370 feet. The debris is taken seven or eight miles down the road and used for rip-rapping. The rock is mica elate and needs no arching. The Governor and Council are about closing another contract with B. N. Farren to continue the work on the big tnnnel under the appropriatioos of the last Legislature. The old aad new contracts together amount to about six hundred thoneand dollare. The work is progressing at the rate of about 275 feet a month, and consists of enlarging, both in width and height, and arching with brick where the stone is soft and liable to fall. Mr. Farren found the bore twenty-four feet wide and twenty feet high, and leavee it thirty feet wide and twenty-three high. The work will probahly be done in about a year from now, it heing expected that the new appropriation will finish it up."

MECHANICAL PROGRESS.

Compressed Steel.

In the ordinary practice of the manufacture of steel, as now conducted, the metal is cast into large ingots and subsequently submitted, in a heated state, to pressure between rollers or to severe hammering. This rolling and hammering is found necessary in order to remove the little hollows or bubbles which are always produced to a greater or less extent by the gases present in molten metal, and also to unite more closely the crystals which are formed during the process of cooling. But this work, at best, can be but imperfectly done by such a rough process which acts only on small portions of the mass at any given time. Moreover the nature of the metal is such that it requires to be dealt with gently at first, becoming fit for more severe handling as it increases in homogeniety and toughness. It is found, after all has been done that can be reached by this process, that the metal is far from being perfectly homogeneous. The bubbles which usually form near the surface of the ingot are liable to be opened up, in the process of hammering and rolling, to the entrance of air and dust so that scale and foreign substances materially interfere with the production of a perfect steel. These imperfections are readily perceived in the serrated edge of our best razors and other cutting instruments, which the microscope so readily reveals.

To more fully remove these imperfections, pressure has recently been applied to the ingot while in a molten state, and since iron naturally contracts during the process of cooling, the application of pressure to increase that contraction is certainly a most rational one; but the great difficulty heretofore has been to reduce the idea to successful practice with the use of a high degree of pressure.

Pressure to increase the solidity of metals while cooling has been employed in England for more than twenty years, especially in its application to copper; but the credit of its first application to steel is due to Mr. Bessemer. He, however, merely embodied the idea into one of his earliest patents, while Messrs. Revollier, Bietrix & Co., of France, were the first to erect steel works for its practical application. This was done in 1867, and in connection with the Seimens-Martin process. A late number of *Engineering* gives a detailed description of the various experiments which have been made in this direction from which we have gathered the following facts:

It was soon perceived, in the experience of the firm named, that the Seimens-Martin converting process did not admit of the best necessary to secure the proper degree of liquidity after the metal had reached the molds, to obtain the desired results in removing the bubbles. In order to overcome this difficulty, a steel was employed containing a higher percentage of carbon, and hence a lower melting point; but here a new difficulty was encountered in the hardness and brittleness of the resulting metal. These complications resulted in a failure to produce a superior compressed steel at these works.

A better success has attended the experiments of Herr Von Stummer-Traunfels, at the Neuberg works in Austria, which were conducted in connection with the Bessemer converting process. This improved result is mainly due to the fact that the initial temperature of the molten metal — its temperature when it leaves the converter—is much higher than in the Seimens-Martin process. This fact and its importance being fully realized, hydraulic appliances were devised and put into effective operation at these works, by which a pressure of from 400 to 700 tons upon the top of the ingot was rendered practical. Not having the exact superficies of a section of an ingot, we are unable to state the pressure per square inch.

But still more important is the progress in this direction achieved by Sir Joseph Whitworth, in his works at Manchester, England. He has there in operation the most magnificent and complete works for producing compressed steel yet erected. Among his appliances are four hydraulic presses capable of exerting pressure as high as 8,000 tons. He has appliances for compressing not only ingots, but various other shapes, and notably rings, such as are employed in the manufacture of his heavy ordnance.

In the production of crucible steel he usually applies a pressure of six tons to the square inch, during which pressure the ingots are reduced one-eight in length, a small fraction of which reduction is due, however, to the expansion of the mold by the heat of the molten metal and the enormous pressure applied.

When the pressure is first applied there is a slight escape of molten metal around the plunger, but the solidification at the vent soon prevents further leakage of the metal, while, as the pressure goes on, there is a copious discharge of gas, principally carbonic oxide. In case of small articles, Sir Joseph has applied a pressure of even twenty tons to the square inch. Masses of very great weight are compressed at these works. A propeller shaft of compressed steel, which, when finished, weighed eighteen tons, has been turned out at these works. Also a lining for an engine cylinder, fifty-nine inches in diameter, forty-four inches long, and one and three quarter inches thick. The introduction of compressed steel is a most important advance step in the progress of the iron industry.

Needed Inventions.

Somebody says women cannot invent, however well they could vote. Here is something in their own line. Come, girls, don't fail to show your genius, and make your fortune to boot!

The *Sewing Machine Journal* gives the following list of inventions in which great improvements can be made. There is great need, it says, of these specified, and also great room for advancement. Doubtless a fortune can be made on them if properly managed:

1. A ruffler which can be set to gather a given fullness.
2. A simple embroiderer.
3. An adjustable scroll binder which will not stretch the binding.
4. A practical adjustable hemmer, from the smallest size to an inch wide.
5. A rotary shuttle sewing machine, which will not twist or untwist the thread, and which will sew with great rapidity.
6. A practical tuck tolder.
7. A sewing machine which will have in its working parts the different attachments which can be thrown in gear with some working part of the machine when the attachment is required.
8. Motive power.
9. A good needle threader.
10. A glass oil bottle which can be sold cheap, and used to oil the machine instead of the oil can. It must be made so that the oil can be forced out.

Ships' Sheathing.—Experiments made with a view to determine as nearly as possible the causes which produce deterioration of ships' sheathing show conclusively that different seas act differently on the sheatbing, and often weak or diluted sea water more than strong, as that at the month of rivers sheathing is often found to wear more rapidly than out at sea In these experiments, as made by M. Prideaux, the various ingredients of sea water were taken alone, and mixed in different proportions, but the gross quantity of the salts in the water being always three per cent. of its weight, the results were that the chlorides acted more rapidly upon the copper than the sulphates. Of the chlorides, that of magnesia acted most, calcium next and sodium the least. Accordiog to Prof. Graham's investigation, chloride diffuse more rapidly than any other salts. This may give a preponderance of such salts at the months of certain rivers, and may have a tendency to increased wear occasionally in such places. It is well known, of course, that the quantity of salts held in solution in sea water, except in such as the Dead sea, is on an average from 3 to 3.8 per cent. of the weight of the water.

A Mechanical Scarecrow.—An automaton scarecrow on exhibition at an English fair is described as a self-acting machine made for the scaring and frightening of birds. It fires guns at regular intervals by means of clockwork. It is so constructed that it can be charged and put to work the evening of one day to commence firing at any hour of the next, and will continue firing at intervals all day without requiring further attention, or it can be set firing immediately. It is fitted with a self-acting apparatus to stop the clock work as soon as the last gun is fired, or at any hour required. As an alarm apparatus, for the protection of plantations, game preserves, farm yards, etc., it must be of great value, as it is so simple that any lad could regulate it.

A new tramway locomotive is being experimented with on a private tramway, at the quarries of Avron-Neuilly, near Neuilly-sur-Marne. The motive power is compressed air, mixed with steam. For a journey of three-eighths of a mile, with twenty-five passengers, a charge of 800 litres of compressed and heated air is found to be sufficient, the vehicle weighing 4,500 kilogs. The journey is made without noise or smoke, no steam is given off, and stoppage is easily effected.

American Locomotives in Russia.—There are now eighty American made locomotives in Russia. They are coal burners, and much larger and more powerful than the small wood-burning locomotives heretofore built in Russia or imported from Germany, France or Belgium. The American locomotives cost 25,000 silver rubles each, and the German locomotives 18,000 to 20,000 rubles, but the American locomotive is fifty per cent. more powerful than the German.

Washing Smoke.—An apparatus for washing smoke, and so depriving it of its character of a nuisance, is in operation at a factory at Meuil-montant, Parie. A fine shower of water, travelling in the direction of the smoke, and at five times its velocity, is projected into the chimney, where it mixes with the smoke, taking up the soluble gases and precipitating the impurities carried up with the smoke by draft The foul water is discharged into a cistern, where it is collected, and a fine black paint is got from it.

SCIENTIFIC PROGRESS.

Mr. Crookes' Late Discovery.

Our readers will readily call to mind the description given some time since, in these columns, of a late discovery by Prof. Crookes of a singular phenomena in regard to light, wherein when a ray of sun-light was made to fall upon a set of arms delicately suspended upon a pivot, said arms were put in motion in a direction opposite to that from whence the ray of light came. Hence it was inferred that rays of light possessed force to a certain extent, similar to falling water. It was at once seen that if this explanation of the phenomena was substantiated a material modification in the present dominant theory in regard to light would be required. Hence Prof. Crookes' explanation was received with considerable doubt, and scientists set themselves to work to furnish, if possible, some other explanation which would be in harmony with universally acknowledged principles.

Professor Dewar, of Edinburgh, among others, repeated the experiments of Prof. Crookes', and studied them with much care. The result of his observations was a conclusion that the movement of the suspended arms was due to the action of the obscure or heat rays alone, and that the rays of light had no influence whatever upon them. This was readily proved by separating the rays of heat from those of light, as is readily done by causing them to pass through certain substances. Thus when any substance was interposed between the suspended arms and the sun which would absorb the heat rays, the arms remained immovable; while when a substance was interposed which admitted the passage of the rays of both heat and light or heat alone the arms would revolve.

The experiments made were numerous and simple, and do not seem to admit of any doubts of the correctness of his conclusions; neither do they involve any new or inexplicable phenomena in regard to light.

What takes place from the action of the heat rays upon the suspended arms is described and explained by Professor Dewar substantially as follows:

Particles of gas are flying about in all directions, with a velocity which depends on the temperature. When they impinge on arms heated as they must be in this experiment, they go off with a greater velocity than those which go off from the colder side, and hence there is a recoil of the arms.

Those who have dreamed of securing a profitable direct motive power from solar radiation, will see from the above that they are doomed to an inevitable disappointment.

A New Theory of the Origin of Rocks.—The most recent deep sea soundings have proved that the grand areas of the general sea bottoms of the Atlantic and Pacific oceans are similarly constituted of a girdle of calcareous mud, of indefinite depth, formed by a similar vein of discarded calcareous shells of animals of low organization—the foraminifera. This white calcareous matter of the foraminifera shells is replaced in certain deep oceanic valleys, for instance between Tristan d'Aonnha and Kerguelen's land and elsewhere, by a very fine red clay. In certain geological deposits, of greater or less antiquity, beds of glauconite or green siliceous sand exist, which are constituted entirely of the casts of ancient foraminifera formed of a green material, which is a compound of silicate of iron and alumina. Chemists have found that the red mud is the accumulation of a small percentage of clayey matter, resulting from the wholesale decomposition of the calcareous shells; clay deposits can therefore be assigned, like siliceous and calcareous deposits, to the resultant debris of organisms living at the surface of the sea. Supposing therefore that the whole globe was immersed under an entire envelop of water, deposits of all the materials of our stratified geological rocks could be going on without the slightest resistance from the degradation and wearing away of any actual land surface at all; and these deposits, subject in the ordinary natural course of events to ordinary processes and actions, could be modified into gneiss, schist, slate, limestone, and every variety of geologic rocks.—*Ex.*

Artificial Production of Precious Stones.—An address on clay and its economic application was delivered by Prof. T. O. Archer on the occasion of the inaugural meeting of the fifty-fourth session of the Royal Scottish Society of Arts at Edinburgh. The President commenced by a reference to alumina and its various alloys. One of the greatest discoveries of the present age, he said, was the obtaining of the oxide of alumina in a pure crystalline state. It has long been known that the precious stones were composed of oxide of alumina colored by other metallic oxides; and it was a very fair inference that if they could succeed in melting the oxide alumina, there was nothing in the world to prevent the manufacture of emeralds, rubies, sapphires, etc. This had actually been accomplished by a Parisian chemist, and the artificial gems were of the same hardness and density as, and chemically identical with, the real stones.

Why Do the Clouds Float?

For too long a time the scientific world has believed in the idea of De Saussure—that the water particles of which clouds and fogs consist are vesicles, analogous to soap-bubbles, consisting of a watery envelop, with a vacuum inside, so as to be specifically lighter than the air. It is strange that the fact is continually being overlooked that if particles are only small enough they may be kept up in a liquid or gas, notwithstanding the material of which they are parts is considerably heavier than the medium in which they float. Powders of heavy material may be kept up in water for days and weeks, as those who prepare polishing powders know. The finest emery is only obtained from water from which the coarse particles have been deposited in different periods of time, according to their fineness, when at last, after collecting the deposits of many hours, and even days, the very finest parts do not settle until after many weeks' rest.

It is the same in the air; if we collect the dust deposited in a room which has been closed for some weeks, and examine it, we will find it all to consist of particles of very heavy materials, and if machine shops are in the neighborhood, even metallic dust will be recognized.

Now when heavy metallic dust can be carried in the air, why not water dust, which is much lighter? In viewing the grand falls of Niagara, we have noticed that, when the atmosphere was not too dry, so as to cause the spray to disappear, while the sky was covered with loose floating clouds, the spray in ascending formed a cloud identical to the others, with which it floated away.

The height at which clouds will float depends chiefly on the *size* of the watery particles; the larger they are the lower the clouds will float. This was recently verified by Mr. Angus Smith, in Iceland, where he observed a cloud or fog rolling down the streets like dust or smoke; it came from the sea, and the particles were larger than any he had ever seen before, being about one 400th of an inch in diameter. He did not find the particles hollow, but concrete throughout, and in his account refers also to the absurdity of the theory that the cloud particles should consist of hollow spheres or vesicles.

The power which hold small and heavy particles up in a liquid or gas, is simply the adhesion, which increases with the surface. The finer the dust the larger is the surface as compared with the volume, and when the adhesive action of the liquid or gas on this large surface is great enough, it may overcome gravitation, and the particles can not fall, but will be kept floating.

That there is a strong adhesion between air and water is proved by the effect of wind on the surface of water, especially when compared with the effect of the wind on a watery surface lubricated with a film of oil then the air glides over it without causing even a ripple. On this depends the quieting effect of oil when poured on turbulent waves when they are caused by wind. Oil poured on the waves of the rapids of the St. Lawrence river would by no means have that same quieting effect.—*Am. Manufact'r.*

Light Observed in Grinding Hard Stones.—At the agate polishing establishment in Oldenburg, a phenomenon has been observed for the past century that has as yet, perhaps, attracted too little attention from scientific men. Under very powerful friction, such as only can be produced by the machinery at those works, hard stones become splendidly luminous and transparent throughout. In this establishment the axis of an undershot water wheel reaches into the grinding room, where four or five grindstones rotate vertically; over each is brought a gutter, so that a constant small stream of water pours upon the stone. When grinding, the workman lies braced against a post and with both hands presses the stone to be polished firmly against the grindstone, bringing his whole weight to bear upon it. Some experiments were made in this workshop by Noggerath in broad daylight. He observed that as long as a stone of the hardness of quartz was pressed against the revolving grindstone there was produced an intense red light, which at the same time radiated around the object and emitted numerous sparks. This experience was the same with all hard stones, which appear almost like red hot iron, and it really looks as if the hands must be severely burnt. All the stones become warm in grinding, but not very hot. Chalcedony gave a magnificent fiery red light; chrysoprase, a little red light; rock crystal, a beautiful rose red; coralline, a superb red light, the color being evidently increased by the natural hue of the stone. Amethyst gave a pale violet, while numerous opaque stones gave no light at all.

A Wonder.—It has been discovered that when water is strongly acidified with hydrochloric acid, with a small part of benzole, and heated, it was found that it boiled and rested at regular intervals of a minute. Then, after stopping a long time entirely, boiling began again, with the like intermissions as before, but of half a minute. Thus, in a regular series, till it ceased altogether. Savans consider it a profound wonder.

A Curious Mineral.—In the veins of copper pyrites occurring at Ykouna, in Japan, shining black nodules are found of the size of a man's hand, containing about twenty-four per cent. of water and twenty five per cent. of bituminous matter, which yields on assaying 310 grms. of silver, and 190 grms. of gold to the ton. The density of the mineral is 2.13.—*Annales des Mines.*

A New Flexible Shaft.

In the northeast corner of the Mechanics' Fair is exhibited a novel mechanical apparatus, which, on accnnt of its peculiar working, attracts mnch attsntion,. It is simply a flexible rod or shaft, one end of which is attached to a small pulley, over which a band running from a larger pulley passes; the othsr end being so shaped as to be conveniently attached to an augur bit, emsry wheel, grindstone, or anything reqniring a rotary motion.

In size the sheft may be from one to two iuches, or larger or smaller as, desired. It is made sntirely of the best steel wire; e number of wires rnnning straight through the center, while around these, and iu opposite directions, are closely coiled two wires, thereby giving it the same strength, whether revolving to the right or left. In handling it some would think it perfectly solid, but it can be coiled about the hand and bsut about with almost as much ease as if it were india rubber.

This shaft is encased, and revolves in a leather or rubber tube, and, when in opsration, only the pulley at the one end and the hit or wheel at the other, is seen moving. There is therefore, no danger of any garment getting sntangled about it.

This invention is pstented under the title of the "Patent Flexible Sheft for mschanical purposes," and will, no doubt, prove of great ntility to ship and house carpenters, oabinet makers and in sll kinds of work to be operated on, at a distence from the motive powsr, or thet is difficult of access on account of peculier construction. It will admit of heing coiled once or twice around a piece of wood, and at the same time bore a hole through it. The length may be suited to the kind of work to be done, though, of course, the longer tbe shaft tho more strain there will be on it, and heuce a long sheft must be made heavier and stronger than a short one. It is exceedingly convenient in its appliance. Mr. N. Stove is the patentee and Mr. W. H. Kellay, of Sacramento, is owner of the right for California.

General News Items.

Moae troops sail for Cuba this week.

No one namsd yet as Delano's successor.

Salmon are plenty in the watsrs of the hay.

The Fourth National Bank of Chioago has failed.

A "Yankee" rifle team has beaten a teem of "Ksnucks."

The American bark *Forest Queen* has fouudered at sea.

A centennial mouument is to be erected on Long Island.

The Bank of California will resume businsss on Saturday.

No settlement is probable between Turkey and Servia.

Governor Stanford did not huy "Lulu" after all.

The Swedish Arctic expedition is at Hammerfest, Norway.

China is reported as avoiding a settlement with England.

Fifty persons were injured by a railroad accidsut in Iowa Sunday night.

The Commiasioner of Indian Affairs says he is willing to resign. Who cares?

The Grangers of Stanislaus are in favor of the Conire Costa sqnirrel law.

Young Charley Knchel has pleaded guilty to embezzling 300 shares of California stock.

The Old Catholics of Germany have declared in favor of allowing their priests to marry.

Dubino the late cyclone in Texas the wind achieved a velocity of eighty-six miles an hour.

If any of the European potentates want a slice of Turkey now is the time to help themselves.

The annual exhibition of the Napa and Solano Agriculturel Society opened at Vallejo yesterday.

Supt. Banoe tells the New Yorkers they must be eatisfied with one fast meil train a dey for the present.

The Chicego Boerd of Education have discarded the Bible from the public schools. Let's hear from St. Lonie.

Prof. Steiner returned sefely to mother earth. His balloon escaped and was conrsing hesvenward at lest accounts.

A young man got twenty years of Stete prison life awarded him by a New York judge yeeterday for robbing hie mother.

They had a small eerthqnake at Newburgh, N. Y., last Saturday night, csueed hy the explosion of a powder mill five milee from the city.

Monster Steer.—The Oregon and Northern California papers mention a monster steer reised by a Mr. Miller, in the Klamath Lake section, whioh ie claimed to be the largest ever grown. He calls him the "Lost River Renger," is 19 hands high, 20 feet from tip to tip, and calcnlatsd to weigh, when fat, 5,000 pounds. He is said to be the largest animal ever witnessed, next to the elephent. Mr. Miller also intends taking him to California this winter, where he will fatteu him and tske him to the Centennial.

MINING HAREHOLDERS' DIRECTORY.

Compiled every Thureday from Advertieements in the Mining and Scientific Preee and other S. F. Journals.]

ASSESSMENTS.—STOCKS ON THE LIST OF THE BOARDS.

Company.	Location.	No.	Amt.	Levied.	Deling'nt.	Sale.	Secretary.	Place of Business.
Alpha Cone M Co	Washoe	7	1 00	Aug 12	Sept 17	Oct 7	Wm Willis	419 California st
Alta S M Co	Washee	2	50	Aug 23	Oct 15	Nov 7	Wm H Watson	302 Montgomery st
Amazon Cons M Co	Nevada	1	10	Sept 20	Oct 22	Nov 12	W R Townsend	330 Pine st
Andes S M Co	Washoe	5	25	Sept 10	Oct 18	Nov 6	M Landers	507 Montgomery st
Arizona S M Co	Nevada	2	1 00	Aug 20	Sept 24	Oct 15	Wm Willie	419 California st
Baltic Cone M Co	Washoe	2	25	Aug 13	Sept 16	Oct 6	Theo C Kibbe	419 California st
Buckeye G & S M Co	Nevada	15	12	Sept 13	Oct 16	Nov 5	C A Sankey	331 Montgomery st
Caledonia S M Co	Washoe	14	3 00	Sept 3	Oct 8	Oct 28	R Wegener	414 California st
Coemopolitan M Co	Washoe	2	25	Aug 11	Oct 8	Oct 25	M Landers	507 Montgomery st
Crown Point G & S M Co	Washoe	23	50	Sept 4	Oct 8	Oct 28	Chas E Elliott	419 California st
Dayton G & S M Co	Nevada	4	1 00	Sept 15	Oct 19	Nov 8	W B Hean	419 California st
Empire M & M Co	Washoe	20	50	Sept 4	Oct 6	Oct 26	W F Dean	419 California st
Globe Cons M Co	Washoe	6	75	July 20	Sept 9	Sept 29	Joseph Maguire	419 California st
Gold Mountain G M Co	Cal	8	25	Sept 10	Oct 20	Nov 10	J P Cavallier	513 California st
Hale & Norcross S M Co	Washee	47	5 00	Aug 21	Sept 24	Oct 15	Joel F Lightner	438 California st
Imperial S M Co	Washoe	24	1 00	Sept 4	Oct 8	Oct 28	W E Dean	419 California st
Iowa M Co	Washoe	4	5	Sept 16	Oct 18	Nov 12	A D Carpenter	605 Clay st
Justice M Co	($5 on old stock and $1 on new)	16	6 00	Sept 15	Oct 18	Nov 14	Jas S Kennedy	Merchants' Ex
Knickerbooker M Co	Nevada	13	1 00	Sept 7	Oct 16	Nov 5	J H Sayre	Stevenson's Build'g
Lady Washington M Co	Washoe	5	50	Aug 19	Sept 22	Oct 12	H C Kibbe	419 California st
Leo M Co	Washoe	4	50	Sept 4	Oct 8	Nov 5	Wm Willie	235 Pine st
Mammoth S M Co	Nevada	19	15	Aug 18	Sept 29	Oct 26	D A Jennings	401 California st
Mint G & S M Co	Washoe	11	20	Sept 7	Oct 12	Nov 4	D A Jennings	401 California st
Newark S M Co	Nevada	11	50	Sept 14	Oct 19	Nov 8	Wm Willis	419 California st
New York Cons M Co	Washoe	15	33½	Aug 31	Oct 4	Oct 23	H C Kibbe	419 California st
New York M Co	Washoe	5	50	Aug 31	Oct 4	Oct 23	H C Kibbe	419 California st
Original Gold Hill G & S M Co	Washoe	4	50	Aug 26	Sept 30	Oct 18	W M Helman	309 California st
Phil Sheridan G & S M Co	Washoe	3	50	Aug 6	Sept 8	Sept 29	W R Townsend	330 Pine st
Phœnix G M Co	California	3	3 00	Sept 8	Oct 16	Nov 8	Chas E Elliott	419 California st
Pioche S M Co	Ely District	10	1 00	Aug 13	Sept 21	Oct 12	Chas E Elliott	419 California st
Poorman G & S M Co	Idaho	3	1 00	Aug 25	Sept 30	Oct 21	Wm Willie	419 California st
Rocky Bar M Co	Washoe	3	10	Aug 6	Sept 16	Oct 6	J P Cavallier	513 California st
Rye Patch Cons M & M Co	Nevada	4	50	July 30	Sept 6	Sept 30	D F Verdenal	400 California st
Senator S M Co	Washoe	12	50	Aug 27	Oct 2	Oct 21	J H Sayre	331 Montgomery st
Silver Cenirel Cons M Co	Nevada	2	25	Aug 8	Sept 8	Sept 29	Lucien Hermann	330 Pine st
South Mountain Cons M Co	Idaho	1	2 00	Aug 9	Sept 14	Oct 4	Wm Willis	419 California st
S Overman S M Co	Washoe	3	1 00	Aug 6	Sept 7	Sept 27	David Wilder	Merchants' Ex
Starr King S M Co	Nevada	12	15	Sept 6	Oct 6	Oct 23	Louis Kaplan	Merchants' Ex
St Patrick G M Co	Cal	11	50	Aug 12	Sept 15	Oct 7	D F Verdenal	400 California st
Sucker Mill & M Co	Washoe	12	50	Aug 31	Oct 11	Nov 1	Wm H Watson	302 Montgomery st
Sunrise S M Co	Cal		50	Sept 14	Oct 16	Nov 8	T H Wingard	318 California st
Surprise Valley M & M Co	Invo Co Cal	1	20 00	Aug 30	Oct 4	Oct 23	W R Townsend	330 Pine st
Victor Q M Co	California	1	25	Sept 2	Oct 5	Oct 26	John R Wildo	Merchants' Ex
Ward Beecher Cons M & M Co	Nevada	5	50	July 14	Aug 25	Sept 22	D A Jennings	401 California st
Washington & Creole G & S M Co	Nov	15	75	Sept 27	Oct 30	Nov 20	T D Judah	401 California st
Wells Fargo M Co	Washoe	3	20	Sept 14	Oct 16	Nov 8	O H Bogart	402 Montgomery st
Woodville Cons S M Co	Washoe	3	1 00	Aug 21	Sept 23	Oct 11	W M Helman	309 California st
Woodville G & S M Co	Washoe	11	1 00	Aug 21	Sept 23	Oct 11	W M Helman	309 California st
Yellow Jacket S M Co	Washoe	21	5 00	Sept 20	Oct 23	Nov 24	G W Hopkins	Gold Hill Nevada

OTHER COMPANIES—NOT ON THE LISTS OF THE BOARDS.

Annie Belcher Q M Co	Cal	2	25	Aug 17	Sept 20	Oct 7	J M Buffington	311 California st
Blue Jacket M Co		2	1 00	July 30	Oct 5	Oct 25	C J Eaton	724½ Market st
Carrie Hale H M & W Co	Cal	2	10	Sept 18	Nov 1	Nov 20	F W Van Reynegom	531 California st
Cole S M Co	Washoe	27	5 00	Aug 21	Sept 27	Oct 19	Joel F Lichtner	438 California st
Constitution M Co	Nevada	1	15	Aug 31	Oct 4	Oct 22	F Frank Swift	419 California st
Coqnille Black Sand G M Co	Oregon	1	10	June 8	Oct 13	Nov 18	F P Reynolds	111½ Leidesdorff st
Eagle Silver M & M Co	Nevada	2	50	Sept 11	Oct 20	Nov 10	H L Byrne	533 Kearny st
Edith Q M Co	Cal	5	20	Sept 14	Oct 30	Nov 20	Wm Stuart	113 Leidesdorff st
El Dorado State Co	Cal	1	10	Aug 18	Sept 21	Oct 9	Hugh Elias	416 Montgomery st
El Dorado W & D G M Co	Cal	11	20 00	Sept 21	Oct 22	Nov 8	Hugh Elias	416 Montgomery st
Florence M Co	Cal	3	15	Sept 17	Oct 25	Nov 17	Scot Sutton	220 Montgomery st
Georgia S M Co	Washoe	1	10	July 29	Oct 2	Oct 22	R Wegener	414 California st
Glascow G & S M Co	Nevada	1	10	Sept 20	Oct 22	Nov 12	W R Townsend	330 Pine st
Golden Chariot M Co	Idaho	14	75	Sept 2	Oct 7	Oct 28	Louis Kaplan	Merchants' Ex
Gold Run M Co	Cal	13	25	Sept 27	Oct 30	Nov 26	C C Palmer	41 Market st
Hayes G & S M Co	Nevada	7	20	Aug 18	Sept 28	Oct 25	Geo R Spinney	320 California st
Howard Hill G M Co	Cal	4	35	Sept 27	Nov 3	Nov 24	F J Hermann	418 Kearny st
Independent G M Co	Cal	9	50	Sept 11	Oct 12	Oct 30	Geo T Grimes	240 Montgomery st
Juniata Cons M Co	Nevada	3	25	Sept 20	Nov 1	Nov 24	Chas S Neal	419 California st
Kelsey G & S M Co	Cal	14	5	Sept 27	Nov 6	Nov 29	J H Sayre	321 Montgomery st
Little Panoche Q M Co	California	2	10	Sept 3	Oct 7	Oct 29	Geo R Spinney	320 California st
Morse & Evans G M Co	California	2	10	Sept 6	Oct 15	Nov 12	Daniel Bnok	331 Montgomery st
North Bloomfield G M Co	Cal		1 00	Aug 14	Sept 22	Oct 12	Thos Derby	320 California st
North Lonsdale S M Co	Nevada	2	10	Sept 7	Oct 14	Nov 5	W A Van Bokkelen	419 California st
Oakland G & S M Co	Nevada	2	50	Sept 2	Oct 7	Oct 29	Wm H Watson	302 Montgomery st
Oro Fino M Co	Idaho	1	1 00	Aug 17	Sept 17	Oct 8	Frank Swift	419 California st
Panther M Co	Nevada	1	20	Aug 31	Oct 1	Oct 19	Frank Swift	419 California st
Picacho M & M Co	Cal	1	10	Aug 2	Sept 13	Oct 18	Ford H Rogers	330 Pine st
Pioneer Gas M Co	Nevada	4	10	Sept 14	Oct 19	Nov 9	Wendell Easton	419 California st
Prnesian G & S M Co	Nevada	6	50	Aug 19	Sept 27	Oct 20	R H Brown	402 Montgomery st
Rattlesnake Q M Co	Cal	3	25	Aug 24	Sept 28	Oct 18	Andrew Baird	310 California st
San Francisco Copper M Co	Nevada	2	10	Aug 4	Sept 6	Sept 30	R De Clairmont	Front & Jackson st
St John G M Co	Kern Co Cal	3	1 00	Aug 30	Oct 4	Oct 23	W R Townsend	330 Pine st
Tiger M Co	Nevada	1	15	Aug 31	Oct 2	Oct 21	Frank Swift	419 California st
Weaverville D & H M Co	Cal	7	2 25	Aug 19	Sept 20	Oct 18	Ford H Rogers	330 Pine st
West Point O & S M Co	California	1	25	Sept 6	Oct 8	Oct 25	Louis Kaplan	Merchants' Ex
Wm. Penn Cons G & S M Co	Washoe		5	Aug 7	Sept 11	Sept 30	John F Pope	424 Montgomery st

MEETINGS TO BE HELD.

Name of Co.	Location.	Secretary.	Office in S. F.	Meeting.	Date.
Baltimore Cone M Co		C A Sankey	331 Montgomery st	Annual	Oct 7
Cosmopolitan M Co	Washoe	M Landers	507 Montgomery st	Annual	Oct 11
Esta Buena G & S M Co		A Noel	419 California st	Annual	Oct 8
Eureka Cons M Co		W W Traylor	408 California st	Annual	Oct 11
Exchequer M Co		Jas S Kennedy	Merchants' Ex	Annual	Oct 19
Niagara G & S M Co		W R Townsend	330 Pine st	Annual	Sept 28
Sec Belcher M Co	Nevada	Geo D Edwards	414 California st	Annual	Oct 14
South Overman Cons M Co	Nevada	David Wilder	Merchants' Ex	Annual	Oct 11

LATEST DIVIDENDS (within three months)—MINING INCORPORATIONS.

Name of Co.	Location.	Secretary.	Office in S. F.	Amount.	Payable.
Black Bear Quartz	Cal	W L Oliver		25	Sept 13
Cone Virginia M Co	Washoe	Chas H Fish	401 California st	10 00	Sept 7
Empire G M Co	Sierra Co Cal	C Collischon		5 00	Aug 17
Empire M Co	Nevada Co Cal	D A Jennings	401 California st	50	Sept 15
Eureka Consolidated M Co	Nev	W W Traylor	419 California st	1 00	Aug 5
Excelsior M & M Co		Frank Swift	419 California st	1 00	April 10
Gila S M Co	Nevada	W Aug Knapp	15 Leidesdorff st	25	Aug 16
Jefferson S M Co		C A Sankey	331 Montgomery st	50	May 15
Leopard M Co		R H Brown		50	July 15
Lyon Mill & Mining Co	Washoe	E F Stone	Hayward's Bldg	50	Aug 18
Manhattan S MCo	Nevada	Chas S Neal	419 California st	1 00	June 15
Northern Belle M & M Co		W Willis	419 California st	1 00	Sept 15
Oneida M Co		L Kaplan	Merchants' Ex	50	Aug 24

The Mining Share Market.

A marked improvement has heen manifested in the mining share market since our last. Transsctions are numerons and stocks generally are strong and active. The Bank of California opens on Saturday, the 2d of October, with over $3,000,000 in its vaults. The Bank of Nevada will open its doors on Monday, and San Francisco Stock Board and Pacific Exchange will recommence their sessione the dsy following. We give below the prices of some of the leading stocks yesterday (Wednesday) in the California Board: Best & Belcher, $42¾; Belcher, $18½; Crown Point, $23⅝; Gould & Curry, $17¼; Hale & Norcross, $40; Justice, $36½; Mexican, $19; Ophir, $53⅛; Sierra Nevada, $13¾.

Assessmente have been levied on the following stocks: Washington & Creole, Yellow Jacket, Gold Rnn, Kelsey, Howard Hill and Florence.

In epeaking of the Comstock, the Gold Hill *News* says that the mines never looked better, generally speaking, and people generelly are growing more and more bnoyant in the feeling and idees in view of better times coming shortly. All are weiting petiently for the "good time coming."

The receipts of the San Francisco Committee for the relief of sufferers by the French floods amounted last week to $249.50, including $120 from Portland, Oregon, $101.50 from Victoria, and $6 from San Francieco. The grand total so far is $15,606.95.

PATENTS & INVENTIONS.

A Weekly List of U. S. Patents Issued to Pacific Coast Inventors.

From Official Reports for the Mining and Scientific Press, DEWEY & CO., Publishers and U. S. and Foreign Patent Agents.]

By Speoial Dispatch, Dated Washington, D. C., Sept. 28th, 1875.

For Week Ending September 14th, 1875.*

Ore Feeder.—Chas. P. Stanford, S. F., Cal.

Ore Crusher and Amalgamator.—Charles Braids, Copperopolie, Cel.

Invalid Lounge.—Andrew Shields, Portland, Oregon.

Sphygmoscope.—Wallece R. Pond, Stockton, Cal.

*The patents are not ready for delivery by the Patent Office until some 14 days after the date of issue.

Note.—Copies of U. S. and Foreign Patents furnished by Dewey & Co., in the shortest time possible (by telegraph or otherwise) at the lowest rates. All patent business for Pacific coast inventors transacted with perfect security and in the shortest possible time.

Thirteen thousand fresh troops have been sent from Spein to Cuhe.

The new Board of Truetees of the Lick fund have organized by the election of R. S. Floyd, President, Faxon D. Atherton, Sr., Treasurer, and F. Ward, Secretary.

MINING SUMMARY.

The following is mostly condeused from jonrnals pnbished in the interior, in proximity to the mines mentioned

California.

AMADOR.

The Good Hope.—Amador *Dispatch*, Sept. 25: Work on the Good Hope mino near town is still heing pushed forward with nnahated vigor both day and night. Mr. Peters is confident that every days' work brings him nearer to the great "bonanza" which is undoubtsdly located in the vicinity of the bottom of the shaft.

The Eureka.—*Foothills Ensign*, Sept. 24: The Italian contractors who undertook to sink 200 ft in this mine at $10 per ft, threw up the contract on Saturday. They had been working for ahout 26 days, during which time they sunk 52 ft. The rsason for qnitting work was that the price was not sufficient to pay them. On Sunday morning another force of 6 minera commenced sinking at $15 per ft. They expsot to get down the remaining 150 ft in about 8 weeks..

New Mine.—Some 10 years ago, when Dry town was in its palmiest days, C. C. Belding sunk a shaft on a mineral claim located by him, and sfter reaching a depth of 80 ft, with cheering indications, work for some reason unknown to us was bronght to a standstill, and the cleim has remsined idle ever since until 2 weeks ago, when Belding commenced draining the shaft, with the view of further development. On Tuesday last ha startsd drifting, and took out rock of a first-class character. Some of the specimens brought to Sutter crsek are speckled with gold, and would yield, at a low estimate, from $12 to $20 per ton.· Tha ledge is said to be 3 ft thick, with well defined hanging walls. The gulch just below the location yielded large quantities of the precious metal in the early times, which faot is not unfavorable to tha existence of a rich quartz vein. If the prospsot continues as at present, the owner will arrange for the erection of a 10-stamp mill at an early date.

BUTTE.

New Flumes.—*Mercury*, Sept. 24: Two new flumes are being made that will run from the Hewitt claim on the bluff to the river. On Tuesday we took a look at ona of them, about 1,500 ft in length, 4 ft in width and 30 inches in dapth. The wood work is under the cherge of John Norton, who is pushing it as fast as possible. Just behind him is J. C. Bierce, hard at work laying the blocks, which are about 15 inches square and 6 in thickess. A part of the way has to be tunneled, and Thomas Young has a crew of Chinamen at work blasting on the old tunnel, so that it will be wider and deeper. As soon as this finme is done the craw will be put at work on the other, which will be some 2,000 ft in length and of the same dimensions otherwise as the first finme. It will probably take something over a month to complete the entire work, hnt when done it will donbtless be one of the best pieces of property in the county. The company has an abundance of water and acres of rich ground.

Mining.—On Sunday lsst we took a walk to the school house to see how far along the workman had got the new part. The trnstees are having a well dug in the reer. It had reaohed a depth of about 20 ft. A couple of Chinamen were at work with a rocker washing the dirt that hsd bsen thrown ont, and from what we saw in a pan, they would make a good day's work of it.

CALAVERAS.

Mosquito District.—Calaveras *Chronicle*, Sept. 25: The Ashlsnd and Lewis & Fairchild mines are taking a short rest, but will be soon in full blast again. Both mines show large quantities of excellent ore bedded in a splendid slate formation. The former Vance mine is being vigorously worked with excellent results. San Bruno ss usual.

West Point District.—A new superintendent for the Josephine, has arrived. Work will be resumed at an eerly day. M. Carey ie cleaning ont and repairing an old tnnnel for the purpoee of draining the sorface water from hie new shaft on the former Doyle mine, hie machinery not heing of sufficient capacity to contend with the heavy flow of water. Pryor & Co., are still in rich ore. Plenty of ore, which shows considereble free gold, hes been etrnck in the Cheeno. The Cheeno is nearly due eouth of the Good Faith and apparently on the same lode. The Good Faith, one of tho most promising minee of the district, is idle at present, bnt it ie expected that it will etart up again soon. Henry & Co. are running a substantial tunnel on the former Soaproot. Contractore are repairing the old Valentine tnnnel.

Mosquito Gulch Quartz Items.—The new shaft in the San Bruno, from the eurface to the upper tnnnel of the mine, snnk for the purpose permitting the smoke from tha engine to eecepe, is completed. Work is now going forward aa usual, operatione being principally confined to stopeing from tha 300-ft west level. The ore extracted ie of good quality, and is being got out in large qnantities. Garland's mill is now crnshing tha rock. A very rich discovery wes lately made by Mr. H. W. Potter. He has found a ledge the croppinge of which prospect from $300 to $400 per ton. The lead is narrow on top, not exceeding ten inohee in width, but it will probably show increased thickness as

development progresses. The rock is the richest ever discovered in the district, and the "find" is creating considerable excitement. Good rock is being taken from the Rickman mine. The shaft is now sunk to the depth of about 70-ft and stopes have been opened. No trouble has yet been experienced from water. Favorable developments have recently been made in the Albers mine. A rich vein has been cut by the tunnel, although its objective point is not yet reached. It is rumored that the well known Grasshopper mine has been sold to the proprietors of the Josephine, at West Point, for $3,000. The Grasshopper was worked down to water level several years ago, when operations were suspended in consequence of the inadequacy of the machinery. If we recollect right the lost rock taken from the mine milled $160 per ton. At all events it is one of the richest veins in the district, and we hope the report that it has fallen into hands capable of working it to advantage will prove true. Garland's mill is now employed on San Bruno ore and rock belonging to Messrs. Barney & Rogers.

An Important Mining Enterprise.—One of the most notable gravel mining enterprises ever undertaken in the county has been lately inaugurated by the Messrs. Cook & Haywood—practical miners, well known for their energy and activity in promoting such operations. The object of the undertaking is the working—by the hydraulic method of washing—of an extensive deposit of gravel, located on the south side of the Calaveras river nearly opposite Rigney's ranch. The first thing to be secured, in carrying the enterprise into effect, was an adequate supply of water, to be conducted at a sufficient hight above the gravel bed to be available for hydraulic purposes. To accomplished this necessitated the digging of a ditch to tap Jesus Maria creek, about 5 miles distant, an indispensable adjunct of the enterprise that called for a large outlay of capital at the outset. Work was commenced upon the ditch several months since, and it is now over half completed. Thirty men are employed in digging it. Its dimensions are: 3 ft wide at the top, 30 inches on the bottom and 2 ft deep, with a grade of 6¼ ft to the mile. The carrying capacity of the ditch will be in the neighborhood of 800 inches, and the water it conveys, when directed against the gravel bank by means of an iron pipe and nozzle, will have a pressure of about 200 ft. We can see no reason why the enterprise should not prove an extremely profitable one. The gravel deposit is extensive and rich, water will be free and all the facilities for working the ground excellent. It is expected to have everything in readiness for active operations, with the earliest rain fall, and we shall be disappointed if the projectors of the undertaking are not well rewarded for their energy and enterprise.

COLUSA.

Quicksilver.—Colusa *Sun*, Sept. 25: We have frequently spoken of our wealthy quicksilver mines in the Coast Range, and we are assured by proof most positive that our ideas were of not too high a character concerning them. A few days ago 33 tanks were taken from the Abbott mine, from a clean up of 7 days run. It is confidently believed this will be increased by the next clean up.

INYO.

Good Prospects.—Inyo *Independent*, Sept. 25: Mr. Holt, of the Consolidated Virginia on Kearearge mountain, is preparing to ship a lot of high grade ore from some ledges on the north side of the mountain on Oak creek. These are the same ledges upon which the irrepressible Jimmy Sharp has been operating at times for several years past, and out of which, with common blacksmith fires and similar means, he has smelted many a small bar of fine bullion. Jimmy is at work there now with quite a force, furnished by Mr. Holt, and in a general way we can state that the mines are developing most beautifully.

Lookout District.—Panamint *News*, Sept. 22: Archie McDonald came in from Lookout last Monday, and says that the Minnie-Etta mine, owned by Wm. M. Lent, J. J. Dolan and others, is developing splendidly. Four cuts have been run into the hill, exposing a vein from three to fourteen ft in width and carrying a large mass of ore, assaying from $300 to $500 per ton. The walls are well defined, and the ledge is dipping into the hill at an angle of forty-two to forty-five degrees. From present appearances there does not seem to be a doubt of the permanence of the vein. About the first of next month work will be commenced on the Keystone, owned by the same company. This mine has been examined by San Francisco experts who believe it will prove equally as good as the Minnie-Etta.

Surprise Mill.—The pulp assays at the Surprise mill from the 16th to the 20th of September, have been $85.81, $95 92, $76.96, $92.28, $97.17. And this with but little care in selecting the ore. By more careful selection the above figures can be increased at least fifty per cent. The fineness of the bullion is as follows: First bar, of 6,594.04 ounces, is 942 fine; the second bar, of 5,256.11 ounces, is 843 fine; the third bar, of 5,409 ounces, is 881 fine. Average fineness of the three bars, 888⅔. At least a ton of this bullion, worth about 28,000, will be shipped to San Francisco in four or five days. The mill is averaging about $1,200 per day.

KERN.

Silver-Bearing Lead.—*Courier*, Sept. 25 A silver-bearing ledge was discovered last winter, about seven miles from Kernville, which attracted considerable attention at the time, but from which nothing more has been heard till last week. The discoverers of the ledge, believing they possessed a valuable mine, set to work to develop it and find the true character of the deposit. In pursuance of this design they started a tunnel into the mountain at some distance below the mine. They had proceeded about 100 ft when they struck the lead, which proves to be well defined and growing larger as it descends. Assays made of the rock show a return of $700 to the ton in silver, with traces of gold. This is the first silver-bearing lead discovered in Kern county, but as the existence of rich silver ore has been demonstrated, we may expect to hear of more developments of a similar character.

MARIPOSA.

Rivka Tunnel.—Mariposa *Gazette*, Sept. 25: Since our last advice the River tunnel has advanced to 1,157 ft, with the same kind of rock as at the last writing, only a little harder. Water is still met with, but owing to the compact character of the ground it only makes the appearance when a perceptible fissure is cut.

As showing the tough nature of the ground in which the heading now is, we mention the fact that notwithstanding water is used in drilling, a circle of flame can be distinctly seen while holes are being started, and even when they are six inches deep.

The average weekly advance for the past eight weeks has been only 19¼ ft. During the past month over fifty drills, each 1¼ inches in diameter, have been broken close off near the machines, owing to the crystallization of the steel by the hammering to which it is subjected while in use. This is what one would call difficult ground, but as we learn harder rock is yet anticipated before the vein is reached, as it is a well known fact that the hanging wall of the Pine Tree mine is almost like cast iron in its resistance to the drill and powder. In all respects, so far, the rock in the River tunnel is like that of the Pine Tree.

NEVADA.

Goon Clean-up.—Grass Valley *Union*, Sept. 25: We have heretofore mentioned that a crushing of rock was being made from the Jennings location, the north extension of the Allison ranch lead. A clean-up of 45 loads of this rock was made at the Gold Hill custom mill, J. W. Crase, superintendent, on Thursday, and produced a beautiful bar of gold worth $6,000, or nearly $133.50 per load. This is a splendid result, and very encouraging to the owners, and will doubtless cause them to erect permanent machinery and open the mine systematically, as a lead that produces such quartz as that is entirely too valuable to be permitted to lie idle. Martin Ford, of Boston ravine, and Edward Commins, of San Francisco, are the principal owners in the location.

Items.—North San Juan *Times*, Sept. 25: The Bedrock claims, near Birchville, owned by V. G. Bell and others, are reported to be yielding good revenues to the owners. These mines are among the best on the Ridge, and employ a large number of hands to work them. Under the energetic management of Mr. Bell, no stone will be left unturned to make them pay.

A new shaft, over 100 ft deep, has been sunk on the upper end of the new tunnel, now being driven into the American company's claim at Sebastopol. At this depth, owing to the immense body of water which flows into the shaft, work this week was stopped. Before the company can proceed further it is supposed that a pump and other hoisting gear will have to be obtained.

The Yuba gold mining company, whose claims are located in the heart of Manzonita hill, between Sebastopol and Sweetland, are the owners of a large amount of valuable mining ground. It is said that negotiations are afoot between the company and certain parties for a purchase of the Yuba claims.

The Manzanita hill claims, situated on the lower or south end of Manzanita hill, near Sweetland, and owned by the Milton company, are reported to be paying good dividends. An immense body of gravel has been washed away since last spring. The company owns a large amount of gravel, and every foot of it will pay handsomely.

PLACER.

Another Gravel Mine.—Placer *Argus*, Sept. 25: A hasty survey of the works of the Auburn gravel mining company, shows that this new enterprise has been pushed with commendable vigor, and that a brilliant prospect is before them. After washing off a small knoll, with encouraging results, the company have extended their pipes about three-fourths of a mile further, and are now nearly ready to begin on a large and very rich deposit of gravel. They have been delayed considerably in getting their pipe, but it is now all on the ground, and by the middle of next week, the work of washing will begin. The tract of ground on which they operate has been thoroughly prospected, and is known to be very rich. The top gravel prospects thirty cents to the yard, while at the bedrock it pays from five to six dollars. As there are about sixty acres in this tract, the claim is at present rigged up, will furnish employment for a long time. The preparations for work are of a very complete character. The tail flumes have been extended further down the canon, and several new under-currents have been put in. Two giants have been placed in position, and will be at once connected with the main pipes. The new location gives about seventy-five feet more fall, and of course a greatly increased pressure. The bank of gravel to be worked varies from one hundred, to one hundred and seventy feet in depth, and can be worked very easily, as it contains no pipe clay and but few boulders. The development of these immense gravel beds, and the demonstration of their wealth, marks a new era in the business of Auburn. The success of this company being now assured, we may expect the large beds extending for miles above and below town, to be washed out, and contribute their wealth to the enrichment of the State. The Auburn company own about two hundred acres of good mining ground, and valuable banks of gravel extend along the American river as far as Penryn. The great advantages possessed by these mines over those higher in the mountains, add greatly to their value. There is never any snow to interfere with working, and there is an abundance of water the year round, enabling owners to work all the time, instead of only a few months in the year.

SAN BENITO.

The Consolidated Wonder.—Hollister *Enterprise*, Sept. 25: The above mine, or combination of mines, situated near Hollister, the property of Messrs. Stayton, Shockelford, Crepin and others, is exciting considerable attention. From the statements made by those who have visited it lately, the developments, so far as progress has been made in the work seem to be of an unusual promising character. Large quantities of ore have already been unearthed, and the samples which have been exhibited here, are certainly far above the average productions of a new and partially developed mine. As I am an old miner, I can give you the facts not as a looker-on, but as an operator. I dug out the rock with my own hands and submitted it to a test, and I will not hesitate to say that it is one of the best quicksilver discoveries in the State, as the following test will show: I reduced four ounces of the rock taken out four feet below the surface, and I received one ounce and forty grains of fine quicksilver as the fruit of my labor. There are many lodes running parallel to each other in the above claim, and I would not exaggerate if I should say that there are millions of tons of rock and dust that will pay from five to ten per cent. lying close at hand.

SAN LUIS OBISPO.

San Jose Quicksilver Mine.—*Tribune*, Sept. 25: Nine miles, in an air line from San Luis Obispo, nearly due east, at the head of the Rinconada, are a group of mining locations, commonly called the San Jose mine. The whole mountain is one immense outcrop of metamorphic sandstone, which forms the matrix for the ore. Upon the northern side of the mountain the mine has been worked to a great extent as an open quarry, and the ore lies in huge piles and reefs, for future reduction. Into this side of the mountain from the level of the grade of the quarry, a prospecting drift is being run under the heart of the mountain. The indications are flattering for an immense body of ore, several stratums having already been cut. Below this point the Ivanhoe tunnel is being pushed under the crest of the outcrop to the main workings, and at that date only lacked 30 ft of reaching the objective point for which it is being run. It will open the mine to a depth considerably over 100 ft below the lowest workings of the lowest level. The present supply of ore is being mined from the easterly side of the mine, where there are numerous tunnels, drifts, shafts and stopes, all of which show more or less ore. There are numerous evidences of a rich mine where opened to any considerable depth. The entire outcrop, which is several hundred ft in width, is more or less permeated with cinnabar, portions of it being rich.

SANTA BARBARA.

The Los Prietos.—Santa Barbara *Press*, Sept. 22: This morning Mr. Mahon, Supt. of the Los Prietos mining company, informed a *Press* reporter that his mines are going on with every promise of a brilliant success. There are in all six drives, from five of which about 1000 tons of ore will be ready for reduction about the 1st of Nov. next, and 25 men are at present employed upon the mine. A new drive is being pushed on to meet a shaft 120 feet deep; the drive passes below several of the croppings, and is expected to strike the ore in considerable quantity. The croppings extend over an area of 6 miles, and are of the finest ore in California. Since July 1st no assay has been made, but prior to that date gave a result of from one-half of one per cent to thirty-five per cent., and some even higher. The present drive is about 900 ft from the base of the hill, and it is proposed in all to have about 8 drives to the shaft at distances of about 100 ft apart. Since Mr. Mahon has been in charge of the mine no machinery has been bought, no expenses being incurred beyond those absolutely necessary to carry on the work. The winter supplies are being laid in, for when the river rises the mine is shut off from communication with the outside world except by means of a rough mountain trail, across which everything has to be brought by pack mules. The wealth and size of a successful quicksilver mine, when properly worked, is almost incredible. One at Almaden in Spain is 1700 ft deep and has been worked with a profit for 2900 years.

SONOMA.

Mining Items.—*Russian River Flag*, Sept. 23: The Board of Directors of the Great Eastern quicksilver mining company met in Healdsburg yesterday and declared a dividend of 3 cents a share, aggregating $1,800, payable immediately. This is the result of a 6 weeks' run with 5 retorts—after reserving $888 for expenses, etc. As the company receives from the lessees only one-fourth of the product of the mine, the entire net value of quicksilver produced in that time must have been, at the late low prices, about $11,000.

E. G. Hall informs us that the new furnace for the Mt. Jackson mine, near Guerneville, was completed last Tuesday and was heated up the same day. It will be charged with ore this week. Everything about the furnace seems satisfactory.

In the Calistoga silver mine they have struck a rich very ledge, better than they have ever worked before, and they have a large force of men at work getting out ore. They have struck another ledge half way up the mountain side that assays $480 gold. This ledge is a very large one, and the further they go in the wider it gets.

SIERRA.

Another Mill.—*Mountain Messenger*, Sept. 8: Jesse Corney is making preparations for building a five-stamp quartz mill at his ledge, in Jim Crow canon, the castings to be furnished by Manson & Co. Jesse has worked hard for years prospecting his ledge, and we earnestly hope that very soon his perseverance and energy will be rewarded with a golden harvest.

Alleghany.—Fessler and Lewis are taking out pay from Spohn's quartz ledge. Bay State and Highland & Masonic companies are doing well. Kenrelbach & Eastman found a pocket, recently, and extracted a couple hundred dollars in a day or two. Barrett & Childs, the past three weeks, have taken out from Kanaka creek, three nuggets weighing, 4½, 13 and 37½ ounces. These are encouraging statistics.

Minnesota.—Keystone company are driving a prospecting tunnel, and expect to strike pay soon. Out-buildings in good order. Minnesota company, S. and B. Ireland, owners, are preparing for winter, and are getting out timbers. Plenty of good quartz in sight. Sam generously allowed us to pack off a pocket full of rock. They are now building a blacksmith shop. The ledge is three feet thick and prospects well.

Excelsior Manufactory—A New San Francisco Industry.

For many years, and until quite recently, large quantities of a material known as "Excelsior" has been imported to this city from the East, withdrawing from the coffers of this State a large sum of money annually; and this, too, while we possess at home all the facilities, and a superior kind of wood for manufacturing the materials at our own doors. It seems to have been left for Messrs. J. S. Spaulding & Co., the enterprising machine carpet beaters, at 353 and 355 Tehama street, to observe and comprehend the opportunity which was here presented for the establishment of a new and useful industry in San Francisco, and we are pleased to say that their effort has been a most successful one.

"Excelsior," as most of our readers know, is a peculiar, thread-like wood shaving, used for filling mattresses, and is intended mainly as a substitute for pulu, it being more convenient, more conducive to health, and much more cleanly and free from dust. It also wears longer, and is more elastic. The Excelsior factory is in the same building with the Pioneer carpet beater, and belongs to the same parties. It is understood that the facilities of the establishment shall keep pace with the demand for the article, which is already so great that the proprietors contemplate an early increase to their present machinery.

The wood employed here for the manufacture is that of the cottonwood tree, which is found to be much superior to the poplar generally used at the East. It is of stronger fibre, and less liable to pack, and break up, and is lighter, in the proportion of 19 to 22. Hence, the same weight and cost gives more bulk, the thing sought for. The wood is obtained from Humboldt county, as that grows there is found to be of the best quality to be found in the State.

In order to save freight it is necessary to pack the excelsior from the East into close packages, in which condition it remains a long time, during the Cape Horn transit and delay in the warehouse at both ends of the route. This close packing not only results in a material deterioration of the fibre, but also necessitates much labor in picking it loose before it can be used, while that manufactured in this city is very loosely packed, being put up in boxes like hay, and only packed close enough for convenience in handling. Care is also taken here to effect a very thorough separation of the dust from the fibre, much of which is necessarily produced in the process of manufacture, and which the Eastern manufacturers usually bale up without separation—thus deteriorating the entire mass, and compelling the purchaser to pay for that which is not only of no use to him but which he must get rid of at the cost of his own labor. Dealers and others who employ this article in their manufactures will find it to their advantage to purchase the home made article, and, moreover, in doing so they will encourage home industry and aid in keeping our money at home, to help our mechanics and furnish an increased market for the produce of our farmers.

Stanley has been heard from. He has buried two of his companions who have died of malarial fever, and lost twenty-one of his followers in a fight with hostile natives. He has made a survey of the lake Victoria Nyanza.

The California Watch Company.

There is, perhaps, no one point of interest at the Mechanics' Institute Fair that is more attractive to the general public, than the stand in the gallery occupied by the Cornell watch company. Here may be found every evening groups of interested and curious spectators initiating themselves, by ocular practice, into the mysteries of watch making.

Within the railing surrounding the exhibit, watchmakers are at work with the different parts of the skilled mechanism which goes to form the machinery of a pocket time piece. A casual glance will fail to convey to the ordinary observer the intricate and delicate character of the class of workmanship which is necessary to produce a perfect watch. Only by a visit to the factory itself, and a careful and appreciative examination, can the difficulty of watch-making be understood. Let the reader think of machinery and tools which are used to drill holes one eighteen-thousandth of an inch in diameter! Think of screws so minute that 190,000 of them are contained in a pound troy! and these Lilliputian portions of the body mechanical of the watch have to be made with a precision which approaches to perfection—the devintion of the hundredth part of the width of a hair would be fatal to the time-keeping qualities of the watch. An excellent idea in general can be obtained by examining the artisan at work, in the Pavilion stand, as to the importance of nicety and precision of detail necessary in watchmaking.

The Cornell watch company was organized with the following officers: Paul Cornell, president; Oliver Eldridge, vice-president; Bank of California, treasurer; H. Cox D. D., secretary; Charles R. Bacon, superintendent. Directors, John Parrott, Peter Donahue, William Norris, Paul Cornell and Oliver Eldridge.

A building was erected on Fourth St., and the manufacture of watches inaugurated last spring. The company had employed the best and most skilled watchmakers obtainable, and soon obtained a foothold in the market, their goods meeting with a welcome reception from dealers generally. It was soon found, however, that the premises were not, in all respects, suited to the business. Although built especially for them, there were some objections to the location, and it seems that the flying dust, which is almost ubiquitous in San Francisco three-fourths of the year, threatened to have an injurious effect in the manufacture of their watches. A meeting of the directors was called, and it was decided to increase the capital stock, re-organize the company, and remove the manufactory to Berkeley.

The re-organization was accomplished a few days since. The capital stock was raised from $300,000 to $700,000, and the name of the company has changed to the "California Watch Company." The new officers are as follows: President, N. W. Spaulding; Vice-President, Irving M. Scott; Secretary, H. T. Graves; Treasurer, Oliver Eldridge; Superintendent, Charles R. Bacon; Assistant Superintendent, J. K. Bigelow. Directors: N. W. Spaulding, Irving M. Scott, Peter Donahue, Oliver Eldridge, Paul Cornell, A. Remmelsberg. Arrangements were at once made with the Berkeley Land Association, by which the watch company are to obtain a most desirable tract of land on this property, directly on the line of the C. P. R. R., which is now in the course of construction, and will form the direct line overland. They will, next week commence the construction of a watch factory. It will be 150 feet in length and three stories high, except a portion in the center, which will be four stories. A parallel court extending back twenty feet is to connect with a building for the engine and repairing shops. The building will be pushed to rapid completion and the prospect for the future of the California watch company is extremely hopeful. Two hundred persons will be employed and the increased facilities will be taken advantage of to introduce many novelties in watches. One style of watch will be made, the works of which alone will cost $250 each. Houses will be erected in the neighborhood and disposed of at cost price to the employees on the installment plan. We are glad to note that the energy and skillful management which has marked the business career of Mr. Bacon is appreciated by the new company. He will be continued as superintendent. We shall take occasion to refer to the progress of this new enterprise again.

Triple Cylinder Engine.—The Alden triple cylinder is something new. Two cylinders alternately exhaust into an auxiliary while their pistons are balanced by the free exhaust steam around them. Its results are also new; viz., it will use all the exhaust steam, does away with all back pressure and secures regular motion. This virtually doubles the power of steam over the common single cylinder steam engine, or saves half the steam or half the fuel. *American Manufacturer.*

To Cleanse Kerosene Casks.—Set the cask on its end; remove one head, and build a fire in the bottom of the cask with straw or any light combustible matter. Allow the head which has been taken out to remain suspended in the cask while burning. When the inner surface is charred, put out the fire by covering up the open end, and rinse the barrel with strong lye. A barrel thus treated can be used for cider, meat, or any other purpose.

Completion of the Hell Gate Excavations.

On July 4th, 1876, the great explosion which is to shatter the submarine rocks at Hallett's point, and open a navigable channel for vessels of large draft, coming and going through Long Island sound, to and from New York city, will take place; such, at least, we understand to be the present intention of those in charge of the work. The excavations were completed about two months ago, and the operation now in progress consists in the boring of the holes in which the heavy charges of nitro-glycerine are to be placed. These borings are about half finished, and will require the labor of two or three months longer, after which two months more will be occupied in inserting the charges.

The entire surface undermined measures 2½ acres, and the cuttings aggregate 7,042 feet, varying in hight from 8 to 22 feet, and in width from 12 to 13 feet. There is a roof ten feet thick between the mine and the water, and the latter, at the outer edge of the excavation, is 26 feet deep at low tide. Between the headings and galleries heavy piers are left, which now sustain the immense weight of rock and water above. In each pier from ten to fifteen two and three inch holes are being drilled, and in the roof similar apertures are being made at intervals of five feet apart. All of these openings will be filled with nitro-glycerine, in charges of eight and ten pounds, and all will be connected together by gas pipe filled with the same explosive. This will be done during the cold weather, when the danger of hauling the nitro-glycerine is greatly diminished.

Previous to the explosion the coffer dam will be broken away and the water allowed to fill the entire excavation, so that it will serve as a tamping. Then, by means of an electric fuse, the nitro-glycerine in the gas pipe will be fired, which will determine the blowing up of the whole affair. No fear is apprehended as to the result, since it has been determined that the explosion of half the charges will be sufficient to cave in the roof, and cause it to fall to the sunken floor, deepening the water at once to a proper depth, or necessitating but little dredging to complete the work.

The new operations at Flood rock will involve still greater cuttings than at Hallett's point. The shaft is now down to a depth of fifty feet. The Hallett's point work has been under way since 1869, but has been greatly delayed by the failure of Congress to provide sufficient appropriations; if the same course is to be followed with reference to the Flood rock excavations, it will be manifestly impossible to form any estimate of their time of completion —*Scientific American.*

American Agriculture.

An American pamphlet by Mr. S. B. Ruggles recently published, calls attention to the increase of production in the United States. According to the census the population in 1840 was 17,069,453, but in 1870 it has increased to 38,558,371. The growth of production was in some things more rapid even than the growth of population. Thus, the wheat grown in the earlier year amounted to 84,811 175 bushels; but in 1870 it was returned at 287,745 026 bushels. Butter and cheese increased from 202 410,440 pounds in the one year to 677,017,095 pounds in the other, and the yield of hay was nearly trebled. The system of returns made thirty years ago was not as complete as it afterwards became, and therefore the details at that period are in many respects deficient; but if we take the year 1850 as a starting point, we have more grounds upon which a comparison can be made.

About 6,000,000 had been added to the population at this time. The cash value of farms, including farming implements, machinery, and live stock, in 1850, was estimated at $3,967,343 580; but in 1870 this had increased in a most remarkable manner, and it was then calculated at $11,124,958,747. The production of hay doubled; the value of animals slaughtered or sold for slaughter increased from $111,703,142 to $398 956,377; the yield of tobacco grew from 199,752,655 to 262,835,341 pounds; of wheat, from 100,468,574 to 287,745,626 bushels. It was only when we came to the special productions of the South that this increase ceases. Unfortunately, the difference then in some instances becomes a diminution. The yield of cotton was more than maintained. In 1850 it amounted to 2,469,093 bales of 400 pounds each; in 1870 it reached 3,011 996 bales. But the rice crop fell from 215 313,487 pounds to 73,635 021 pounds; and that of sugar from 267.577 to 87,943 hogsheads.

In contrast to this the report from manufacturing States is noteworthy, the value of the products of manufactures having increased from $1,019,106,616 to $4,232,325,493. The total yield of cereals in 1870 was 1 387,274,217 bushels, of which the Southern Atlantic States, from Maryland to Florida, and the interior States south of the Ohio and on the Gulf of Mexico, produced only 320,730,258. New England, the Middle Atlantic States, and the States north of the Ohio produced 1,028,341,574 bushels, and the Pacific States and territories only 38,202,385. The farms of the New England States are valued at $707 912 439, in the Middle Atlantic States at $3,028,551,359, and in the States north of the Ohio at $5 132 816,399 In the South Western States the valuation, too, is as high as $1,254,614,196. In1870 the agricultural population amounted to 5,922,471 persons, of whom 5,303,363 were returned as natives of the United States. Of the rest the Germans are the most numerous, and the Irish the next. The total value of the farms being $11,124,958,747, we have an average per head of $1,878, while the net yearly product of $2,137,252,383. gives an average in like manner of $360.—*London Farmer.*

How the Rust Grows.

The transformations in the growth of a butterfly are so evident that the merest school boy may try the experiment and observe the truth of it for himself; but in the rust the objects are so very small that the changes can only be seen by the keen eyes of the skilled observers aided by the best powers of the microscope. Beginning with the spores of the mature rust-plant, as seen in the black stains on the old stubble of any grain field, it will be found that when the warm and moist days of spring come these spores germinate, producing in a few days a short stem bearing a crop of other spores of very much smaller size. To avoid confusion, these must be called by their scientific name, *sporidia*, while the parent spores are the *teleutospores*. The sporidia have never been seen or made to grow up on the grain; but when they find their way to the leaves of a barberry bush, they soon begin to germinate, and make themselves manifest on the under surface of the leaves in what are commonly known as "cluster cups." The interior of these pretty little cups is closely packed with spores of a still different kind, styled the æcidium spores. These will not grow upon the barberry, but when they fall upon a blade or stalk of grain, they soon produce the yellow rusty covering so often seen as the grain is beginning to ripen, and caused by a multitude of *uredo* spores. Later in the season this uredo state produces the final, perfect teleutospore, thus completing the circuit of life in this little rust-plant. Long before this rust was discovered to be a plant, farmers had noticed that there was a close relation between it and the barberry, and at present the latter is being rapidly destroyed with good results, though it can scarcely be expected that the rust-plant will thereby become extinct, as probably the æcidium state grows on other than the barberry, though not yet discovered elsewhere. This is an excellent illustration of polymorphism, so common among fungi, and it also answers well to show the vast number of spores these microscopic plants produce. The teleutospore usually bears from five to ten sporidia, and allowing that only one of these finds the barberry leaf, there may be from one to fifty cluster cups as the result. In our case suppose only *one*, and a low estimate for its contents would be 250,000 æcidium spores; and if only one in a thousand finds a place on the grain stalk, and each brings forth its 250,000 fold, there would be under such circumstances 62,500,000 spores from the single one with which we started. Taking the same teleutospore, and supposing every spore in all the stages found its place to fill it, the result would be 1,562,500,000,000,000,000 spores, which may be looked upon as its true descendants for the season. On giving each inhabitant of the globe his equal share of these reproductive bodies, he would have nearly as many as there are individuals in the whole human race. This may seem like a very large story about a very small matter, but it is not the only strange truth the microscope has revealed.—*Scribner for October*

Size in the Eye.—Size with the eye, as with the brain, is generally conceded to be a measure of capacity. A large eye has a larger range of vision, as it unquestionably has of expression, than a small one. A large eye will take in more at a glance, though perhaps with less attention to detail, than a small one. Generally speaking, large eyes see things in general, and small eyes things in particular. The one sees many things as a whole, considering them in a philosophical or speculative way, often seeing through and beyond them; the other sees fewer things, but usually looks keenly into them, and is appreciative of detail. Some eyes, however, look at everything and yet see nothing. Fullness of the eye, causing a bulging of the lower eyelids, is the well known sign of Language. Persons with this sign large have not only a speaking eye, but also a speaking tongue; whereof their fellows do not long remain in ignorance. A general projection or fullness of the eye above and below, which brings the eyeball forward on a line with the face and eyebrow, denotes the quality of physical perception, or the capacity to see quickly whatever appears upon the surface of things. A person with such an eye, on entering a room for the first time, would note rapidly the shape, size, arrangement, and general appearance of the different articles of furniture in it, the color of the walls, curtains etc.; take in with equal facility, the color of eyes and hair, size and appearance of any person who might be present. In looking at a picture such a person would at once incline to examine the details of color, number, grouping, attitude, and costume of the figures composing it.—*Annual of Phrenology.*

A patent has been taken out for correcting the injury which befalls steel to be welded to iron in consequence of the great heat of the latter. The process is to wet the steel surface to be welded, then sprinkle it with a powder composed of calcined borax, iron filings and prussiate of potash. The two surfaces are then brought in contact and raized in about 600° of 700° Fah. When subsequently rolled or hammered, the joint is found complete and the steel intact.

Celluloid.

A destructive fire, attended by an explosion, recently occurred at the celluloid works, Newark, New Jersey. One life was lost, several persons injured, and property to the extent of $150,000 destroyed. It is alleged that, when the fire was discovered, the engineer immediately turned on steam into the apartment, when an explosion instantly ensued, the inference being that the steam assisted the explosion. But this we think, is a mistaken inference.

Celluloid is a manufacturer's name given to a species of collodion, or dissolved and dried gun cotton. Common cotton, the refuse of cotton mills, and other vegetable fiber is dipped in a liquid composed of nitric acid and sulphuric acid; then drained, washed in water, and dried, when it is found to possess highly inflammable and explosive qualities, and is termed gun cotton, as it may be used as substitute for gunpowder; it has twice the power of the latter. This prepared cotton may be dissolved in ether and alcohol, when it forms a thick transparent liquid, known as collodion. This is the material used by photographers, who, in taking a portrait, spread a thin film of collodion liquid on a glass plate. The ether and alcohol soon evaporate, leaving the dissolved cotton to dry upon the glass in the form of a thin membrane or skin, which receives the silver compounds used in taking photo pictures. Collodion, when dried in any considerable mass, forms a tenacious, transparent substance, somewhat resembling horn. If whiting, zinc oxide, and other coloring substances are added to it while in the liquid state, and then dried, substances resembling ivory, hard rubber, bone, etc., result. All such forms are, very inflammable.

The use of alcohol and ether is expensive as a solvent, and the celluloid makers substitute camphor, the use of which forms the basis of their patent. By peculiar manipulation, involving the combined employment of heat and pressure, they are enabled to produce plates and blocks of dried collidion, of beautiful texture and color, possessing a certain degree of elasticity, with great strength and toughness, and little weight. From these plates and blocks a great variety of merchantable articles are made, such as harness trimmings, jewelry, dental plates for artificial teeth, billiard balls, knife handles, etc. They are a complete substitute for hard rubber and ivory for many many purposes, and considerably cheaper.

But not only is the manufacture of the crude celluloid dangerous, but even the most finished articles made from it will readily inflame. As a practical experiment, any one may take a strong and highly polished martingale ring of celluloid, which the strength of a horse could hardly break; apply to its surface a lighted match, and it will quickly ignite like a torch.

Celluloid factories must be classed among the extra hazardous risks, so far as fire insurance is concerned, and their presence in large cities are not desirable. The manufactories should be isolated; the finished goods should only be stored or exposed in small quantities in the shops.

Development of the Iron Trade.—The first discovery of iron was on the mountain Ida, in Croto, about 1500 B. C. The famous Delhi wrought iron pillar, forty-eight feet long and weighing over seventeen tons, was erected A. D. 319. Ralph Hogge produced the first pig metal in England in 1543. He used charcoal as fuel. In 1619 David Dudley succeeded in making cast iron, using pit coal from the forest of Dean as fuel. In 1735 Abraham Darley made the first cast iron from coke, at his works at Colebrook Dale, England. Henry Cort built the first sand bottom puddling furnace in 1783, in his works in Gosport, England. In 1781 Henry Cort invented the grooved rolls of the present day. In 1816 Samuel Rodgers invented and introduced the iron bottom puddling furnace. In 1826 Messrs. White & Hazard attempted to make pig metal with anthracite coal, but failed—the furnace chilled. In 1831 Neilson invented the hot blast. In 1833 David Thomas conceived the idea of using anthracite with the hot blast, and in 1836 he made anthracite metal a success. In 1838 Mr. Thomas came to this country, and made the first anthracite pig metal in the United States, at the Pioneer furnace, at Pottsville, Pa., in June, 1839. In 1847 Henry Burden introduced his rotary squeezer into the works of Lyon, Shorb & Co., at Pittsburg. In 1856 Henry Bessemer took out his patent for Bessemer steel.

The California Wine Crop.—The wine crop of this State increases each year in importance. We have gathered from different sources statistics which afford sufficient data to base a calculation as to the probable product of this year's vintage. The production of the State this year will be at least 8,000,000 gallons, divided about as follows: Sonoma, 1,000 000; Los Angeles, 800,000; Solano, nearly 500,000; Napa, 700,000; El Dorado, 600,000; Yolo, 500,000; Anburn, 400 000; Yuba, Sacramento and Marysville, 1 200,000; Colusa, 300,000; Santa Clara, 500,000; Santa Barbara, Ventura, San Bernardino, San Luis Obispo, Monterey, Tehama, Lake and other counties not enumerated, say 1,500,000, making the total above given. Sonoma is the largest wine producing county in the State, having last year for the first time exceeded the product of Los Angeles. In the next few years a large number of vines will come into bearing, increasing the present production almost one-half. The vintage here promises well. It will commence in a few days, and is two weeks sooner than last year.—*Sonoma Democrat.*

Useful Information.

Freezing Water in Bottles.

Visitors to Paris are well acqueinted with the glaes bottlee containing water frozen into solid blocke which are delivered every morning by *La Societe des Carafons Frappes* to its customers; and the country cousin wonders indefinitely as to how the block of ice is put into the bottle. A new method of cougeling such bottlea of water hss recently been introduced by M. Carre, an inventor whoee success in the introduction of freezing machinery is well kuown.

Freezing water in a vscuum is a common lecture room experiment, eud it is readily done by placing water in e saucer under the bell glass of an air pump, and exhaustiug the air; when the ebullition caused by the withdrawal of the aeroetatic pressnre ceases, congelation begins. It is not difficult to understand the sequence. In pessing from a liquid to a vsporous condition, without the aid of heat from outside, the water must borrow some hest from surrounding objects; and this heat pessing off in vspor, the remaining water quickly becomes frozen. M. Cerre has ntilized thia process in a very ingenious manner, and has reduced it to a very simple and economical method, capahle of domestic nse.

The bottle is suspended, by means of a rubber cork, from the uozzle of a pipe, and the withdrawal of the air, by working a hend lever, iuducea a spsedy commencement of ebnllition. The rising vapor is drawn through an intermediate vessel filled with sulphnric acid, which at once absorbs end condenees it, and congelation commences in the middle of the wster in the bottle; and from the first formed particles, needles of ice soon radiate in every direction Their nnmber angments in geometrical progression, and their eize increases as you behold them, until, in less than one minute from the commencement of the operation, a bottle of water is frozeu eolid with very little exertion.

This seema to be a handy apparetus for use in places where ice is not readily obtainahle. Ice is now being made and sold in London for $2.50 per ton; and if a more simple method of doing this can be introduced, so that the indispenssble commodity may be made in every grocery or honsehold, the storing companies, with their huge monopoly, cumbrous csrts, and high cherges may soon be gone from among us.

A German Invention.—It is stated that a recent German improvement in decorative art consists in the fusion of gold, silver and platinnm with bronze, by which the most gorgeous effects sre produced — gold fusion giving a splendid violet tint, silver a faintly lustrous "Kioto" tone, and platinum a rich and deep black shade. The intermediate tints may be obtained by modification of heat, while the seme process may be applied with nearly equel success in the case of cast iron. Very novel effects in this art have been prodnced by lsying one tone upon the other—as, for instance, colored leaves end variegated arabesques on diffsrently tinted metallic surfaces—and the method is beginning to be extended to the ornamentation of leather, thns bidding fair to revive, at a moderate cost, the art of preparing leether mosaics, one of the most elegant of the various adaptations of inexpensive materials to artistic purposes.

A New Cement.—A French chemist has succeeded in prepering e mineral compound, which is said to be superior to hydranlic lime for nniting stone and reeisting the ection of water. It becomes as hard es stone, is unchangeable by air, and is proof againet the action of acids. It is made by mixiug together ninetesn pounds of sulphur and 42 of pulverizsd stoneware and glass; this mixtnre is exposed to a gentle heat, which melts the snlphur, and then the mass is stirred nntil it becomes thronghly homogenous, when it is run into molds and allowed to cool. It melts at abont 248° Fahr., and mey be reemployed without loss of any of its qnalities whenever it is desirable to change the form of an apparatus, by melting it in a gentle heat, and operating es with asphalt. At 230° Fahr., it becomes a stone and preserves its solidity in boiling water.

Driving Screws into Hard Wood.—A correspondent of an English jonrnal writes: Hsving lately had occesion to screw together two pieces of ebony, I made nse of the following dodge, which was perfectly successful. I filed a flet about a quarter of sn inch long on the side of a commou wood-screw, commencing at the point. This out the wood, and formed a thread in the same wey that a tap would have done. The screw followowed it np and held well. Having previously had difficulty in getting screws to hold in box and other woods, I send the above wrinkle for the benefit of my brother amateurs.

Composition of Metaline.—Metaline is out at last. The following is officially given as the ohemicsl oomposition of this remsrkable new lubricant: Paraffine, 4.98; csrbon, 18.89; silica, 6.44; lime, 3.96; magnesia, 1.99; ferric oxide, 3.94; alumina, 2.53; leed, 32.40; ziuc, 20.07; copper, 2.75; tiu, 1.55; moisture, 0.51—total, 100.01.

Hard Pressed Tea.—Tea is now consolidsted into cakes by powerful hydraulic presses, in which form it is said to retain its flavor better, and consequently to be more economical, than in the ordinary loose condition.

Ammonia Paper Board.—This method of msnufactnring paper board, to make that article more generally useful and dnrable, is described as follows: When a sheet of paper is immersed in an ammonical eolntion uf copper, and then dried, it is said to be qnite impregnable to water and does not lose this quality even though the water be boiling. Two sheets of paper thns prepared, and psssed through a cylinder adhere to each other so completely as to be qnite inseparable. If a large number of sheets so prepared be cylindered together, boards of great thickness are obteined, the resistsnce and cohesion of which may be increased by interposing fibrous matter or clothes. The substance so prepared is quite as hard as the closest grained wood of the seme thickness. The smmonical solution of copper is prepered by treating plates of copper with ammouia of the density of 0.88 in contact with the atmosphere.

The cultivation of mehogeny in Jamaica has commenced. Other valuable woods for furnitnre hsve also been planted. Jemsica formerly produced mshogany much more highly prized thsn thet from Hondurss, the country being hilly, end the trees growing on hilleides hsving a harder textnre and richer grain thau those growing upon the level country of Honduras. It is stated upon good authority that one thousand ponnds sterling hes frequently been paid for a log of Jamsica mshogany. This seems a very extravagent price, mahogany being at the preesut time not so much in demand for furnitnre as formerly—but its intrinsic beauty end its strength ere sure to hring this wood again into fashion.

A remarkable phenomenon was observed in Brighton, Vt., Monday ahout noon The sun was surrounded by a distinct circular rainbow (so to ssll it) of a radius abont one third of the altitnde of the snn. There wae another of double the radius, of which the lower part was very distinct and beautiful. In addition to these there was a third circle of white light of equal radius with the smaller; hut, instead of its center being in the sun, the circumference passed through it, the opposite point being to the north. The smsller prismatic circle lasted about en hour, becomiug finally white. The other two were of shorter duratiou.

New Balloon Experiments.—A balloon ascent to escertein the possibility of a precise aim with projectiles from a great hight has been msde by M. Eugene Godsrd at Rheims. M. Godsrd and two officers floated at a hight of abont 3,600 feet, and were perfectly successful in hitting any prominent given object, such as a road, a cansl, etc., with atones and empty bottles. At his next asceusion M. Godsrd inteuds to try and kill some of the numerous hares seen throngh his glass on the plains below. If these experiments prove successful, balloons may become highly nseful for sporting.

A Proper Precaution.—Many people are nervous for fear tometoes and other acid fruits will become poisoned by the leed in the tin cans. A formula has been prepared, and dealers are putting it upon their cans, for detecting the poison if there is any.

Good Health.

Fever and Ague.

It is more prevalent dnring the spring and fall thsn at other seasons; the reason is, that changes of temperature are the more sudden and frequent. There are persons who have hved many years in fever end ague districts without having had the disease. With proper cere and attention all might avoid it. An observance of these simple rules would generally ward off the disease.

Avoid exposure to the damp air of the early morning and the eerly eveniug, except when exercising, and then do not remain in the opeu air to cool off. Avoid great fatigue; sleep eight hours out of twenty-four. Bs sure that the water used for drinking and cooking is perfectly pnre. Wear flaonel underclothing at all seasons. Keep the feet warm and dry.

To cnre the fever and ague, take twelve greins of qninine at oue dose, abont an hour before the chill is expected. Just one week from that hour take another twelve grains of qninine. The disease will seldom return. This is the dose for an adult. Children should take smaller doses according to age. The reeson that decided doses cure fever and ague seems to be, that the disease receives a shock which breeks it. Small doses of quinine only hold it in check dnring the time the medicine is beiug regularly taken; as eoon as it is snspended the disease generally returns. Hence the populer notion that quinine only feeds the disease. The fault is not with the medicine, bnt in the manner of administering it. While we do not believe in encourssging the employment of medicine, we are bound to say that quinine, heroically administered, has proved the only dead shot for fever and ague in our practice.—*Hall's Journal of Health.*

Sick Headache.—Two teaspoonfnls of finely powdered charcoal, drank in a half-tnmbler of water, will often give relief to the sick headache when caussd, as in most cases it is, by a superabundence of acid on the stomech.

Hygieia—The Goddess of Health.

The following ettractive portrsiture of the goddess of health ie from the introductlen to the Report on Hygiene read by Dr. Benj. Lee, of Philadelphie, at the recent annuel meetiug of the Medical Society of the State of Pennsylvania:

Hygieia, the "sweet, smiling goddess of health," was one of the fairest conceptions of an age which combined, in an exceptionel degree, poetry of thought with clearness of judgment, owing, perhaps, to the very fact that it appreciated so much more thoroughly thsn any other (unless it may heve been the Mosaic) the absolute necessity of coporeal sanity to the existence of meutal sanity, and wss, therefore, not ashemed of this humen form, which the Creator himself, having moulded efter his own likeuees, contemplated with unmixed admiration, and pronounced superlatively "good." This age of poets, sages, and artists lavished ell its wonderful powers of creative geuius in giving expressiou to its ideal of that divinity whoee special care should be the bestowment and maintenauce of physical health. The embodiment must needs he feminine, because the mother, the nnrse, the wife, have for their special function that daily miuistry to the bodily welfara and necessities of offspring and of husband, that constant presence in and care of the home, which are the two essentials of health in the family and in the individual. She must needs be youthful, as presenting ever to the mind of the entranced beholder that period of life when a blood unvitiated by vice or excess courses through a frame unmarred by violence or exposure, and colors a cheek unstained by sin. Purity must look forth from her eyes, and truth sit enthroned ou her hrow; for unbridled passiou and soul-torturing deceit ere equally inimicel to the perfect preservatiou of health. Her form must he lithe, vigorous, and well uourished, but not redundaut, as showing her adorers thet neither asceticism on one haud, nor gluttony and voluptuousuess on the other, are allowed in her worship, encouraging sctivity as contrasted with indolence. Cheerfuluess must rediate from every feature, since gloom end despondency are the recognized foes of senity, whether of body or miud; and over ell, pervading expression of face and pose of limb, must be thet indescribeble charm of geutleness, as teaching her votaries that in the mutual interchauge of kindly sentimeut end act they shonld greatly promote the commou health and common weel. And so has the lovely inspiration come down to us, immortalized by the sculptor's art, a joyous msiden, full of tender grace, robed in chaste end flowing vestment.

Cured by Laughter.—The Pittsburg *Gazette* relatss the following: "A short time siuce, two individuals were lying iu one room very sick, one with brain fever and the other with an aggravated case of the mumps. They were so low that watchers were needed every night, and it was thought doubtful if the one sick of fever would recover. A gentleman was engaged to watch over night, his duty being to wake the nurse wheuever it became necessary to edminister medicine. In the course of the night both watcher eud the nurse fell asleep. The mau with the mumps lay wetching the clock, and saw that it was time to give the fever petient his portion. He was unable to speak aloud or to move any portion of his body except his arms, hut seizing a pillow, he managed to strike the watcher in the face with it. Thus snddenly awakened, the watcher sprang from his seet, falling to the floor, aud awakened botb the nurse and the fever patient. The incident struck the sick meu as very ridiculous, and they laughed heartily at it for some fifteen or twenty minutes. When the doctor came in the morning he found his patieuts vastly improved, and he had never knowu so sudden e turn for the better, and now both are up end well."

What Every Wife Ought to Know.—Every action and emotion depletes the physical system. Milk, the first food absorbed by men and animals, is the only netural mixture, containing all the elements of blood save the coloring. Water constitutes three-fourths of the body. To work well, either physically of meutally, we must be fed judiciously end thoroughly. The worker must eat mixed food. Food properly administered stimnlates the system es wiue does, only more natnrally. The long night hours empty the stomach, deplete the system, and chill the body. On arising the physical condition is low, and should be recruited. If we lose time at early morning in bringing the body np to its natnral heet and strength, we cannot regain it dnring the day. A healthy man reqnires abont one pound of nntriment per day to keep him in good condition. While a working man wonld need daily five pounds of solid mixed food, two and a half would be enough for persons who lounge and sleep much.

A Fourth Set of Teeth.—It is stated that a woman ninety years old, et the Hospital of of Incurables, in Paris, has "cut" a complete fourth set of teeth; the third eet having appeared at the ege of sixty-three, end the eecond at forty-seven.

Domestic Economy.

Imperfect Cookery.

To ascertaiu just how much really good material is spoiled in the cooking would form an iuteresting and qnite fruitful subject of research, and set some housekeepers at least to thinking. If every loaf of bad bread mennfactured from good flour, every overdone or nnderdone piece of meat prime in original quality, every mese of potatoes ruined in the kettle, every muddy cup of coffee made, every dish of every sort that might be palatable and nutritious, bnt which by carelessness, ignorance, or neglect is made tasteless and mediocre—if ell these could be written down in a book, with dates and specifications, and the average cook confronted with them once a year, what consternstion would or should fill her heart, and whst e fearful aggregete of meteriel wested beyond redemption would appear in the account.

The fact is that cookery is entitled to rank among the exact sciences, and that happy accident's are of rare occurence in the culinary domain, while unhappy acoidents are constantly happening. There is continually the golden mean to be sought in the admixture of all the elements that are to make up a savory meal, and such is "the total depravity of material things," as one of our witty writers once phrased it, that if there is one chance in ten of things going wrong thet chance is sure to befall.

To cook a potato exactly right, so that it will be just done, and no more, be mealy, white, pertect, requires en exercise of thet talent little short of geuins, so one would think who eats that vegetable at ordinary tables. The same is true of onions, that odorous bulh, which is almost always served underdone; of beans, which ere either burned in the baking or dried to a choking consistency. Now a hungry epicure even can make a good meal off three or four things—nicely cooked meat, perfectly prepared potato, a dish of ripe fruit, and exemplary bread end hutter. It is not variety or qneutity that is so important as quality, and if those who cook could only reelize this and precipitate all their powere upon the perfect preparation of only two dishes at each meal, those who feed at their hands would certainly be the gainers. It is e great deal easier, when one has really made up her mind to it, to have everything just right thsn it is to let things drift, for one right thiug fits into another right thing and theu the whole is right. Badly cooked food is not only sheer waste of raw material, bnt it ceuses waste in nerve, muscle, soul power. The hungry body vainly attempts reeuperatiou in tryiug to digest and assimulete food not "convenient" for it, so that whst might have heeu accomplished had the food beeu right remains undone.

Apropos hereto and for the help of careless cooks the followiug extract from an unpnblished bnsiness letter is given: "Having writtenu an hour or so I found the inner roomiuess large and descended to breakfast. The order was scrambled eggs, steak, codfish cake, coru cekes, muffins, stewed chicken, and chocolate. The eggs were so old they smelt, the chicken even worse, the coru cskes tasted like sawdust, and the butter was oleomargarine or worse. The muffins turned ont to be one small hut good grahsm biscuit, burned to a cinder at the top; the chocolate wss flat end bitter. But the hotel is central and elegant; the furniture is costly; the walls ere frescoed; the mirrors are large; the darkies are olever; the bills are ample; the lady boarders wear scant skirts with ruffled humps; and how rude it would be to suivel about the mere victnals! I won't do it. I went without my breakfast, paid for it with effusive cheerfuluess, tipped my hat jaunti1y in taking leave of the haudsome cashier, and knew that I hed had jnst as good a time as the other fellows!"—*N. Y. Tribune.*

French Recipes for Cooking Potatoes.

Puree of Potatoes. — This differs from mashed potatoes only in the employment of more milk and butter, and in the whole being carefully reduced to a perfectly smooth, thick, creamo-like mixture. Where economy is a great object, and where rich dishes are not desired, the following is an admirable mode of mashiug potatoes: Boil them till thoroughly done, having added a handful of salt to the weter, then dry them well, and with two forks placed heck to back, beat the whole up till no lumps are left. If done rapidly, potatoes thus cooked are extremely light and digestible.

Potatoes Sautees.—These are even more agreeable with meat than fried potatoes. Cold boiled potatoes are sliced up, and tossed np in a seucepan with butter, mixed with a little chopped parsley, till they are lightly browned. Pure goose or other dripping is by many cooks preferred to butter for this purpose.

Potatoes Soufflees.—Theee delicious blistered potatoes are prepared as follows: The potatoes, if small, are simply cut in halves; if large, cut into three or more slices; these are fried in the usnal way, but are taken out before they are quite done, and set aside to get cold; when wanted they ase fried a second time, but only until they sre of a light golden color, not brown.

Cream Tomato Soup.—To one quart of sweet milk, pnt one pint of cooked tomatoes. When it comes to a boil, add, one teaspoonful of soda and a half teecnpful of rolled cracker, and season as for oyeters This soup is very nice.

MINING AND SCIENTIFIC PRESS.

W. B. EWER.....SENIOR EDITOR.

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San Francisco:
Saturday Morning, Oct. 2, 1875.

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WHY FRANCE IS PROSPEROUS.—During the first half of this year, France imported goods to the value of $342,200,000 and exported to the value of $385,500,000, so that she sold only $43,300,000 in excess of what she bought, and, though this is not a large sum, it is always on the right side of the books. But she imported only $45,000,000 worth of manufactured articles and exported $212,800,000, and the manufactured articles she exported paid for all the natural products and raw material she bought. In other words, her industry paid for a great portion of the material it brought in, and purchased in addition all the foreign products required in excess of the native products to feed the people.

THE GREAT SILK MANUFACTURING STATE.—New Jersey boasts of forty-five silk manufactories (out of a total of 170 in the United States) taking the lead in this respect of all other States, Massachusetts and Connecticut alone excepted. Paterson is the central point of activity. Work is very active at these mills at the present time. The value of raw silk annually consumed by them is about $7,500,000 in gold.

GERMANY COPYING AMERICAN STYLES OF WORK.—The *Hub* is authority for saying that several carriage making firms in Germany have commenced building for their home trade what they term "the light American work," and they expect to create a fashion and consequent demand for such productions. The Germans are acting upon the national proverb — *Prufet Alles und behallet das Beste*—examine everything and keep the best.

A New Business Era.

What an eventful period has been the past six weeks! What whirlwinds have been in the minds of our leading business men! What a shuffling of coin and computing of balances! It is well these visits of financial tumult are few and far between. The failure of the Bank of California, which so startled our community, like all other changes, will eventually produce its good, although dearly bought lesson. In the shuffle, which the past few weeks has made, a new deal all around of much of our surplus capital will be made. A new business era, we may say, is now inaugurated. One of more calculation, and less dash. One more legitimate in its ventures. Legitimate labor and enterprise of merit will have more than ever the fostering care of capital. The speculative, rash and totally reckless operations that have been a leading feature of many business men, belong to the past—buried with the first quarter of a century which inaugurated it. We are now entering on a more staid, calculating and refined (if we may use the word) business era. Men to thrive, must become producers. "Stocks on the Board" must possess merit to command coin. Gambling in holes in the ground is probably dead. It is to be more labor and more reward for it. It is a new move on the business chess board, even in the Bank of California, which of itself, when it opens its doors, will open a safer, more calculating, sober institution than ever before. As it was a fitting representative of the bold and vigorous quarter of a century past, it ought to be the grand representative of the more cautious, calculating and stable quarter we have now entered upon. The business outlook of our State never was better; our mines are throwing forth their treasures and with millions of increase; our industries are thriving, with our grain, wool and other articles of export looming up greater millions yearly. We have nothing to be despondent over, as regards the future; on the contrary, there is a greater stimulant for every branch of legitimate industry; for within the next four months, the vaults of our banks will possess millions of surplus capital.

Steam Road Wagons in Nevada.

In Southern Humboldt, near the Churchill line, about eighty miles south of Winnemucca, there is an extensive salt marsh, capable of

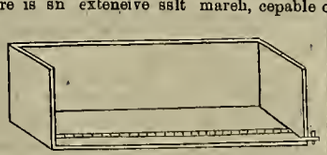

Fig. 3. Leaching Box.

supplying the whole country with that mineral. This salt has been proved by analysis to be almost chemically pure; and for domestic and mill purposes is not excelled in the world. In the vicinity of this marsh extensive beds of high grade antimony ores have recently been discovered, and the prospects for an unlimited supply of that metal are unsurpassed in the United States. Notwithstanding the practically inexhaustible quantities of the articles, both of which are almost universally used, the deposits, owing to their remoteness from the railroad, are comparatively valueless.

As the want of sufficient capital to construct a railroad through that region precludes such means of communication, the *Silver State* proposes that as there is a good natural road from the line of the Central Pacific railroad to Winnemucca, steam road wagons be used for purposes of transportation. If experience should prove the feasibility of using these vehicles, it will have an important effect, not only in that particular region, but upon numerous other sections, at present considered as unapproachable.

AN AMERICAN REAPER IN EUROPE.—It is said that the greatest reaper trial ever held in Germany has just closed at Angenumber. The highest prize, a gold medal, was awarded to an American harvester.

A New and Promising Gold Field.

Encouraging mining reports are being received from the central and southern portion of Colorado. It appears from information recently furnished the San Juan (Arkansas) *Prospector*, that there is a region of country to the south of the three great Parks, and on the easterly slope of the dividing ridge between the headwaters of the Colorado and Arkansas rivers, which promises to become a valuable mining section. The country is occupied by the Ute Indians, and the miners and prospectors there have had the good sense to acknowledge the Indian rights to the country, by paying them for the privilege of prospecting and mining them. Under this arrangement the work of prospecting is proceeding without interruption and under the most friendly relations. Negotiations are made with their chief, Ouray, and include certain designated streams or gulches, usually of considerable extent.

One of the localities is at what is known as Taylor's Park, a region quite as extensive as Middle Park, and well supplied with water. Several parties are gulch mining there, and all reported to be doing well.

South of this is Union Park, where several other companies are reported to be at work; and all perfectly satisfied with the results of

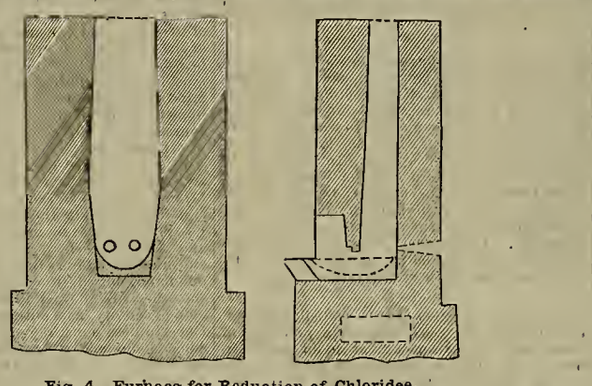

Fig. 4. Furnace for Reduction of Chloridee.

their labor. They expect to be able to continue operations through the coming winter, notwithstanding the high elevation of the country—some 8,000 feet above the sea level. One party, which has made a contract with Ouray for a certain gulch, say that all they want is one full season of uninterrupted work. It is said there is a party at work in this vicinity under the direction of Professor Hayden, who, at last accounts, were getting their ground in readiness and expected to realize at least $10 per day to the hand.

Surrounding this particular locality it is said are mountains in which great numbers of quartz veins occur, some of which bear unmistakable evidence of richness, although no attempt has yet been made to either prospect or locate them. At a short distance from this is what is known as the Elk mountain country, in which there are some silver bearing veins, which have been prospected to some extent, but are thought to yield only low grade ore.

Coal of a fair quality has also been found in

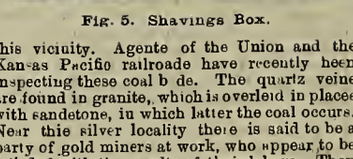

Fig. 5. Shavings Box.

this vicinity. Agents of the Union and the Kansas Pacific railroads have recently been inspecting these coal beds. The quartz veins are found in granite, which is overlaid in places with sandstone, in which latter the coal occurs. Near this silver locality there is said to be a party of gold miners at work, who appear to be satisfied with the results of their labors. They give the Utes a small portion of their gold for the privilege of working. Although there is an abundance of rain here, and the natural vegetation is abundant, the frost and cold nights renders the country of little value for agricultural purposes, other than grazing or dairying. The food supply of the region will come from the rich and warm valleys to the east.

"STATISTICIAN" FOR SEPTEMBER.—A copy of this publication is received. It is just what it claims to be, and, this number, like its predecessors, contains a great amount of information given in the most available and practicable form.

MANY of Healdsburg's enterprising citizens are in favor of boring an artesian well in the center of the plaza.

A NEW steam saw mill is being put up on the timber land in Lake county, near Allens' Springs.

Giant Powder against Hercules Powder.

A decision was rendered a few days since by the United States circuit court, which not only on account of the value of the rights in issue, but also of the matters involved, has excited considerable interest, especially among mining men.

In May 1874, the Giant powder company, a well known corporation of this State, manufacturing and dealing in Dynamite or Giant powder, brought suit against the California powder works, another corporation manufacturing and selling the high explosive known to the trade as "Hercules powder." In this suit it was alleged by the Giant powder company that the other company in making and vending Hercules powder, was infringing three letters patent of the United States claimed to be owned by them. These patents were numbered respectively Nos. 5,799, 4,818 and 4,819.

It appeared from the bill of complaint that all these patents were re-issues of original patents, the first being a re-issue of a re-issue of one patent and the two last being divisional re-issues of another original patent, No. 50,617. In 1869 the assignees surrendered this and procured in its place four separate re-issued patents, and in 1872 they surrendered one of these and obtained in its place two new patents, Nos. 4,818 and 4,819. This gave them five patents in place of the original one issued to Nobel in 1865.

The California powder works, defendants in the suit, after having all the patents, both surrendered and outstanding placed upon the record, demurred, claiming that it appeared from an inspection of the bill and patents that the patents Nos. 4,818 and 4,819 were for inventions not mentioned in the original patent from which they sprung, and that therefore they were void. After the argument, the plaintiff, the Giant powder company, confessed the demurrer and having obtained leave to amend, after some delay filed an amended bill and the decision rendered a few days since was upon the demurrer to the amended bill of complaint. The amendment alleged that Nobel originally filed with his first application in the Patent Office a memorandum, in which he mentioned some of the compounds claimed in the re-issued patents, but that his attorney had left them out by an amendment, and that the original patent was thus issued without them.

The court was composed of both Justice Field, of the supreme court of the United States, and Justice Lorenzo B. Sawyer, of the circuit court, and each filed opinions. The case was argued for the plaintiff by Messrs. Felton, McAllister and Wheaton O'Rally and Messrs. Gifford, of New York, and Bakewell, of Pittsburg, by brief, and for the defendants by Messrs. W. W. Cope and C. R. Greathouse. Judge Field sustained the demurrer and held that the original patent No. 50,617 was for modes of using liquid nitro-glycerine; for a process for exploding the liquid, and did not mention, or cover, any compounds of known or unknown ingredients; and that as the re-issues in question were for compounds composed of nitro-glycerine and other substances, there was no connection between the inventions covered by the original patent and the re-issues, and consequently the latter were absolutely void.

He further held that under the patent law of 1870, the Commissioner of Patents, could not, in chemical patents, grant a reissue for any invention other than that mentioned in the original, and that the provision of the act permitting the commissioner to go outside of the record and take proof, was limited to machine patents, where there was no model or drawing. It was also held that if Nobel was the inventor of the compounds, he should have made independent applications instead of attempting to cover them by re-issue. Judge Sawyer concurred specially, holding that as the original patents were issued under the act of 1836, the right to re-issue must be determined by it, and under the doctrine laid down in Seymour *vs.* Osborne, 11 Wall., the re-issue could only embrace inventions described, suggested or indicated in the original.

Some of the points decided are new, and the case is peculiarly instructive, as showing the necessity for care in preparation of papers for patents in the first instance, and how rights of great value may be lost by the employment of incompetent or irresponsible patent agents.

CLOSING OF THE FAIR.—It has been officially announced that the Mechanics' Institute Fair will close on Saturday, October 9th. The premiums will be awarded on Wednesday, October 6th. The great carnival will take place on the evening of November 5th.

THE opening of the Felton railroad for business will take place during the first week in October.

A NEW soap factory has been established at Alvarado.

MT. HAMILTON, the site of the Lick Observatory, is 4,448 feet in hight.

THE *Bulletin* and *Call* folks have sued the *Alta* folks for $25,000 damages for libel.

Metallurgy of the Copper-Silver Ores of Inyo County—No. 5.

[Written for the Press by SAMUEL PURNELL.]

The Leaching Process Continued—Extraction of Copper.

The copper present in the first solution in the form of chloride, combined with the chloride of any iron present (lead and antimony having been precipitated by simple cooling of the solution), is now ready for removal. This may be accomplished by running it into tanks containing metallic iron, when the copper is precipitated as a metallic state as cement copper. About eighty-eight parts of iron will go into the solution as chloride in place of one hundred parts of copper precipitated. In place of using metallic iron the copper may be precipitated as an oxide by carbonate of lime; but in this case any iron or other chloride present would also be deposited and render the copper impure. The roasting, however, might be so managed as to convert the iron into oxide and therefore insoluble. Should the copper be precipitated by metallic iron the iron going into solution may be recovered as oxide by precipitation with lime. In some localities the copper and iron oxides may be reduced to metals in a shaft furnace with profit. Otherwise the oxides can be sold. It is probable that the copper could be crystallized out from its solution with advantage. Being in the form of chloride, it could be reduced with charcoal and lime in a furnace, and thus furnish the metal at one operation, Fig. 4. Fig. 3 shows the leaching box described last week.

Further Recovery of Silver.

As considerable undecomposed salt remains in the ore after roasting, and as chloride of silver is soluble in a concentrated solution of common salt, some silver is dissolved and carried out with the base chlorides. It is regained simply by diluting the leach water as it flows away, and offering an abundance of surface for the chloride to deposit on. A disadvantage is that the chlorides of lead and antimony are also deposited and have to be separated by after treatment. The amount of silver so carried out is small, seldom exceeding one or two per cent. Another plan for regaining this silver, introduced by Mr. O. Hoffmann, consisted in conveying the leach water into the box through a bottom cock, under slight pressure, upward through the ore till the water reached the top, then the cock was closed and water admitted on the top as usual. By this dilution the chloride was precipitated in the box. The leaching was then conducted in the usual manner. This plan, however, did not give as much satisfaction as the former, as some silver was still lost.

The best plan is to have the chloride solution, in which may be some silver, diluted with water in a series of shallow boxes filled with any porous and neutral matter (shavings), on which the chlorides of lead, silver and antimony are deposited, Fig. 5. When the silver accumulates on this porous matter in sufficient quantity the whole may be removed and leached with hot water and hyposulphite the same as though it were ore. The silver is thus all regained. A number of other methods may be used to save this silver. Among others, the iodide of potassium process of Claudet. Or the leach water may be passed over plates of metallic copper. The process of Claudet for ores directly is not applicable to existing affairs here. Care should be taken to employ no more water for leaching than necessary, or the solution may be too dilute to act on the iron.

Further Facts.

It has been commonly supposed that this is a very slow process and suited only to a small concern, and also to one only where the highest professional skill must be almost exclusively employed. The very contrary is the fact. Pans will not usually work over a ton of ore in twenty-four hours, while in the same time a leaching box may work from five to ten tons. As for the skill required, it is of course necessary to have at least one person around who is thoroughly familiar with every part of the process. Every other workman may be of the ordinary kind. In Mr. Kustel's works, near this city, the laborers are all Chinamen, and the only others employed are a night and day foreman. No process is so suitable for all kinds of ores as this, as will be plain by a careful examination. It is exactly suited for a class of ores which are exactly unsuited for amalgamation or smelting. It is also a cheap process, as from silver-copper ores the silver may be extracted to 90 per cent., at a cost (from crushing to discharging tailings) of from $10 to $15 per ton, varying with the locality and skill employed. It requires no pans, or settlers, or quicksilver, or blankets. Except the ornshing machinery, nearly all its apparatus is of wood. Coarse crushing only being necessary, stamps can put through more rock than usual. A works of the same capacity as an ordinary amalgamation works can be erected for one-third the amount the latter would cost; and thus there is a better proportion of capacity to cost of plant. If erected in a bad location it can be more readily taken down and removed to a better.

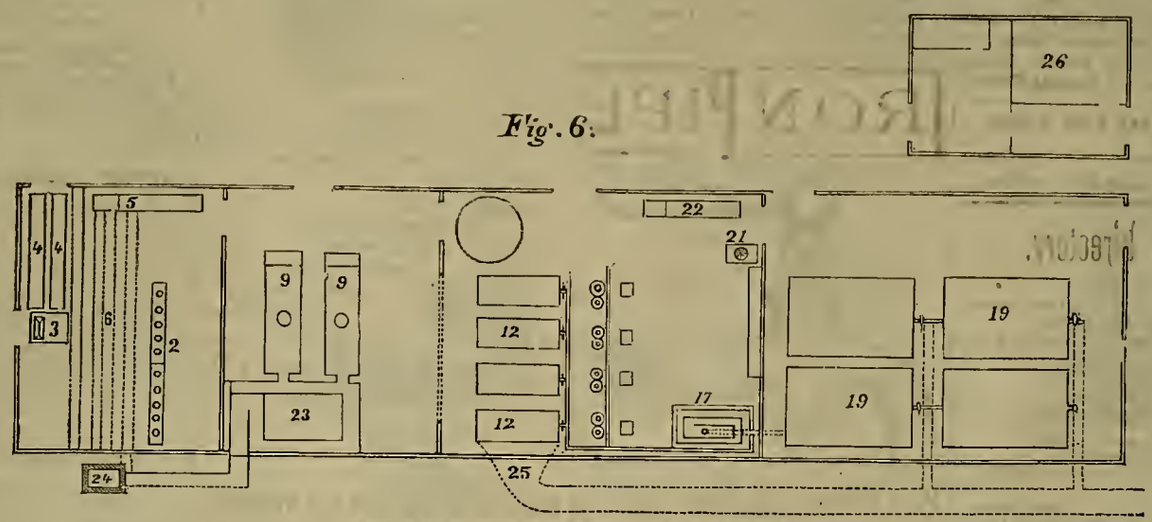

Fig. 6.

THE LEACHING PROCESS—PLAN OF WORKS.

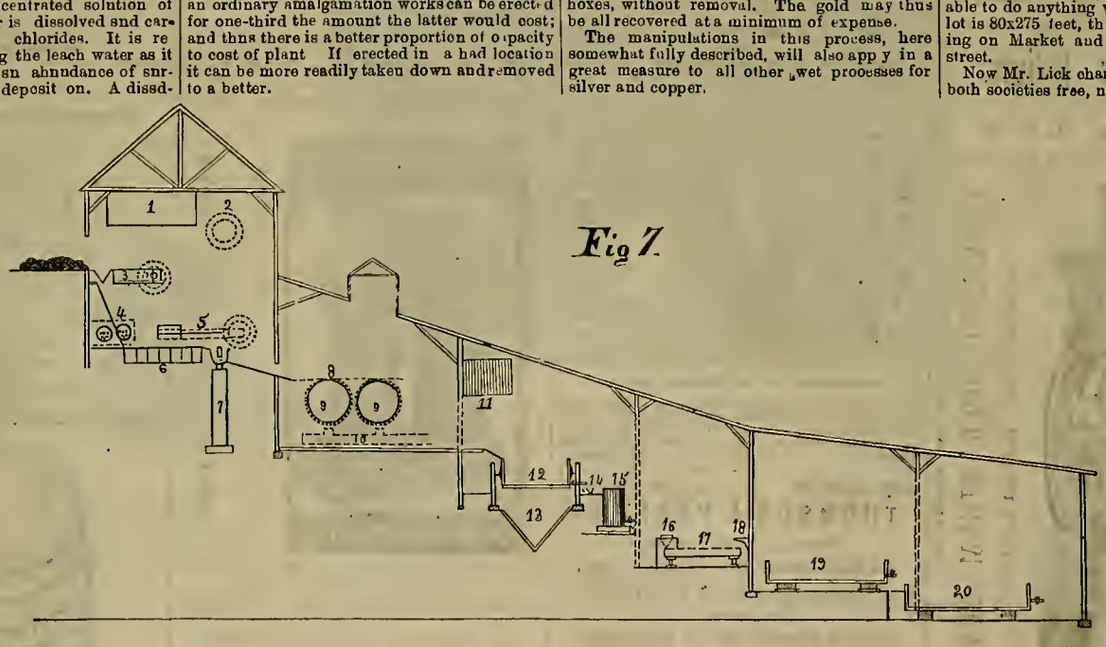

Fig 7.

THE LEACHING PROCESS—SECTIONAL VIEW OF WORKS.

This can be seen by referring to Fig. 6 and 7. Fig. 6 gives a plan of works, and Fig. 7 a sectional view of solving process works. The details are as follows, the numerals in both engravings up to number 20 referring to the same things: 1, water tank; 2, cam shaft of ten-stamp mill; 3, Blake crusher; 4, boilers; 5, engine; 6, dry floor; 7, bed of stamp battery; 8, mixing floor; 9, Bruckner's furnace; 10, cooling floor and boxes; 11, tank for solving solution; 12, leaching box (this is intended to turn on its axis and lift the tailings out into the sluice); 13, sluice for tailings; 14, waste pipes; 15, precipitating tubs; 16, filter; 17, box of wood shavings; 18, shelf; 19 and 20 boxes for precipitation of base chlorides. In addition to the figures in Fig. 6, which refer also to this, 21 is the screw press; 22, reverberatory furnace; 23, duct chambers; 24, chimney stack; 25, sluice for tailings and water; 26, assay room and office.

The openings represent doors. The mill is represented as being built on a hillside. The sketches are not drawn to any scale, except that the relative proportions are about correct. The capacity per day would be 10 to 15 tons of ore.

It may be stated that with the class of ores under consideration, it is scarcely possible by the pan process to work them closer than to 50 per cent. of the fire assay, or to turn out bullion more than 500 or 600 fine. The solving process will extract the silver to over 90 per cent., give bullion over 900 fine, and save such base metals as may be desired. The latter are necessarily destroyed in the pan process. The quantity of water required is but little more than for pans, and if water is scarce it can be used over and over again. It can be carried on in all weathers. Any number of boxes may be arranged and the capacity thus increased to any extent. The proper degree of concentration for the hyposulphite may vary slightly with each ore; but it is soon determined by experience. The less base metals in the ore the more concentrated it may be, and *vice versa*. Very rich ores, as well as poor ones, are suited to this process. With most ores about twenty-four hours would be required to pass them completely through the works. Very rich ores will require a longer time; perhaps three days. Any gold remaining is in a favorable state for chlorination, which may be performed in the same boxes, without removal. The gold may thus be all recovered at a minimum of expense.

The manipulations in this process, here somewhat fully described, will also apply in a great measure to all other "wet processes for silver and copper.

Processes have been introduced in Europe during the last few years for the extraction of silver by means of acids, but they are not adapted for use in this country at present.

A process for the simultaneous extraction of gold, silver and copper has been employed in Hungary by Patera and Roeszner with success. It was reported that 98 per cent. of the silver, all the copper, and nearly all the gold was saved. The process is, in short, roasting to sulphates, and then chloridizing with salt, then leaching with a cold concentrated solution of common salt through which chlorine gas has been passed to saturation. The gold, silver and copper are dissolved. The gold and silver are precipitated by metallic copper, and the copper subsequently by iron. With some ores it would be best to leach simply with hot or cold water, and afterwards with the chlorinated salt water. This would remove all copper, lead and antimony, and avoid the precipitation of the lead and antimony with the silver and gold. Where an ore contains considerable gold and little base metal this process may prove valuable, and might be a cheaper mode of extracting it than by chlorination after the solving process, or by regular chlorination. As far as known this process has not been tried on a large scale in this country, but there can be no doubt of its adaptability with great profit in some cases. The precipitated gold and silver may be separated by "parting" or by chlorine gas.

The Pioneers and the Academy of Sciences.

All the business arrangements with relation to relieving the old Board of Trustees of the Lick Trust, and the appointments of the new ones, having been perfected, it is probable that immediate steps will now be taken to carry out Mr. Lick's wishes with regard to the trust. Some changes have been made in the deed and these appear wise ones. One very important one is that of taking the sum of $240,000 from what was set aside for statuary, and adding it to the sum for founding the School for Mechanics' Arts. This will give that school a sum total of $540,000. The statues will be made and erected but not in so elaborate a manner as was anticipated. Mr. Lick has also given deeds to the California Academy of Sciences and Society of California Pioneers for their property on Fourth and Market streets respectively, free from all restrictions whatever.

It will, perhaps, be remembered that he presented to the Society of California Pioneers and the California Academy of Sciences each a piece of land near the corner of Market and Fourth Sts., some time before the Lick trust deed was drawn up. The restrictions, however, were so heavy that neither society was able to do anything with the property. Each lot is 80x275 feet, that of the Academy fronting on Market and the Pioneers on Fourth street.

Now Mr. Lick changes these gifts and gives both societies free, unrestricted deeds to these respective properties. They can go ahead and mortgage if they choose to build, and when completed can rent part of their buildings, which they could not do under the other deed.

This will set both societies on their legs. The Academy was in rather an embarrassed position, although with great prospects ahead. The present building where the meetings are held is a damp and disagreeable one and in an unpleasant locality. Probably immediate steps will now be taken to have suitable buildings erected, which will be not only useful but an ornament to the city. Mr. Lick has shown sound judgment in relieving the embarrassments of these societies, by giving them their new deeds free from restrictions, and they will, no doubt, take immediate possession and commence to build.

SUCCESSFUL CULTIVATION OF RAMIE.—Bakersfield *Courier* Sept. 25: We were shown some stalks, or rather stems of the ramie plant, raised by Mr. Drury on the other side of New River about twelve miles from Bakersfield. The ramie plant has been tried here before, but never by any one who had any knowledge of its culture, and therefore the attempt was not attended with success. Mr. Drury, however, has demonstrated that it can be produced here in its perfection. The conditions of soil and culture are not at all exacting; in fact the plant is a native of the jungle, and only requires rich soil, moisture and warmth to reach its highest development. These conditions are all found here, and Mr. Drury exhibits specimens of the plant from seven to ten feet in length.

PHYLLOXERA.—Petaluma *Argus*, Sept. 24: The phylloxera, which has done considerable damage to some of the vineyards in Sonoma valley, has as yet but slightly injured any of the vines in the yards of the Buena Vista Vinicultural Society.

Banking.

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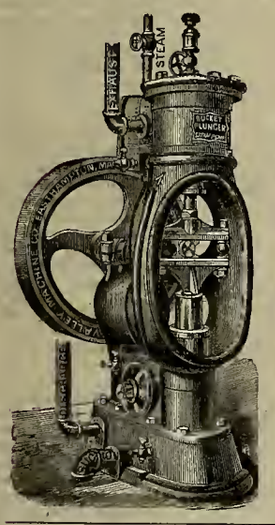

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Averill Chemical Paint,
MANUFACTURED BY THE
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PURE WHITE, AND ANY SHADE OR COLOR.

This Paint is prepared in liquid form, READY FOR APPLICATION—requiring no thinner or dryer, and will not spoil by standing any length of time.
It is Cheaper, more durable, more Elastic, and produces a more Beautiful Finish than the best of any other Paint.
It will not Fade, Chalk, Crack, or Peel off, and will last twice as long as any other Paint.
In ordering White, state whether for Outside or Inside use, as we manufacture an Inside White (Flat) for inside use, which will not turn yellow, and produces a finish superior to any other White known.
Put up in ¼, ½, 1, 2 and 5 gallon packages, and in Barrels. Sold by the Gallon.
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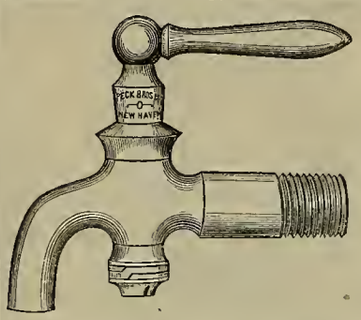
3v9-eow-bp-1y SAN FRANCISCO, CAL.

IRON PIPE



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AT BOTTOM PRICES.

JAMES L. BARKER,
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☞ Orders by mail will receive prompt attention.
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Mechanics' Mills, Miseion Street,
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(Formerly with David Stoddart,)
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ENGINEERS and MACHINISTS,
MANUFACTURERS OF
STEAM PUMPS, STEAM ENGINES,
And all kinds of Machinery.
REPAIRING PROMPTLY ATTENDED TO.

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OREGON PILE CURE.

To those suffering from Piles—External, Internal and Itching Piles: You can be cured, as hundreds of others have been. Send for Circular and see undoubted testimony. Will send sample bottle for $1, or 6 bottles for $5.
Call upon your Druggist, or address
DR. RUSSELL,
No. 5 Post street, San Francisco.

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412 Commercial Street, S. F.,
Assaying in all its branches, ores analyzed, ores worked by mill process or otherwise. All assays guaranteed to correspond with U. S. mint assays. Silver and gold assay, $2.00; lead assay, $3.00; copper assay, $4.00.
J. S. CURTIS, Metallurgist.

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IN LOTS TO SUIT.
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WIRE ROPE
For Mining, Shipping, and General Purposes.

All kinds and sizes on hand, or made to order; guaranteed of unsurpassed quality, and manufactured of any length. FLAT ROPES, ROUND ROPES and TAPER ROPES, of IRON OR STEEL.

Patent Endless Wire Ropeway
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FOR THE RAPID AND ECONOMICAL TRANSPORTATION OF ORES AND OTHER MATERIAL OVER MOUNTAINOUS AND DIFFICULT ROADS.

This system has been in use for over three years, and given thorough satisfaction.

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And Wire of all kinds, on hand or made to order.
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Wire Cloth and Wire Netting.
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Send for Circulars, Etc., to
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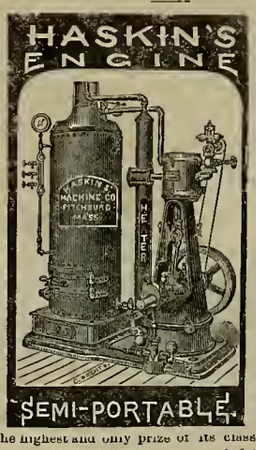

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PARKE & LACY, Sole Agents,
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The highest and only prize of its class given to any Vertical Engine was awarded to the
HASKINS ENGINES AND BOILERS,
BY THE
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at their Fair in Boston, in competition with the Baxter, New York Safety Steam Power and the Sharpley Engines.

AMMONIA!
For Washing and Cleaning Purposes.

For Sale by all Grocers.

This article is universally used in Europe, and, recently introduced for general family use in San Francisco and neighborhood, is already in great demand. It is now the intention of the manufacturers to introduce it all over the Pacific Coast, at prices which will bring it within the reach of every household.
It is unequalled for cleansing Woolen Fabrics, Cutlery, Carpets or Crockery; for Scrubbing Floors, Washing Paint, Removing Grease Spots, Shampooing or Bathing.
It renders water soft, and imparts a delightful sense of coolness after washing.
DIRECTIONS.—For Laundry, use two to four tablespoonfuls to a washtub of water. For bathing, use one tablespoonful in the bath tub. For removing grease spots, apply with a brush, undiluted, and wash with water afterward. For stimulating the growth of plants, use a few drops in every pint of water used in watering.
PRICE.—Per Pint Bottle, 25 cents; per quart Quart Bottle, 40 cents; per Half Gallon, 75 cents.
Also, SULPHATE OF AMMONIA for chemical purpose, fertilizing, and the preparation of artificial manures AMMONIACAL PREPARATION, for the prevention and removal of boiler scale. CRUDE AMMONIA, for general manufacturing, and PURE LIQUOR and AQUA AMMONIA for chemical and pharmaceutical purposes.
☞ Manufactured by the
SAN FRANCISCO GAS-LIGHT CO.
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Metallurgy and Ores.

JOHN TAYLOR & CO.,
IMPORTERS OF AND DEALERS IN
ASSAYERS' MATERIALS
Chemical Apparatus and Chemicals,
Druggists Glassware and Sundries,
PHOTOGRAPHIC GOODS, ETC.,
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We would call the special attention of Assayers Chemists, Mining Companies, Milling Companies Prospectors, etc., to our large and well adapted stock
ASSAYERS' MATERIALS
—AND—
Chemical Apparatue,
Having been engaged in furnishing these supplies since the first discovery of mines on the Pacific Coast.
☞ Our Gold and Silver Tables, showing the value per ounce Troy at different degrees of fineness, and valuable tables for computation of assays in Grains Grammes, will be sent free upon application.
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Ores worked by any process.
Ores sampled,
Assaying in all its branches.
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Plans furnished for the most suitable process for working Ores.
Special attention paid to the Mining and Metallurgy of Quicksilver.
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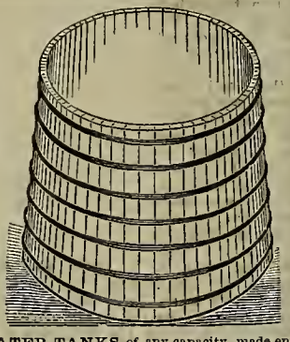
RODGERS, MEYER & CO.,
COMMISSION MERCHANTS,
ADVANCES MADE
On all kinds of Ores, and particular attention PAID TO
CONSIGNMENTS OF GOODS.
4v16-3m

Instructions in Assaying,
Chemical Analysis, Determination of Minerals, and use of the Blow-pipe.
HENRY G. HANKS
Will receive a few pupils at his new laboratory, 617 Montgomery street, up-stairs. TERMS MODERATE

LEOPOLD KUH,
(Formerly of the U. S. Branch Mint, S. F.)
Assayer and Metallurgical CHEMIST,
No. 611 Commercial Street,
(Opposite the U.S. Branch Mint.
SAN FRANCISCO CAL. 7v21-3m



WATER TANKS
of any capacity, made entirely by machinery. Material the best in use; construction not excelled. Attention, dispatch, satisfaction. Cost less than elsewhere.
WELLS, RUSSELL & CO.,
Mechanics' Mills, Cor. Mission & Fremont Streets.
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Diamond Drill Co.
The undersigned, owners of LESCHOT'S PATENT for DIAMOND-POINTED DRILLS, now brought to the highest state of perfection, are prepared to fill orders for the IMPROVED PROSPECTING and TUNNELING DRILLS, with or without power, at short notice, and at reduced prices. Abundant testimony furnished of the great economy and successful working of numerous machines in operation in the quartz and gravel mines on this coast. Circulars forwarded, and full information given upon application.
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MACHINISTS' TOOLS,

EXTRA HEAVY AND IMPROVED PATTERNS,

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LATHES, PLANERS, BORING MILLS, DRILLS, BOLT CUTTERS, DOUBLE NUT TAPPING MACHINES, SLOTTING AND SHAPING MACHINES ON HAND. GEAR CUTTERS AND MILLING MACHINES A SPECIALTY.

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ROOT'S "SAFETY" BOILER

MANUFACTURED BY THE

Abendroth & Root M'f'g Co.,

BROOKLYN, N. Y.

THE ROOT WROUGHT-IRON SECTIONAL SAFETY BOILER has been improved and perfected by Eight years experience, and the sale of

Over 1,500 Boilers,

for all purposes. Is perfectly safe from Destructive Explosion, all parts easily accessible for cleaning, **Utmoet Durability, Highest Economy in Fuel, Reaeonable Price.** Working portion composed of **Wrought-iron Boiler Tubee, tested to a presenre of 500 pounds per square inch.** Steam from cold water in from *ten* to *twenty* minutes.

We refer to the following parties, among others, who are using the Root Safety Boilers:

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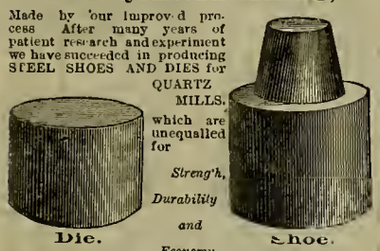
STEEL SHOES AND DIES FOR QUARTZ MILLS,

Made by our improved process After many years of patient research and experiment we have succeeded in producing STEEL SHOES AND DIES for QUARTZ MILLS, which are unequalled for *Streng'h, Durability and Economy.*



Die. Shoe.

Will wear three times longer than any iron Shoes.

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Of Quartz Mills, Pans, Separators, Concentrators, Jigs, Hydraulic Rock Breakers, Furnaces, Engines, Boilers and Shafting; and General Miuiog Machioery in all its details, and Furnishers of Mining Supplies.

All orders promptly filled.

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Examination solicited.

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Manufscturers of ENGINE LATHES, 48 inches swing and smaller; VERTICAL BORING MACHINES, suitable for jobbing and boring Car Wheels; UPRIGHT DRILLS, 36 inches and smaller, and other Mschinists' Tools.

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LEHIGH Emery Wheels

Are the best. Try them.

Emery Wheels under a new patent. Send for circular to TREADWELL & CO.

Improved Cast and Forged Steel Shoes and Dies for Quartz Mills.

[PATENTED MAY 26TH, 1874.]

Price Reduced to 16 Cents Per Pound.

SAN FRANCISCO, November 10th, 1874.

To Supts. of Quartz Mills and Mining Men generally:

We take pleasure in stating that owing to the rapid increase in our orders, our Pittsburg Manufacturers have been compelled to add largely to their works—a new gas furnace and heavier trip hammer—and are thus enabled to reduce the cost of steel and at the same time produce SHOES AND DIES superior to any yet manufactured. We have consequently reduced the price to 16 cents per pound and solicit a trial order, guaranteeing that you will find them at least 10 per cent. cheaper than the best iron. There are no STEEL SHOES AND DIES made excepting under our patent and sold at this office, or by our authorized agents, though certain Eastern manufacturers advertise STEEL SHOES AND DIES which are only cast iron hardened by the addition of a composition. They will not out-wear two sets of common iron, though called steel. They are very brittle and are not capable of being tempered, flying from under the hammer like cast iron. Our STEEL SHOES AND DIES are in use in many of the largest mills on the Pacific Coast, and all who have tried them pronounce them cheaper and far superior to iron in every respect, even at the old price of 20 cents per pound. Their advantages over iron are cheapness on first cost, increased crushing capacity, time saved in changing and in setting tappets, increased value of amalgam by absence of iron dust and chippings, and a saving of 75 per cent. in freight. It takes 50 days to fill orders from the manufactory East. Price 16 cents per pound shipped at San Francisco. Terms liberal.

Address all orders, with dimensions, to W. R. Townsend, Secretary.

1v29-3m CAST STEEL SHOE & DIE CO., Room 4, Academy Building, S. F

THORNE, DeHAVEN & CO.

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DRILLING MACHINES.

PORTABLE DRILLS. Driven by power in any direction, self-feed and convenient adjusment.

RADIAL DRILLS. Self-feed—large adjustable box table—separate base plate, every convenience.

VERTICAL DRILLS. Self-feeding—of new and improved designs.

MULTIPLE DRILLS. For boiler work, etc., 2 to 20 spindles, fed and returned by power or hand, together or separately.

HORIZONTAL BORING AND DRILLING MACHINES. For large pieces—with boring head, adjustable, vertically and horizontally.

SPECIAL DRILLS. For special work. Gun Blank Drills, Coal Drills, &c., built to order.

Patent Stamp Shoes
FRASER, CHALMERS & CO.
SUCCESSORS TO EAGLE WORKS M'F'G. CO.
MANUFACTURERS OF
STEAM ENGINES, BOILERS AND STAMP MILLS
CRUSHING ROLLERS
AMALGAMATING PANS AND MACHINERY FOR SYSTEMATIC MILLING, SMELTING, AND CONCENTRATION OF ORES
AGENTS FOR BLAKE STONE BREAKER
LEFFEL & Water Wheel
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CHICAGO.
ROASTING CYLINDERS
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The Simplest, Cheapest, Most Effective and Durable Power Drill is the New

"CALIFORNIA" ROCK DRILL,

MANUFACTURED BY

HAWKINS & CANTRELL, San Francisco, Cal.,

AND SPECIALLY DESIGNED TO MEET THE REQUIREMENTS OF MINERS ON THE PACIFIC COAST

—ALSO—

AIR COMPRESSORS,

And Complete Mining Outfits for Power Drills.

Address, L. W. COE,

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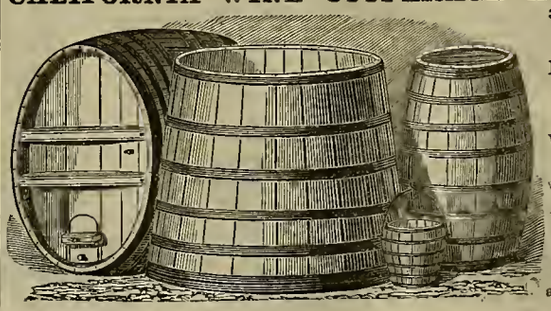
CALIFORNIA WINE COOPERAGE AND MILL CO.



30, 32, 34, 36, 38 & 40 Spear Street,

M. FULDA & SONS Proprietors.

Manufacturers of

WATER TANKS, SHIP TANKS, MINING WORK,

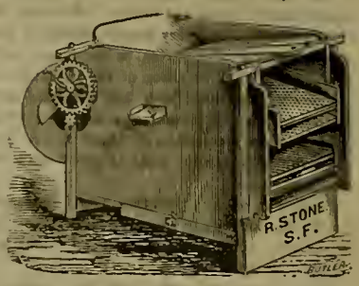
WINE, BEER AND LIQUOR CASKS, TANKS, ETC.

Cooperage and Tanks, Steamed and Dried Before or After Manufacture at Reasonable Rates.

Sawing, Planing, etc. at Short Notice. eowbp

THE PATENT

Novelty Mill and Grain Separator



Is one of the greatest improvements of the age for cleaning and separating grain, while it combines all the essential qualities of a first-class Fanning Mill. It also far excels anything that has been iuvented for the separation of grain. It has been thoroughly tested on all the different kinds of mixed grain. It takes out Mustard, Grass Seeds, Barley and Oats, and makes two distinct qualities of Wheat if desired. For further information, apply to

R. STONE, cowbp 422 Battery street, S. F.

BAKER'S Rotary Pressure Blower,

Warranted superior to any other, Rotary or Reciprocating. T. WILBRAHAM & BROS., 2316 Frankford Avenue, PHILADELPHIA.

For Smelting Works, Foundries,

—AND FOR—

Ventilation of Mines.

Full stock always on hand.

J. C. SENDERLING, Sole Agent for Pacific Coast, 32 Fremont Street, S. F.

lam-16o

The Ingersoll Rock Drill.

Thie Drill is used extensively in the Fast ern States and all Foreign Countriee.

IT CAN BE RUN WITH

LESS POWER, LABOR AND REPAIRS,

—AND—

DO MORE WORK

THAN ANY OTHER DRILL IN THE MARKET. THE

Automatic Feed

Is an important feature, as it saves labor. We ask for a trial against any competitor. For ioformation regarding the same, send for circular to

JUDSON & SHEPARD, Agents, Cor. Clay and Front streets, San Francisco.

LANE & BODLEY,

John & Water Sts., Cincinnati.

Sole Manufacturers of Bruckner's Patent

REVOLVING FURNACE

For Chloridizing, Desulphurizing and Roasting Ores. Steam Engines and Mining Machinery.

☞ Send for our Illustrsted catalogue.

BLACK DIAMOND FILE WORKS.

TRADE MARK

G. & H. BARNETT,

Manufacturers of Files of every Description

Nos. 39, 41 and 43 Richmond street, Philadelphia, Pa.

Sold by all the principal hardware stores on th Pacific Coast. 18v25.1y

San Francisco Cordage Company.

Established 1856.

We have just added a large am unt of new machinery o the latest and most improved kind, and are again prepared to fill orders for Rope of any special lengths and sizes. Constantly on hand a large stock of Manila Rope, all sizes; Tarred Manila Rope; Hay Rope; Whale Line, etc., etc.

TUBBS & CO., e20 511 and 513 Front street, San Francisco

Pleasant Talks About Inventions.

The era of improvement may properly he said to have commenced in 1400. Previona to that time there is a very mesger record of the onward march of progreaa in mechanios and arts. With the exception of the invention of gunpowder, clsimed both by Germany and China, snd that of steam as a motive power, (the prsctical application of which waa aa yet nnknown,) thera were nona of great value to tha world.

Several important inventions and discoveriea mark the fourteenth contnry, while many of lesser note added to the comfort and development of civilizstion.

Hata, so common now, were first invented in 1404. Algehrs wss first introduced into England hy the Saracena, in 1412. Paper made of linen rags waa the production of the year 1417. To England is accorded the honor of the invention and nae of the mnsket in 1421. A very naefnl if not a grest invantion was that of pumpa in 1425. Diamonds were first cut and polished in 1439. In 1441 printing waa invented hy Faust, a German. Most persona ara familiar with the traditionsl letters carved on the hark of a trea, the embryo type that were destined to merge into the grsnd art which ia so prolifio in practical benefits to the entire humsn race. England wss slow to aieze npon thia new discovery, and it was not nntil 1474, a lapse of 33 yeara, that the art of printing waa introduced into that conntry by Caxton. Aa a natural aequence engraving on wood followed in 1460, and engraving on copper by an Italian in 1480.

With the general diatribntion of wookege through the medinm of the printing preas, came the necaasity of hetter poatal facilities. Poatoffices were first established in France in 1464. The system was soon sdopted throughout Eurnpe. The year 1470 wss rich in the produotion of almanaca at Buda, and the invention of caata in plaster at Florence by Verichio. A rapid stride waa made in the musical world by the invention of the violin in 1477. This year was also marked hy the invention of watches at Nuremherg. The first watch ia ssid to have besn as large round as a hat, with cnmbersome msohinery, and a striking apparatus that told the honra snd quarters, with force enongh to awaken the seven sleepera. Canals in modern atyle were built for the first time in Italy, in 1481. The Greek language was introduced into England hy Groeyn, in 1491, and map and oharts were unknown to the aame country until 1489. Spinning wheela were invented in 1330, and playing carda for the smusement of the French king, in 1390. Dice, it ia recorded, were invented 1500 years B. C., and hellows 554, B. C. By thia it wonld appear that gamestera and hellows menders were aa common in early timea as now.

The various inventions of the fourteenth centnry were each of msterial benefit to acience, art or commerce. But acience is the most indehted to the three grest discoveries, printing, watchea, and muakets. The first disseminates and preserves it; the second aids it at every atep, and the science of war immeaaurably sdvanced hy the third. Germany, the firat in grand reaults, has not been since snperseded in the race hy any country except tha United States. The new republic's multitndinona and great inventiona being in keeping with its rapid growth snd proaperity. M. J. K.

TREATING THE WRONG DISEASE.

Many times women call npon their fsmily phyaician, one with dyapepsia, another with palpitation, another with tronhle of the hreaat, another with pain here and there, and in thia way they all present alike to themselvea and their easy-going and indifferent doctors, separate and distinct diseaaes, for which he prescribes hia pilla snd portions, aaauming them to be anch, when, in reality they are all aymptoms caused by aome nterine disorder; and while they are thus only ahle perhapa to palliate for a time, they are ignorant of the cauae, and encourage their practice until large bills are made, when the auffering patients are no hetter in the end, but probahly worse for the delay, treatment and nther complications made, and which a proper medicine, directed to the cause wonld have entirely removed, thereby inatitnting health and comfort inatead of prolonged misery.

From Miss Lorinda E. St. Clair, Shade, Athens Co., Ohin:

"Dr. R. V. Pierce, Buffalo, N. Y.—Your Favorite Prescription ia working almoat like a miracle on me. I am hetter already than I have been fnr over two yeara."

From Ella A. Schafer, Zanesville, Ind.:

"Dr. Pierce—I received the midicine yon aent me and began using it immediately. As a resnlt of the treatment I feel better than I have for three yeara."

From Mas. John K. Hamilin, Odell, Ill:

"Dr. Pierce—The Favorite Prescription haa done me gnod, which I am very thankful for."

Dr. Pierce'a Favorite Prescription is sold by dealers in medicines.—*Com.*

In forty-eight hours a cough may become dangerous; but within that time any cough can be cured by the use of Hale's Honey of Horehound and Tar. Sold by all druggists.

Pike's Toothache Drops cure in one minute.

Woodward's Gardens embraces an Aquarium, Museum, Art Gallery, Conservatories, Tropical Houses, Menagerie, Seal Ponds and Skating Rink.

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American and Foreign

Patent Agents,

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SAN FRANCISCO.

Patents Obtained Promptly.
Caveats Filed Expeditiously.
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Assignments Made and Recorded in Legal Form.
Copies of Patents and Assignments Procured.
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Examinations Ordered and Reported by Telegraph.
Interferences Prosecuted.
Opinions Rendered regarding the Validity of Patents and Assignments.
Rejected Cases taken up and Patents Obtained

Designing ana Engraving at This Office.

We are prepared tn dn fine Wood Engraving for illustrating Landscape Scenery, Buildings, Machnery, Works of Art, Manufactured Articles, Trade Marks, Seals, Etc. We have a first-class

Machine for Engraving

A portion of the work, which can be finished thereby mnre perfectly than by the eye and hand alone. Our patrons can depend upon first-class work always, and at reasonable prices. Samples can be seen at our office.

DEWEY & CO.

To Country Printers.

The lsrge drum cylinder printing press, now used in the Faia Daily office, in the Mechanica' Pavilion, is offered for sale. It is nesrly new, works satisfsctorily, and will be sold at a hargain. Address . Painter & Co., type founders, 513 Clay street, S. F., or the puhliahers of thia paper.

Our Agents.

Our Friends can do mnch in aid of our paper and the cause of practical knowledge and science, by assisting Agents in their labors of canvassing, by lending their influence and encouraging favors. We intend to send nons but worthy men.

J. L. Tharp—San Francisco.
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G. W. McGrew—Santa Clara county.
Chas. T. Bell—California, Oregon and W. T.
D. J. James—Australian Colonies.
James Kearny—California.
Chas. T. Bell—Montana, Utah, Idaho and Nevada.

Mining and Scientific Press.—On the 3d inst. this paper, published by Dewey & Co., at 224 Sansome street, San Francisco, entered upon its thirty-first volume. It is, beyond a donbt, the best journal published on the Pacific coast for the scientist, mechanic and miner, and should receive the most liheral support. It costs much money, to say nothing of patience and endurance, to publish an ordinary paper; but the amount required of all these to publish such a paper as the Press can hardly be realized by amateurs or those not having had any experience in the publishing and printing business.—[Panamint News, July 14th.

Santa Clara, Cal., April 6th, 1875.

Messrs. Dewey & Co.—*Gents:*—We have just received Patent No. 160,535, for J. T. Watkins & Co's Mammoth Road Grader, which was patented through your Agency. It is the neatest and best that we have ever received. We feel proud of it and thankful to you for the care and attention that you have given it, and when we have anything to do in that line of business we will surely give you a call. Very respectfully,

J. T. Watkins & Co.

Thoughtlessness.—Persons sometimes return their paper, marked "stop this paper." Their name being pasted on the sheet they think that is all we need to be able to cross their names off. Now that is thoughtlessness. Your P. O. address is needed as much as your name. We have thousands of names arranged only according to locality. Our mailing clerk does not know where everybody lives.

Give Your full Address when you communicate on business to this office, especially in returning newspapers. The fact that your name is on our subscription list is of no assistance to us. Without sending your post office address we should have to look over thousands of names to find yours.

Scientific and Practical Books on Mining, Metallurgy, Etc.

Published or issued, wholesale and Retail, by DEWEY CO., Mining and Scientific Press Office, S. F.

BY GUIDO KUSTEL,

Mining Engineer and Metallurgist.

Roasting of Gold and Silver Ores, and the Extraction of their Respective Metals without Quick silver. 1870.

This rare book on the treatment of gold and silver ores without quicksilver, is liberally illustrated and crammed full of facts. It gives short and concise descriptions of various processes and apparatus employed in this country and in Europe, and explains the why and wherefore.

It contains 142 pages, embracing illustrations of furnaces, implements and working apparatus.

It is a work of great merit, by an author whose reputation is unsurpassed in his speciality.

Price $2.50 coin, or $3 currency, postage free

Concentration of Ores (of all kinds), including the Oblorination Process for Gold-bearing Sulphurets, Arseniurets, and Gold and Silver Ores generally, with 120 Litbographic Diagrams. 1867.

This work is unequaled by any other published, embracing the subjects treated. Its authority is bigbly esteemed and regarded by its readers; containing, as it does, much essential information to the Miner, Millman, Metallurgist, and other professional workers in ores and minerals, which cannot be found elsewhere in print. It also abounds throughout with facts and instructions rendered valuable by being clearly rendered together and in simple order. It contains 120 diagrams, illustrating machinery, etc., which alone are of the greatest value. PRICE REDUCED TO $5.

Nevada and California Processes of Silver and Gold Extraction, for general use, and especially for the Mining Public of California and Nevada, with full explanations and directions for all metallurgical operations connected with silver and gold from a preliminary examination of the ore to the final casting of the ingot. Also, a description of the general metallurgy of silver ores. 1864.

As its title indicates, this work gives a wide range of information, applicable to all vein miners and workers in precious metals, affording hints and assistance of exceeding value to both the moderately informed and the most expert operator.

Price, $5 in cloth; $6 in leather—coin.

BY OTHER AUTHORS.

The Quartz Operator's Hand-Book; by P. M. Randall. 1871. Revised and Enlarged Edition. Cloth bound, 175 pages. Price, $2.

Sulphurets: What They Are, How Concentrated, How Assayed, and How Worked; with a Chapter on the Blow-Pipe Assay of Minerals. By Wm. M. Barstow, M.D.; 1867; cloth bound, 114 pages. Printed and sold by Dewey & Co. Price, $1; postage free. The best written work, and most complete work on the subject treated.

ANY OTHER BOOKS DESIRED will be furnished at the most reasonable rates by Dewey & Co., Mining and Scientific Press Office, S. F.

The Mining and Scientific Press.

[Established in San Francisco, 1860.]

Is the leading mining journal in America, and enjoys a large circulation among the more intelligent operators and workers in the gold fields of the world.

As a scientific and mechanical representative of the Pacific Coast, it is decidedly popular and a standard journal with the most thrifty industrial people of the Pacific States and Territories. Its authority is of the highest order, and its usefulness in its special sphere unrivaled.

Every public library, mining engineer, metallurgist, mining operator and intelligent mechanic and manufacturer will find profit by its reading.

Subscription, $4 a year, in advance. Sample copies post paid, 10 cents. As an

ADVERTISING

Medinm for the Pacific Coast, it is superior to any other journal for all kinds of mining and hydraulic machinery and other mechanical work, building materials new manufactures and inventions. Our rates are very reasonable compared with those of other first-class journals. DEWEY & CO., Publishers.

224 Sansome street, San Francisco.

LEATHER.

[Wholesale.]

Wednesday M., September 29, 1875.

Oity Tanned Leather, ℔ lb	26@29
Santa Cruz Leather, ℔ lb	26@28
Country Leather, ℔ lb	24@28
Stockton Leather, ℔ lb	25@29
Jodot, 8 Kil., per doz	$50 00@ 54 00
Jodot, 11 to 13 Kil., per doz	68 00@ 72 00
Jodot 14 to 19 Kil., per doz	82 00@84 00
Jodot, second choice, 11 to 16 Kil. ℔ doz	57 00@ 74 00
Cornellian, 12 to 16 Ko	57 00@ 67 00
Cornellian Females, 12 to 13	53 00@ 57 00
Cornellian Females, 14 to 16 Kil	71 00@ 76 50
Simon Ulmo Females, 12 to 13, Kil	60 00@ 63 00
Simon Ulmo Females, 14 to 15, Kil	70 00@ 72 00
Simon Ulmo Females, 16 to 17, Kil	73 00@75 00
Simon, 18 Kil. ℔ doz	61 00@ 63 00
Simon, 20 Kil. ℔ doz	65 00@ 67 00
Simon, 24 Kil. ℔ doz	72 00@ 74 00
Robert Calf, 7 and 9 Kil	35 00@ 40 00
French Kips, ℔ lb	1 00@ 1 15
California Kip, ℔ doz	40 00@ 50
French Sheep, all colors, ℔ doz	8 00@ 15 00
Eastern Calf for Backs, ℔ lb	1 00@ 1 25
Sheep Roans for Topping, all colors, ℔ doz	9 00@ 13 00
Sheep Roans for Linings, ℔ doz	5 50@ 10 50
California Russett Sheep Linings	1 75@ 4 50
Best Jodot Calf Boot Legs, ℔ pair	5 00@ 5 25
Good French Calf Boot Legs, ℔ pair	4 00@ 4 75
French Calf Boot Legs, ℔ pair	4 00@ —
Harness Leather, ℔ lb	30@ 37
Fair Bridle Leather, ℔ doz	48 00@ 72 —
Skirting Leather, ℔ lb	33@ 37½
Welt Leather, ℔ doz	30 00@ 50 00
Buff Leather, ℔ foot	17@ ½
Wax Side Leather, ℔ foot	17@

METALS.

[Wholesale.]

Wednesday M., September 29, 1875.

American Pig Iron, ℔ ton	38 00 @ 39 00
Scotch Pig Iron, ℔ ton	40 00 @ 44 00
White Pig, ℔ ton	— — @ 38 00
Oregon Pig, ℔ ton	— — @ 28 00
Refined Bar, bad assortment, ℔ lb	— — @ — 3½
Refined Bar, good assortment, ℔ lb	— — @ — 4
Boiler, No. 1 to 4	— — @ — 5½
Plate, No. 5 to 9	— — @ — 5½
Sheet, No. 10 to 14	— — @ — 5½
Sheet, No. 16 to 20	— 5½@ — —
Sheet, No. 22 to 24	— 6 @ — —
Sheet, No. 26 to 23	— 6½@ — —
Horse Shoes, per keg	7 50@ 8 00
Nail Rod	— 10 @ — —
Norway Iron	— 9 @ — —
Rolled Iron	— 6 @ — —
Other Irons for Blacksmitbs, Miners, etc.	— — @ — 4½
Copper.—	
Braziers'	— 35 @ — —
Copper Tin'd	— 37½ @ — —
O'Neil's Pat	— 37½ @ — 40
Sheathing, ℔ lb	— 24 @ — 40
Sheathing, Yellow	— — @ — 25
Sheathing, Old Yellow	— — @ — 12½
Composition Nails	— 24 @ — —
Composition Bolts	— 24 @ — —
Steel.—English Cast, ℔ lb	— 20 @ — 25
Anderson & Woods' American Cast	— — @ — 18½
Drill	— — @ — 16½
Flat Bar	— 18 @ — 22
Plow Steel	— 9 @ — 10
Tin Plates—	
10x14 I O Obarcoal	11 50 @ 12 00
10x14 I X Obarcoal	13 50 @ 14 00
Roofing Plate I O Obarcoal	10 50 @ 11 00
Ranca Tin	— 25 @ — 30
Australian	— 25 @ — 30
Zinc.—By the Cask	— — @ — 10
Zinc, Sheet 7x3 ft, No 7 to 10 ℔ lb	— — @ — 11
do do 7x3 ft, No 11 to 14	— — @ — 11½
do do 8x4 ft, No 8 to 10	— — @ — 11½
do do 8x4 ft, No 11 to 10	— — @ — 12
Nails Assorted sizes	— — @ — 4 10
Quicksilver, per lb	— 67 @ — 70

GENERAL MERCHANDISE.

WHOLESALE.]

Wednesday M., September 29, 1875.

BAGS.

Eng. Stand Wht..	9½@10
Neville & Co's..	
Hand Sewed	9½@10
22x36	9½@10
24x36	11 @11½
24x40	12 @12½
Machine do 24x40	12 @12½
" " 22x40	11½@11¾
" " 22x40	11 @11¾
" " 22x36	9¾ @10
Flour Sacks ¼s	9 @11
" " ½s	6 @ 7
" " 1s	4½@ 5
Hessian 60-in	12¾@14½
do 45-in	8½@ 9
do 40-in	7½@ 8
Wool Sacks, 3½ lbs	45 @50
do 4 "	50 @52½
Stand. Gunnies	14 @15
single seam do	13 @13½
Bean Bags	8 @ 8½
Barley Bags 24x36	11¾@12
do 23x40	11½@12
do 24x40	12 @12½
Oat Bags, 24x40	12 @12½
do 28x36	13 @13½
Derrick's "J. W."	9½ @10
do "E"	— @9½

CANNED GOODS.

Asst'd Pie Fruits in 2¾ lb cans.	2 75 @ 3 00
do Table do	3 50 @ 4 25
Jams & Jellies	3 25 @ 4 00
Pickles ½ gl	— @ 3 50
Sardines, qr box	1 80 @ 1 90
do ½ boxes	3 20 @— —

COAL—Jobbing.

Australian, ℔ ton	10 50 @11 00
Coos Bay	— — @10 00
Sellingham Bay	— — @ 8 50
Seattle	— — @10 00
Cumberland	— 18 @— 20
Mt. Diablo	6 25 @6 25
Lehigh	— — @25 00
Liverpool	10 00 @11 00
West Hartley	11 00 @12 00

COFFEE.

Scotch	9 00 @11 50
Scranton	13 00 @14 00
Vancouver's Isl	10 50 @11 00
Charcoal, ℔ sk	75 @ —
Coke, ℔ bbl	— @ 60
Sandwich Island	— @ 29
Central Americ'n	— @ 22½
Costa Rica per lb	22 @ —
Guatemala	— @ 22
Java	25 @ 26½
Manilla	20 @ 20½
Ground in oa	25 @ —
Chicory	27 @ —

FISH.

Sao. Dry Cod, new	4 @ 4½
cases	6 @ 6½
do boneless	8½@ 10
Eastern Cod	7½@ 8
Salmon in bbls	8 50 @9 00
do ½ bbls	4 50 @5 00
do 2 lb cans	2 25 @2 30
do 1 lb cans	1 25 @1 30
Do Col. R. ½ lb	5 00 @5 50
Pick. Cod, bbls	22 00 @ —
do ½ bbls	11 00 @ —
Bos. Sm'k'd Her'g	40 @ 50
Mack'l, No. 1, ½ bbls	9 00 @11 00
" Extra	— @12 00
" in kits	1 90 @2 00
" Ex mess	3 00 @3 50
" Ex mess, ½ bbs	— @12 00
Pic'd Herr'g, hx	3 00 @ 3 50

HARDWARE.

Amoskeag handled Axes	$16@17; do unhandled do $13 @14—less 50c in 5 case lots.
Amoskeag Stantards, Shingling, No 1, $7.25; No. 2, $8; No. 3, $8.50. Do do Claw No. 1, $7.75; No. 2, 8.50; No. 3, $9.25—less 10 per cent.	
Locks, Yale Lock Mf'g Co., discount 33⅓ per cent. from list.	
Planes, Ohio Tool Co., discount 30 per cent. from list.	
Am. Tack Co's Cut Tacks 72½ per cent. discount and 2½ per cent. extra. Finishing and Clout Nails 71½ off list; 3d fine Nails $7.00 per keg. Ohio Butts 50 per cent. do Fast, 35 per cent off list.	
Machine Bolts, 20@35 off.	
Square Nuts, 2@3c off list.	
Hexagon Nuts 2@3c off list.	
Wrought Iron Washers, 2@3c off list.	
Lag Screws, 15 per cent off list.	

MISCELLANEOUS.

Pulu	8 @ 9

NAILS.

Assorted size, ℔ —	@4 10

OILS.

Pacific Oline Co	
Neat F't No. 1	1 00 @ 90
Pure	— @ —
Castor Oil, No. 1	— @1 30
Baker's A A	— @1 45
Cocoanut	55 @ 60
Olive Plagniol	5 00 @5 25
do Possel	1 75 @5 00
Palm ℔	— @ 9
Linseed, raw	80 @ —
do boiled	— @ 85
China nut in cs	— @ 80
Sperm, crude	— @1 40
do bleached	1 90 @2 25
Coast Whales	47½@ 50
Polar, refined	— @ —
Lard	— @ —
Oleophine	— @ 28
Devoe's Brill's	27½@ 31
Long Island	— @ 25
Eureka	26 @ 27
Devoe's Petro'm	25 @ 27½
Barrel kerosene	23 @ 25
Olive	— @3 50
Downer Kerose'o	40 @ —
Gas Light Oil	23 @ 25

PAINTS.

Pure White Lead	9¾ @10¼
Whiting	— @ 2
Putty	4 @ 5½
Chalk	— @ 2½
Paris White	2¾@ —
Ochre	3 @ 5
Venetian Red	3½@ 5
Red Lead	10 @ 11
Litbarge	10 @ 11
Eng. Vermillion	—@2 25
Averill Chemical Paint, per gal. White & tints	2 00 @2 40
Green, Blue & Ch Yellow	3 00 @3 50
Light Red	3 00 @3 50
Metallic Roof	1 20 @1 60

RICE.

China No. 1, ℔ lb	5 25@6 15
Japan	6 @ 7
Sian Cleaned	7 @ —
Patna	6½@ 7
Hawaiian	8 @ 8½
Carolina	10 @ 10½

SALT.

Cal. Bay, per ton	10 00@14 00
do Common	5 00@ 7 00
Carmen Island	12 00@15 00
Liverpool fine	—@22 50

SOAP.

Castile ℔ lb	10 @ 11½
Common brands	4½@ 6
Fancy do	7 @ 10

SPICES.

Cloves	50 @ 55
Cassia	26 @ 27
Citron	33 @ 35
Nutmeg	1 20 @1 45
Whole Pepper	23 @ 25
Pimento	— @ 15½
Ground Allspice	12 @ 12½
do Cassia do	— @1 50
do Cloves do	— @1 50
do Mustard do	— @1 20
do Ginger do	— @1 00
do Pepper do	— @1 00
do Mace do	— @2 00

SUGAR, ETC.

Cal. Cube per lb	12½@ —
Hartz' Pro. Cube	— @ 12½
Circle A crushed	— @ 12½
Powdered	— @ 12½
Fine crushed	— @ 12½
Granulated	— @ 11½
Golden C	— @ 11
Hawaiian	9 @ 10
Cal. Syrup in kgs	— @ 70
Hawaiian Molasses	25 @ 30

TEA.

Oolong, Canton, lb	19 @ 25
do Amoy	28 @ 50
do Formosa	40 @ 80
Imperial, Canton	25 @ 40
do Pingsuey	30 @ 60
do Moyune	60 @1 00
Gunpo'der, Cant	30 @42½
do Pingsuey	50 @ 90
do Moyune	65 @1 25
Y'ng Hy., Canton	28 @ 40
do Pingsuey	40 @ 70
do Moyune	65 @1 85
Japan, ½ chests, Japan, lacquered bxs, 4½ and 5 lbs	30 @ 75
Japan do, 3 lb bxs	46 @ 67
do pl'n bx, 4½ lb	45 @ 90
do ½ lb paper	35 @ 65
do ¼ lb paper	50 @ 55

TOBACCO—Jobbing.

Bright Navys	55 @ 65
Dark do	50 @ 55
Pacos Tin Foil	60 @ 75
Dry & Twist	65 @ 75
Light Pressed	70 @ 80
Hard do	50 @ 60
Coun. Wrap'r	40 @ 60
Penn. Wrapper	20 @ 45
Ohio do	15 @ 20
Virgi'a Smok'g	45 @1 00
Fine ct che'g, kr	80 @9
Fine cut chew. ing, bucts	75 @ —
Banner fine cnt	— @9 00
Cal Smoking	37 @1 00

TURPENTINE.

Eastern	52½@55

Gold, Legal Tenders, Exchange, Etc.

[Corrected Weekly by Charles Sutro & Co.]

San Francisco, September 29, 3 P. M.

Legal Tenders in S. F., 11 A. M., 86 to 86¼.

Gold in N. Y. 116⅞.

Gold Bars, 890. Silver Bars, 6½ and 7½ per cent. discount.

Exchange on N.Y., 60-100 per cent. premium for gold; on London bankers, 49; Commercial, 49½; Paris, five francs per dollar; Mexican dollars, three to five per cent. discount.

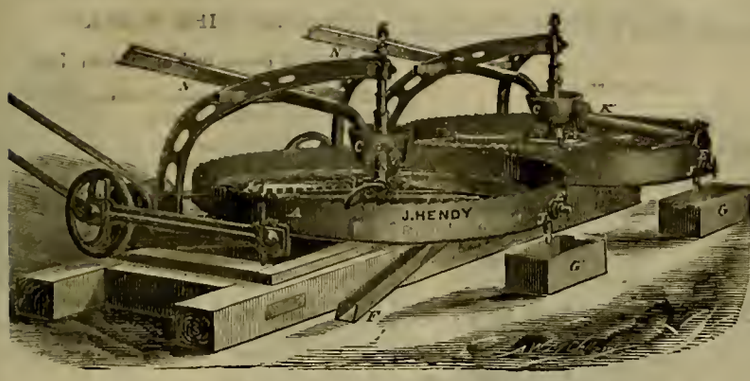
London — Consols, 93 to 93⅛; Bonds, 102⅝.

Quicksilver in S. F., by the flask, per lb, 65c.

OVER $3,500 PER MONTH SAVED

BY THE USE OF

Hendy's Improved Amalgamator and Concentrator



Can be seen at the Manufactory, No. 32 Fremont Street, San Francisco.

SAN FRANCISCO, Aprtl 27, 1872.

JOSHUA HENDY, Esq.—*Dear Sir:*—As a practical miner and millman, I take pleasure in recommending the use of your Concentrators in all mills where gold or silver ores are reduced. No mills should be without them, for the following reasons:

1st. They are good sizers (no perfect concentration in pulverized ores can be effected without first sizing).
2d. The best Concentrator I have ever known—(the concentrated stuff only containing 5 per cent. of sand).
3d. They are good amalgamators, light (feathery) particles of amalgam and particles of coated gold by attrition are brightened, and from their specific gravity and the action of the pan, fall to the bottom and adhere.
4th. They require but little power and attention to run them, and with ordinary care will last for years.

I have been familiar with the workings of your Concentrators for four years past; have run them myself in the North Star Mine, Grass Valley; am familiar with their practical workings on the Empire Mine, Grass Valley; St. Patrick, Placer Co.; St. Lawrence, El Dorado Co.; Oaks and Reese, Mariposa Co., and most cheerfully give you this testimonial. For further information you are at liberty to refer to,

Yours respectfully, JAS. H. CROSSMAN, M. E.

409 California street, or Cosmopolitan Hotel.

SAN FRANCISCO, February 10, 1874.

OFFICE SUPERINTENDENT OF KEYSTONE CON. M. Co., AMADOR, AMADOR COUNTY.

MR. J. HENDY—*Dear Sir:*—In answer to your inquiries as to your Concentrators furnished our company last July, I would say that I am more than pleased with them; and the saving to the company has been over $3,500 per month more than with the blankets and huddles formerly in use. O. C. HEWITT, Supt.

OFFICE SUMNER MINE, KERNVILLE, April 27, 1874.

J. HENDY, Esq.—*Dear Sir:* Having four of your Concentrators in use at our Mills for four or five months, which for saving Amalgam and for concentrating Sulphurets, are a success, beyond a doubt, I feel it a duty due you and those interested in Quartz Mills, to recommend them.

As further evidence of their worth, I now order TWELVE more of your Machines for our new Mill, now in course of erection. E. R. BURKE, Superintendent.

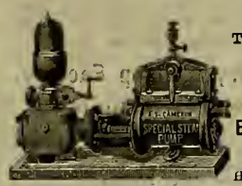
For description send for Circular.

JOSHUA HENDY, San Francisco.

Office and Works, 32 Fremont street. 9v28-1m-tf

MACHINERY DEPOT,

NEYLAN & YOUNG, - - Proprietors.



CAMERON'S PATENT STEAM PUMP,

THE SIMPLEST, CHEAPEST, AND BEST PUMP IN USE FOR ALL KINDS OF WORK.

CAMERON'S Patent Steam Pump.

PICKERING'S PATENT Engine Regulator, Stop Motion and Speed Adjuster,

HAS NO EQUAL FOR ALL KINDS OF ENGINES

Every Governor Warranted.

Patent Engine Regulator

New Haven Manufacturing Co's MACHINISTS' TOOLS, FROM ENTIRELY NEW AND EXTRA HEAVY PATTERNS.

Those Tools are not surpassed by any other makers.

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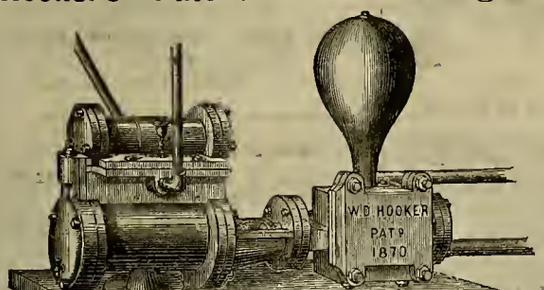
Hooker's Patent Direct Acting Steam Pump.



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SIMPLE, CHEAP AND DURABLE.

Adapted for all purposes for which Steam Pumps are used.

The Best Pump in Use.

☞ SEND FOR CIRCULAR

N. B.—Also manufacturer of Hooker's Deep Well and Double-Acting Force Pump. Received the Silver Medal awarded at the last Mechanics' Fair in San Francisco. 18v27-2am3m

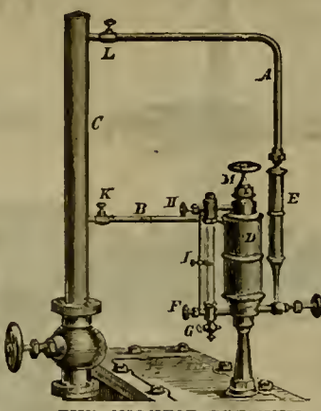
THE MINING AND SCIENTIFIC PRESS, of San Francisco, entered upon its thirty-first semi-annual volume last Saturday. It is most appropriately named, and sustains well its name, containing more really useful information upon mining, scientific and kindred subjects, than any other paper on the Pacific coast. Dewey & Co., the publishers, are well known as agents for securing patents; in fact, most of the patents for inventions on this side of the continent are secured through them. The PRESS is deservedly prosperous.—[Gold Hill News.

Thursday Noon our last forms go to press. Communications should be received a week in advance and advertisements as early in the week as possible.

A Good Binder for $1.50.

Subscribers or this journal can obtain our Patent Elastic Newspaper File Holder and Binder for $1.50—containing gilt title of the paper on the cover. It preserves the papers completely and in such shape that they may be quickly fastened and retained in book form at the end of the volume, and the binder (which is very durable) used continuously for subsequent volumes. Post paid, 25 cts. extra. It can be used for Harper's Weekly and other papers of similar size. If not entirely pleased, purchasers may return them within 30 days. Just the thing for libraries and reading rooms, and all who wish to file the PRESS. lamhp

N. Seibert's Eureka Lubricators.



THE HIGHEST PREMIUM

Awarded by the Mechanics' Institute Fair, San Francisco, and State Fair, Sacramento, 1871.

These Lubricators are acknowledged by all engineers to be superior to any they have ever used; feed constantly by pressure of condensed water, supplied by pipe A, regulated under the oil by valve J, and forced out through check valve and pipe B into the steam pipe C; it then becomes greasy steam, passes to all the valves and cylinder at every stroke of the engine; glass tube I indicates amount used per hour. Packing on rods and stems lasts longer, and the rings on the piston will not corrode. One pint of oil will last from three to six days, according to speed and size of engine; I, sliding gauge; K, valve to shut off when engine stopps; H, F, valves to shut off in case of frost; steam does not enter the oup; it is always cool; warranted to give satisfaction. Patented February 14, 1871. Manufactured by California Brass Works, 125 First street, S. F. 24v23

NIMROD BAULSIR. RICHARD C. HANSON

RICHARD C. HANSCOM & CO.

BLOCK & PUMP MAKERS,

IMPORTERS OF ALL KINDS OF

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STEEL FRICTION ROLLERS,

MINING BLOCKS OF ALL DESCRIPTIONS,

PRESSED LEATHER FOR PUMPS,

Lignum Vitæ for Mill Purposes.

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San Francisco

Scientific Press

U. S. & Foreign

PATENT AGENCY.

Mining and Other Companies.

Gover Mining and Milling Company—

Principal place of business, San Francisco, Cal. Location of works, Drytown, Amador county, Cal.

Notice is hereby given, that at a meeting of the Board of Directors, held on the 3d day of September, 1875, an assessment of ten cents per share was levied upon the capital stock of the corporation, payable immediately, in United States gold and silver coin, to the Secretary, at the office of the company, No. 402 Front street, room 8, San Francisco, Cal.

Any stock upon which this assessment shall remain unpaid on the 11th day of October, 1875, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Saturday, the 30th day of October, 1875, to pay the delinquent assessment, together with costs of advertising and expenses of sale.

W. O. WILSON, Secretary.

Office, No. 402 Front street, room 8, San Francisco, Cal.

Hope Quicksilver Mining Company—Location

of principal place of business, San Francisco, California. Location of works, Cinnabar Mining District, Sonoma County, State of California.

Notice is hereby given, that at a regular meeting of the Board of Directors, held on the 2d day of August, 1875, an assessment (No. 2) of Five cents per share was levied upon the capital stock of the corporation, payable immediately, in United States gold coin, to the Secretary, at the office of the company, Room 2, No. 408 California street, San Francisco, Cal.

Any stock upon which this assessment shall remain unpaid on the 9th day of September, 1875, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Thurday, the 30th day of September, 1875, to pay the delinquent assessment, together with costs of advertising and expenses of sale.

JACOB HARDY, Secretary.

Office, Room 2, No. 408 California street, San Francisco California.

POSTPONEMENT.—The date of the delinquency of the above assessment is postponed to the 8th day of October, and the date of delinquent sales to November 1st, 1875. By order of the Trustees. J. HARDY, Secretary.

September 8, 1875.

Keystone Quartz Mining Company—Principal

place of business, San Francisco, California. Location of works, Butte Township, Sierra county, California.

Notice is hereby given, that at a meeting of the Board of Directors, held on the 22d day of September, 1875, an assessment (No. 5) of Fifty (50) cents per share was levied upon the capital stock of the corporation, payable immediately, in United States gold and silver coin, to the Secretary, at the office of the company, northwest corner Pine and Sansome streets, San Francisco, Cal.

Any stock upon which this assessment shall remain unpaid on the 5th day of November, 1875, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Monday, the 29th day of November, 1875, to pay the delinquent assessment, together with costs of advertising and expenses of sale.

LOUIS VESARIA, Secretary.

Office, northwest corner Pine and Sansome streets, San Francisco, California.

Mount Auburn Gold Quartz Mining Company.

Location of principal place of business, San Francisco, Cal.

NOTICE.—There are delinquent upon the following described stock, on account of assessment, levied on the 25th day of August, 1875, the several amounts set opposite the names of the respective shareholders, as follows:

Names.	No. Certificate.	No. Shares.	Amount.
Frank McCoppin	35	10	$ 2 50
Isabella O Prince	5	100	25 00
Isabella G Prince	1	100	25 00
Isabella G Prince	10	50	12 50
Isabella G Prince	11	50	12 50
Isabella O Prince	12	50	12 50
Isabella O Prince	13	50	12 50
M Klinkstrom	16	100	25 00
J Trigz	17	5	1 25
Henry Eitel	18	10	2 50
Henry Eitel	41	10	2 50
M A Cary	19	25	6 25
M A Cary	28	10	2 50
E J Hutchinson	20	25	6 25
E J Hutchinson	21	25	6 25
Nicholas Larbig	55	100	25 00
Nicholas Larbig	22	10	2 50
Nicholas Larbig	23	10	2 50
Nicholas Larbig	25	10	2 50
Nicholas Larbig	26	10	2 50
Robert Kirk	30	75	18 75
Robert Kirk	31	100	25 00
Robert Kirk	32	100	25 00
Robert Kirk	33	100	25 00
Charles Baum	29	300	75 00
James Curley	30	20	5 00
James Curley	31	20	5 00
James Curley	32	20	5 00
James Curley	33	20	5 00
James Curley	34	20	5 00
James Rourke	35	20	5 00
James Rourke	36	20	5 00
James Rourke	37	20	5 00
James Rourke	38	20	5 00
James Rourke	39	20	5 00
S D Melville	42	100	25 00
S D Melville	48	100	25 00
S D Melville	29	125	31 25
P N Carroll	43	50	12 50
P N Carroll	44	50	12 50
E H Coe	59	100	25 00
P H Canavan	45	1000	250 00
Jacob Bacon	49	50	12 50
P Bedrofivansky	46	50	12 50
N Ravigin	47	50	12 50
Chas J Hohler	50	200	50 00
Mrs Dr Howard	8	100	25 00
Mrs Dr Howard	9	100	25 00
Mrs Dr Howard	10	100	25 00
Mrs Dr Howard	11	100	25 00
Mrs E B Rider	12	100	25 00
Mrs E B Rider	13	100	25 00
Catharine Carney	14	100	25 00
Mrs Mary Reloy	50	25	6 25
Heyward & Hendley	52	100	25 00
Elbridge Durbrow, Trustee	53	15	3 75
Elbridge Durbrow, Trustee	54	35	8 75
Mrs Cosgrove	18	25	6 25
Joseph Jourden	57	50	12 50
John Nugent	58	10	2 50
Geo T Knox	61	25	6 25
M M Harkness	36	990	247 50
M M Harkness	52	50	12 50
Solomon Johnson	15	100	25 00
Solomon Johnson	16	100	25 00
Solomon Johnson	23	500	125 00
Solomon Johnson	24	100	25 00
Solomon Johnson	25	100	25 00
John C Jamison	63	5	1 25
M M Hill, Trustee	37	500	125 00

And in accordance with law, and an order of the Board of Directors, made on the 25th day of August, 1875, so many shares of each parcel of said stock as may be necessary, will be sold at public auction, at the auction house of John Middleton & Son, 310 Montgomery street, on the 28th day of October, 1875, at the hour of 10 o'clock A. M., of said day, to pay said delinquent assessments thereon, together with costs of advertising and expenses of sale.

O. A. JAMES, Secretary.

Office, No. 402 Moutgomery street, Room 9, San Francisco, California.

Orleans Mining Company—Location of

principal place of business, San Francisco, Cal. Location of works, Grass Valley Mining District, Grass Valley, Nevada County, Cal.

Notice is hereby given, that at a meeting of the Board of Trustees of said company, held on the 6th day of September, 1875, an assessment, No. 7, of one dollar per share was levied upon the capital stock of said company, payable immediately in gold coin of the United States of America, to the Secretary, at the office of the company, room 8, No. 315 California street, in the city of San Francisco.

Any stock upon which said assessment shall remain unpaid on the 7th day of October, 1875, will be advertised on that day as delinquent, and unless payment shall be made before, will be sold on the 28th day of October, 1875, to pay the delinquent assessment, together with costs of advertising and expenses of sale.

GEO. P. THURSTON, Secretary.

Office, room 8, No. 315 California street, San Francisco, Cal.

Pacific Wool Growing Company—Location

of principal place of business, San Francisco, Cal. Location of works, Santa Barbara county, Cal.

Notice is hereby given, that at a meeting of the Board of Directors, held on the 25th day of September, 1875, an assessment (No. 2) of four dollars per share was levied upon the capital stock of the corporation, payable immediately, in United States gold coin, to the Secretary, at the office of the company, room 28 Stevenson Building, No. 331 Montgomery street, San Francisco, Cal.

Any stock upon which this assessment shall remain unpaid on the 27th day of October, 1875, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Saturday, the 20th day of November, 1875, to pay the delinquent assessment, together with costs of advertising and expenses of sale. By order of the Board of Directors.

O. D. SQUIRE, Secretary.

Office, room 28 Stevenson Building, 331 Montgomery street, San Francisco, California.

Silver Wave Mining Company—Location

of works, White Pine Mining District, Nevada.

Notice.—There are delinquent upon the following described stock, on account of assessment (No. 12) levied on the 31st day of July, A. D., 1875, the several amounts set opposite the names of the respective shareholders, as follows:

Names.	No. Certificate.	No. Shares.	Amount.
A F Carmody, Trustee	574	250	$ 52 50
E Fisher, Trustee	552	250	62 50
W N Hawley	458	25	6 25
N Reynolds	545	20	5 00
E A Richardson, Trustee	499	100	25 00
E A Richardson, Trustee	520	100	25 00
E A Richardson, Trustee	565	10	2 50
E A Richardson, Trustee	572	100	25 00
W J Williams, Trustee	244	50	12 50

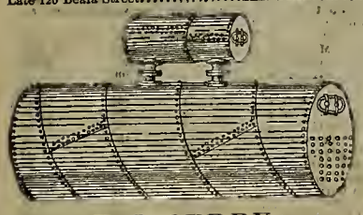
And in accordance with law, and an order of the Board of Directors, made on the 31st day of July, A. D., 1875, so many shares of each parcel of such stock as may be necessary, will be sold at public auction, at the office of said company, on Friday, the eighth (8th) day of October, A. D., 1875, at the hour of two (2) o'clock P. M., of said day, to pay said delinquent assessment thereon, together with costs of advertising and expenses of the sale. J. W. CLARK, Secretary.

Office, Room 2, 418 California street, San Francisco, California.

Iron and Machine Works.

San Francisco Boiler Works,

N. W. Cor. Harrison and Main.
Late 125 Beala Street.....SAN FRANCISCO.



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SHEET IRON WORK of every description done at the Shortest Notice.
All kinds of JOBBING and REPAIRING promptly attended to. 17v25-3m

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24v17-qy

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24v22-3m JOSEPH MOORE, Superintendent.

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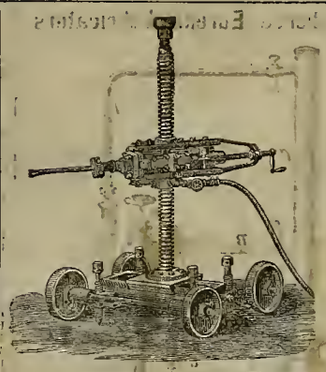

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SOLE AGENTS FOR THE

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THE ONLY SAFE BLASTING POWDER IN USE.

GIANT POWDER, NO. 1,

For hard and wet Rock, Iron, Copper, etc., and Submarine Blasting.

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For medium and seamy Rock, Lime, Marble, Sulphur, Coal, Pipe Clay and Gravel Bank Blasting, Wood, etc.

Its EXCLUSIVE use saves from 30 to 60 per cent. in expenses, besides doing the work in half the time required for black powder.

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MACHINERY AND CASTINGS
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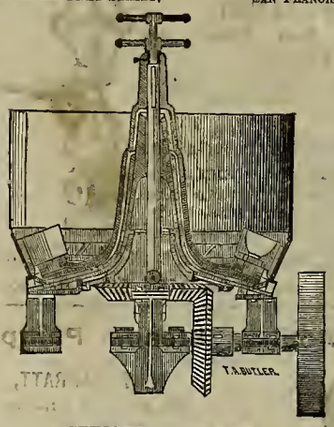

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IRON CASTINGS of all descriptions at short notice. Sole manufacturers of the Hepburn Roller Pan and Callahan Grate Bars, suitable for Burning Screenings.

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☞ Special attention paid to Brewers', Distillers', Beer and Hot Liquor Pumps and Wine Pumps. Particular attention paid to AIR PUMPS, also to
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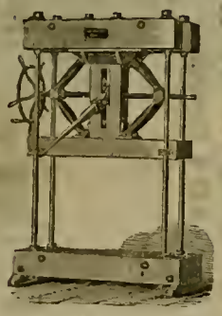

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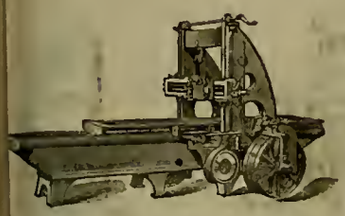

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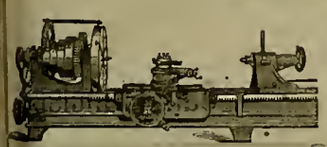

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ARRANGED TO WORK NOISELESSLY AND
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ON PUMP OR PIPES
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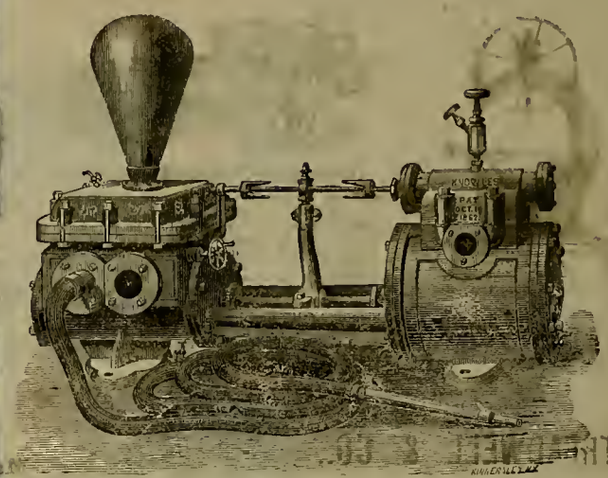

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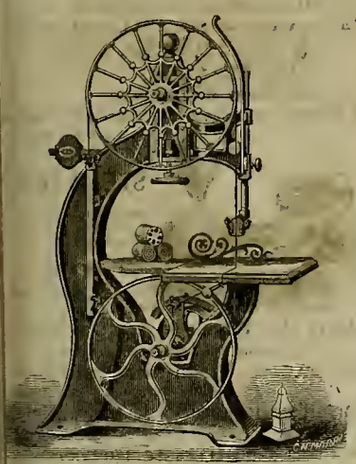

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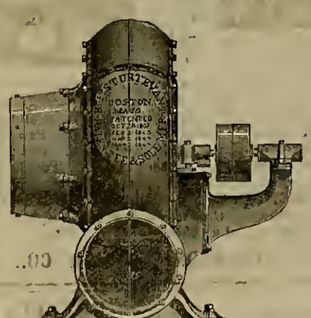

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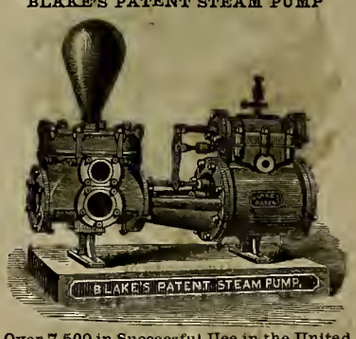

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Barber & Bacon, Millers and Lumber Dealers, South Vernon, Vt., write July 15th:
"We have been running two of your Light Vertical Corn Mills for the past 6 months with remarkable results, and have ground over 80,000 bushels of corn into No. 1 meal in that time, running the grist-mill nights only, as we run our saw-mill in the day time. We have often ground in the 20-inch Mill (which weighs about 500 lbs.), 1,000 lbs. of corn in twenty minutes, or 54 bushels in one hour. Our usual night's work is about 24,300 lbs., or 434 bushels. To do this we have to run at a speed of 1,300 turns per minute, and use about a 20-horse power. You may refer parties to us for further information, and when we have tested your Heavy Vertical Mill, we shall take great pleasure in giving the results."

SEND FOR ILLUSTRATED CATALOGUE AND PRICE LIST.
EDWARD HARRISON, MANUFACTURER OF
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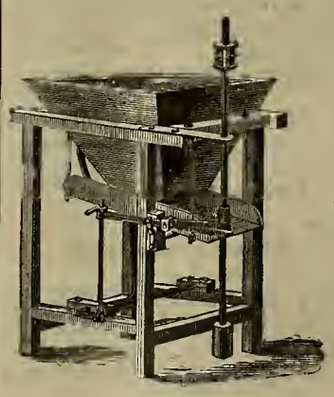
Tulloch's Automatic Ore Feeders.



Will Feed Wet or Dry Ore Equally Well.

Will Increase the Quantity from One to Two Tons Per Day.

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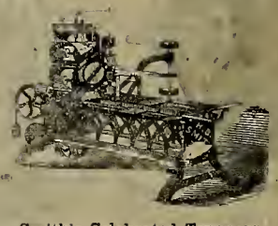

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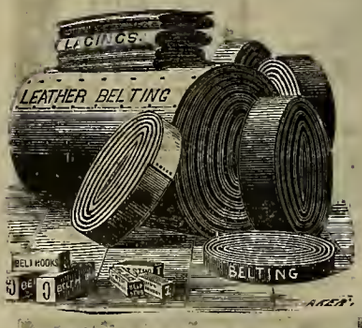

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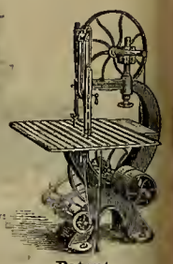

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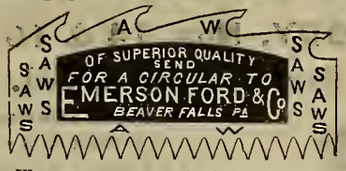

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SAN FRANCISCO, SATURDAY, OCTOBER 9, 1875.

VOLUME XXXI Number 15.

An Improved Hand-Cart.

Hand carts are indispensible articles in this country, but most of these useful little vehicles are open to two objections: First, the impossibility of loading from the rear on account of the disposition of the vehicle to tilt; and second, the inconvenience of loading at the side, owing to the wheel being in the way. Both of these difficulties, it is claimed, are overcome in the invention illustrated in the annexed engravings, which consists in an arrangement of the bed so that it slides back and forth at the will of the operator.

A, is a frame attached to the axle of the cart, and further supported by the braced standards shown, which rest on the ground when the cart is stationary. On the top side of the frame are secured the metal runners, *B*, upon which clips, *C*, having eyes, and attached to the bottom of the vehicle body, fit. These clip eyes are loose upon the runners, so that the body can be moved forward from the axle, as shown in Fig. 1, to allow of loading without the interference of the wheel. When the loading is finished, the body is pushed back and balanced over the axle, as shown in Fig. 2. They are made different to suit all kinds of business. Fig. 3 shows a small one mounted on springs, but they can be furnished with or without springs.

It will be seen that the standards give the body a firm support when the same is pulled forward. The inventor suggests that, as there is no establishment in this country which makes a specialty of hand-cart making, a profitable trade might be monopolized under his patent.

The inventor, Mr. Joseph M. Jones, desires to dispose of his right for two-thirds of the United States; for further particulars regarding which offer, etc, he may be addressed at Paris, Bourbon county, Ky.

Fig. 1

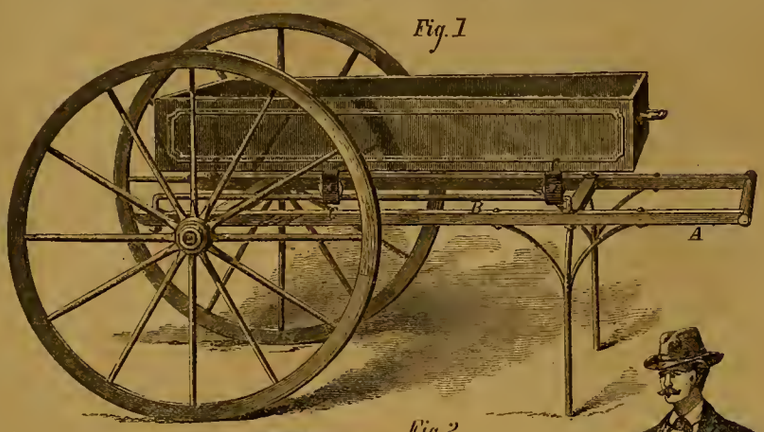
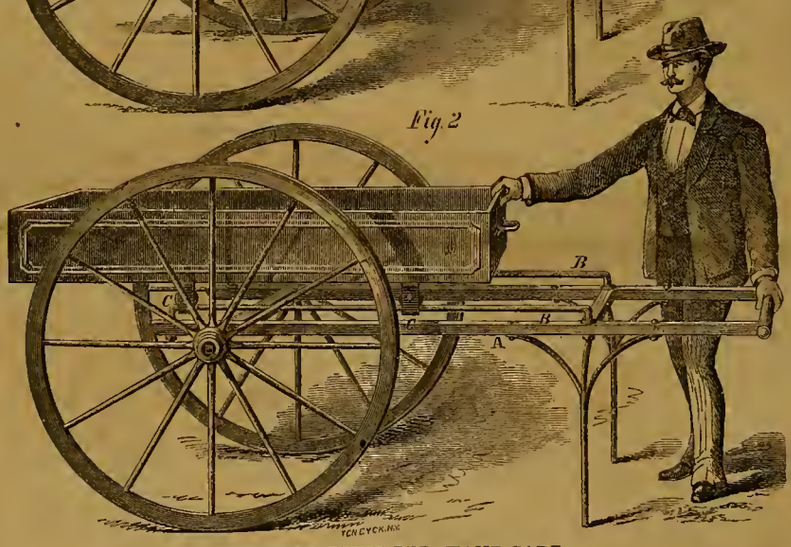


Fig. 2



JONES' SHIFTING-BED HAND-CART.

Pleasant Talks About Inventions.

No. 2.

The spirit of invention, which had achieved such astonishing results in 1400, moved on apace in the fifteenth and sixteenth centuries. While nothing startling was discovered, valuable applications of known principles were developed, and successfully introduced. Steam during this time became subject to the skill of man, to the degree of proving undubitably that it would in time be the great motive power of the world.

Fortifications were first built in the present style in 1500. In 1503 sugar was refined for the first time by a Venetian. Shillings were first coined in England in 1504; gardening introduced into England from the Netherlands in 1509; while roses first bloomed on English soil in 1522. The camera obscura was the invention of 1515. Gunlocks were invented at Nuremberg in 1517. The first fire engine was built at Augshurg, Germany, in 1518, and was called "a water syriage useful at fires." Chocolate was introduced in England from Mexico, in 1520. Street lights were first employed in modern Europe at Paris in 1523 Soap made its earliest recorded appearance at London and Bristol in 1524. The application of steam to navigation belongs to the fifteenth century, for it appears that in 1543 one Blasco de Garay, of Barcelona, propelled a boat by steam, part of his apparatus being described as "a large kettle of boiling water." It is generally supposed that Dr. Guillotine invented the dreadful instrument of punishment which bears his name, during the revolution in France, in 1789. Such is not the case, he only recommended its adoption. The guillotine was known in Germany as early as 1595, and was called *fall beil* (falling hatchet). The romantic statement that Guillotine perished by his own device, is false. He died in bed. In closing the records of 1500 it would not do to forget two important items: The use of punctuation for the first time in literature in 1520, and the discovery of the true theory of the solar system by Copernicus in 1582.

Thermometers were invented at Padua by Santorio in 1626. The invention of air guns is claimed for 1645, but it appears that Ctesibuis, an Alexandrian Greek, who lived B. C., 150–120, applied the elasticity of the air to the construction of wind guns This would seem to verify the old adage, "that there is nothing new under the sun." Saw mills were introduced into England from Holland in 1663. Leather hose for fire engines was invented by two Germans at Amsterdam in 1670 They also invented the suction pipe. The first practical experiments towards establishing the science of electricity were made by Dr. Gilbert, of England in 1580–1595. He arrived at no conclusions, however, and it was reserved for a Franklin to test its power and demonstrate a theory.

The crowning work of the sixteenth century was the advancement made in developing steam as a motor. As early as 1663 the Marquis of Worcester had invented an engine worked by steam. It was a crude attempt, but originated what is now known as the high pressure principle. It was followed by Newcome's engine, in 1705, which was the connecting link between all former rude efforts and the engine that the genius of Watt developed into practicability and universal usefulness.

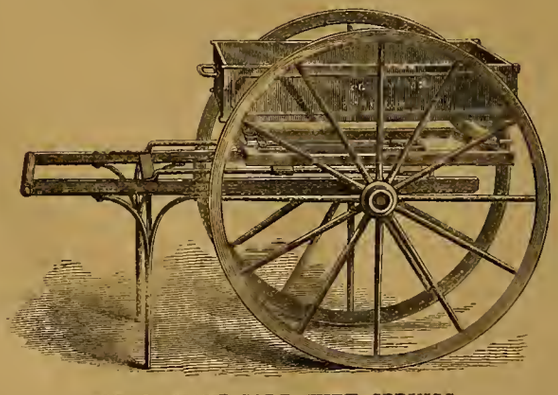


FIG. 3. HAND-CART WITH SPRINGS.

Swan's Box Nailing Machine.

In the extreme rear end of the Pavilion, in the display made by Swan's box factory, a new machine has been placed within the past few days, which attracts more than ordinary attention. It is a box nailing machine invented by Mr. G. W. Swan, which is really a wonder in its way. Although somewhat complicated in appearance, it is really simple in detail, and does its work with great facility.

The nails are poured into a series of troughlike hoppers, on the top of the machine. By these being slightly slanted, the nails slide into a sort of trough, with a slot in its bottom. As they fall into this the nails which are defective, or without heads, fall into a receptacle placed to receive them. In front of this the nails pass on, points down, to the front of the machine. At each revolution of the machine a nail drops into a receptacle where a pair of pliers pass it down and hold it ready for the bar of iron which acts as a hammer, except that it forces instead of hammering the nail into the wood. Ten nails can be driven at a time, either all of one size or of different sizes. The nippers hold the nail straight, so that it can be driven into the edge of a quarter-inch board. As the nails come down the machine turns them the right way to be forced into the wood without splitting it. Three or tenpenny nails can be used at the same time if desired.

Gauges are arranged so as to drive the nails at any desired distance apart; as they can be placed exactly in the center of a quarter-inch or two-inch plank at pleasure. It is so arranged that the cover of the box is only nailed loosely on, so the nails can be drawn. A man in making ordinary fruit boxes, can only nail together from 125 to 150 per day, with the material already prepared. This machine easily does the work of from eight to ten men, and does it accurately. One man only is required to tend it when in operation. It is really an ingenious piece of mechanism and one of great importance to the box manufacturers. A crude machine of this kind has been in use in Swan's box factory for some months, and such improvements as have suggested themselves have been carried out. Now that the machine is perfected the inventor has taken steps to protect his invention by patent. It is well worth examination by all who are interested in a fine piece of mechanical skill.

The enterprising Chicagoans are waking up to the value of Nevada silver mines viewed in the light of paying investments. A party of Chicagoans are making a business tour of the State buying wherever they think the prospect warrants a purchase. They were lately at Winnemucca and it is reported they have purchased the Maine ledge in Sierra district. Parties here in communication with them, inform us it is their intention to visit this place shortly and negotiate for the purchase of certain mining property in this vicinity.—*Pioche Record.*

The *Enterprise* states that the Livermore spring water company received early this week their fine steam pump and works, for hoisting water from the lower to the upper reservoir. When it is placed in position and in working order we will have not less than forty-two feet of fall upon our streets.

The track on the Santa Cruz railroad is laid to Gillingham's farm, on the San Andreas ranch, about fifteen miles from Santa Cruz. During the past week about 500 tons of sugar beets have been carried over the road to the Soquel sugar mills.

The Centennial Building.—We are indebted to the officers of the Centennial Exposition for a fine chromo-lithograph of the buildings, erected for the various departments of the Exposition.

The San Joaquin extension of the Southern Pacific railroad is graded to near the Santiago creek.

The Sonora *Democrat* says: We understand that a third and final survey of the country from Oakdale to the Rock river ranch in this county is being made by the railroad company, which would indicate their intention of removing the track from between Peter's and Milton on the Stockton and Copperopolis road and laying it on the route of this survey. This will bring the terminus of the road to within about twenty-five miles of Sonora.

They are running platform cars temporarily for the use of passengers between Santa Monica and Los Angeles.

The Lower Country Mines.

A gentlemsn who has recently msde a tonr through Southern Californis and visited several plsces of interest, writes a letter to the *Alta* of what he hss seen, from which we mske some extracts:

I left this city just a month ago, taking the Southern Pacific railroad, as far as its termination, then at Caliente; from there I traveled hy stsge to Los Angeles. When the Central Pacific company attempted to make a road over the Sierras, it was an enterprise of daring andacity—still it was completed, and filled the traveling world with raptures of admiration; hut that gigantic work along side of tbe engineering on the Southern Pacific, from Caliente through the Tejon pass and over the monntaius, was a mere child's play.

The traveler by the stages has an excellent opportunity of seeing the work now being accomplished by the railroad engineers, and from the commencement to its termination the mind of the traveler is imbued with a feeling of admiration and a realizing sense of the power of engineering mind and skill—that there is, indeed, "no obstacles to an engineer but time and money."

Passing on to Los Angeles, I could not hut endorse the oft repeated praiese of that "Eden of the West." It is a beautiful country, profnsely rich with the bounties of nature and as lovely a place for human ahode ae mortals could desire. It has a futnre before it in history that will, I think, justify the moet extravagant hopes of ite early settlers.

From there, my curiosity led me to take a snrvey of the eeacoast, and I stumbled upon Santa Monica, the last new town on the horders of the Pacific.

I had not been eo far south and west hefore, and as I stood npou the high hlnff on which this young city ie heing built, and gazing across this great expanse of Pacific watere that lay stretched before me, hounded only hy the clesr, hlne firmament, I did, indeed, conclude that not a word too many had been uttered in favor of this excellent selection of a watering place for the State of California.

Some men in the motivee of their actions—which grand of themselves they may be—may associate therewith a feeling of sordid selfishness, eo as to destroy the good they might at first intend; but as I let my eyes wander over the country, and take into my mental calenlation the inevitable resnlts of building such a city on the ehores of the Pacific, I could not but feel kindly dispoeed to the name of Senator Jones, to whose enterpriee the foundation of the city bas been laid.

Some men may accomplieh one great point of their ambition in a lifetime, and therewith he contented with a monumental name to he read in history; hut there are other men who are impelled by a love of enterprise, who cannot rest while there remains a something yet to he done—of this nnmher is the irresistihle Senator from Nevada.

Santa Monica ie beautifully sitnated, and may easily be all that ie expected of it in the futnre. It aims at no ahsurd pretentione of rivalry; it ie great in its own natnral situation, and is cspahle of becomiug a great seaport town, and these are what make the cities of the world.

No one who thinks of the first location of San Francisco on the verge of the waters of the bay and backed by hnge sand hille, could ever tbink ot the city of to-day; bnt it was in the very nature of human feeling, after a long sea voyage, to seek the first landing near to the ocean, and the city of San Francisco, in spite of everything, became a fact in the geographical and maritime history of the world, which neither riug nor Legislature, State or National, will ever be ahle to move.

So will it be with Santa Monica. Nature has given to that portion of the Pacific coast, a harbor of refuge from the storm, a secure place for commercial interchange of home and foreign produce, which stsmpe it ae pre-eminently the next seaport in importance to San Francisco.

It is not yet one year since the city of Santa Monica was snrveyed, and to-day there are over a hundred houees erected and inhahited, and every day sees the foundation of some new home laid. For location, in a commercial way, it is without a rival, for it has an open sea and deep waters in front, and hehind it there is a country increasing daily in importance to the settler and to the immigrant seeking a new home.

Whatever may he the inoreased facilitiee of railroad communication between San Francisco and the interior of the State southward, there can never he commeroisl intercouise with the moet southern counties on the bordere of the sea to equal that of the safe and oheap conveyance hy water; hence Santa Monica, for all heavy and cheap freight must neeesearily he the only landing place in the future.

But with a wide range of vision, and comprehending the unmistakahle march of eveuts, Senator Jones, after building a msgnificent wharf 1,700 feet into the eea, to which vessels of the heaviest tonnage could come up aud uuload and load again, tne Senator hss rushed forward the Los Angeles and Independence railroad, and iu a few days more there will be an uninterrupted commnnication between the whsrf at Santa Monica and the interior connties of the south, and connecting with other railroads already in operation. It seems almost needless to add, that the final resnlt of all this expenditure of brain, labor and finance will be a great increase to the tressury of the man who had the intellect to conceive and the arm to execute, and to his financial resources there need be no end.

From Santa Monica I traveled to

Panamint,

And there I visited the now mines, aud saw agaiu the labor of Sonator Jones. With his associates he had opeued up a new country, built roads, developed minee and constructed one of the finest etamp mills on the Pacific coast. There were in all, probably, two thousand persons engaged in the uenal occupations of a mining country, enjoying mail communication with the reet of the world. There might be two huudred mines located within a radius of three miles of Panamint, though at the present time tbere were only a few being regularly worked and developed, as there are bnt two mills at the present time in operation. The fine stsmp mill built hy R. C. Jacobs to work the Sunrise ore, is running regularly and turning out its full capacity of bullion. Senator Jones' mill with twenty stamps, and a Stedefeldt furnace, with a capacity of twenty-five tons a day, has been working thirty days on a second class ore, and were able to work up to 85 per cent of the aesay value. The hullion so far aggregates 888 fine. During the laet thirty days they have turned ont $60,000, which ie now on the way to this city. Thie mill is working on ores of the Hemlock and Wyoming mines, and in these two mines they have enough ore in sight to keep the mills running for twelve monthe. These ores average $125 a ton, and the mill has capacity for turning out from $60,000 to $80,000 a month, while the expenees for milling and mining will not exceed $10,000; the Senator has, therefore, an ample, yea, an abundant return, for all hie investments and lahors, and a very handsome future before him.

The Panamint mines look very encouraging, and the feare that the refractory ores could not he worked remuneratively have been satisfactorily dispelled by the large shipments of hullion now on their way to thie city.

I next vieited

Darwin, a New Mining District,

Ahont forty miles in a northwestern direction, only about ten months old. This is a flonrishing little town with ahout 700 or 800 inhahitants. Water has been hrought by pipes a distance of eight miles to snpply the town. The ores of thie camp are argentiferous and are strictly smelting ores. A furnace of twenty tone capacity hae hsen erected and is doing fine work. The bullion is of very high grade. The mines sll look permanent, and with small investments in development expose large bodies of ore. I look upon this camp ae one of the most promising in Inyo county. Capital has already found its way tbere to stimulate the brawny arms of "ye honeet miners," and ite futnre is very enconraging. Lee dietrict is located about fifteen miles northeast of Darwin, but ae yet but little developments have heen done in that camp. The ore is of a very high grade, and the veins seem to be etrong and permanent. Rich croppings show for several hundred feet along the eurface. Twenty-five tons of ore from this new district have heen shipped to San Francisco, and I have seen the sample assay of this twenty-five tons, which average $430 per ton. Very rich ore is found from the graes roots as far ae they have gone. Twenty-feet is the deepeet shaft yet sunk, and the veins seem strong and permanent. Wood and water are ahundant within six miles from the mines. I predict a very good outcome for this new camp.

Having heard conaiderable of the

Gold Mines

And extensive operatione in Kern county, I resolved to make a pereonal visit. Retnrning to Caliente again, I there took the stage for Haviiah. Thie is an old mining town which had been almost abandoned for several yeare; but I found that latterly Messre. Haggin & Tevis, of this city, had taken hold of it. They had recently purchased several mines in that locality, and preparations were being made for extensive operations. The mines having heen more thoroughly developed, are proving to he very rioh and abundant in wealth. With the aid of these capitaliste, this almost abandoned country will again flourish, and they in tura will, in all probability, reap a rioh return for their investmente. It is the old story of money making tbe mare to go. The poor men failed; the rioh men are sure to he successful.

From Havilah I went to Kernville, and there I found a beautiful, lively town, with 1,500 inhahitants, located on the north bank of Kern river. Ten or twelve yeare ago conaiderahle attentiou was drawn to rich placer mines in this locality; hut recently there has been great discoverie made in quartz ledges. Here I again came across Senator Jones, and wae startled with tho greatness of hie enterprises where I least expected to find them. He has erected here an eighty stamp mill, with the best water power in the country. This mill, I am told, is tbe largest gold mill in the world, and hae been built with all the latest improvements, and with the greatest care. It is the handsomeet piece of property that I have ever seen in a mining country. Soon after my arrival, I wae introduced to Mr. E. R. Burke, the manager—who is himself largely interested with Senator Jones, and I wss shown over their property, and throngh their immense mine.

I was perfectly astounded at the

Extent of their Operations,

For I had no idea that there was snch a mine on the Pacific coast. The Senator had expended here first, in the purchase of the mine, the water privileges, erecting the mill, the hoisting works, and the development of the mine, the sum of $540,000 before it began to make him any retnrn; bnt it has reached that admirsble position known as "a paying hasis," and all that remsins to be done is to secure its continued working. The mine itself is 6,000 feet in length, and the vein averages from 80 to 100 feet in width. It is the mammoth gold mine in the world. In this single enterprise, Senator Jones hae hefore him untold millione. The work already done is entirely satisfactory, and the returns far exceed the outlay. The mill has a capacity for reduction of 100 tons a day, and at the rate it would take centuries to exhsust what is already known to exist within his patents.

With such an immense hody of ore waiting for reduction, other mille will he erected as fast ae possible, and that almost unknown country will hecome, I donht not, as celehrated as the Comstock, of Nevada.

Senator Jonee has quietly attended to his interests there, and no one seems to have heard what he was doing; hut one of these days there will he a buzzing ahout a gold bonanza that wil startle the commercial world.

I presnme that his nsual reticence does not sufficiently account for the silence that the Senator has preserved over his rscent enterprises; hut now that they have each of them heing brought up to "a paying basis," and take their places on the credit side of the ledger, the world may expect to hesr of his grand success. He is destined, over that one mine alone, in spite of everything, to become the richeet man iu America.

The Raising of Commodore Perry's Flagship.

After the *Lawrence* had been disahled in the hattle of Lake Erie, it will he remembered that Perry left her during the engagement and made the *Niagara* his flagship until the close of the fight. The *Lawrence*, with great difficulty, was gotten into the port of Erie (the port at which she was hnilt), and after rounding the peninenla, floated up Misery hay unmanageahle. The next year, 1814, she was refitted and sent against the forts at Mackinse. Proving nnseaworthy from the terrihle drubbiug of the English the year previous, she wae brought back to Erie and sunk in Mssery hay, and has lain there ever since, doing duty ae a house for the numberless black bass which could be alwaye caught among the timbers, and a point of interest to he visited hy curiosity hunters. Enough Flagehip *Lawrence* csnes have heen sold to build four such vessels, hesides the resl canee, etc., that have heen cut from her timbers. The vessel was built by Daniel Dohhins, whose widow now lives, or did live a few years ago, in Erie, and who, while her huehand was cutting out timhers, etc., hoarded Commodore Perry and his staff. When the writer of this eaw her last in 1871, she was a smart old lady ninety-four yeare old, and bids fair to live to a hundred. We qnote from the Erie *Dispatch*, which wo are sorry to say does not give ae full details as desirable, hecause all would like to know the names of the proprietors, etc., of the hull; and in thie connection we suggeet that our Historical society secnre some portion of the *Lawrence* as relics. The *Dispatch* says:

"The glory of one of one of the chief points of iuterest in the harhor of Erie—that which hung aronnd the place hallowed by the remnants of Perry's victorious flagship, the *Lawrence*—has departed. Her remains have heen lifted from their quiet resting-place nnder the waters of Misery hay, and carried shoreward to the edge of the peninsula, bringing to view the hietoric relic."

The removal is looked upon with diefavor by the majority of onr citizens, and it is not to he wondered at, as the *Lawrence* has heen lying there so long that she was accounted pnhlic property, and in the snmmer time was visited by hoets of strangers—the framework on one eide heiug visihle—to whom, as well ae to our citizens, it was an object of greater interest.

The remains are a queer looking mass. The port sido has heen cut down nearly to the keel, plauking having heen torn off, and ribs sawed off by those who thought it no harm to steal a piece of wood off the *Lawrence*, and this has been kept up until at least a third of her bottom has gone. The *Lawrence* lay on her starboard eide, and that side ie tolerably whole to the deck beame (npper worke all gone yeare ago), and the timher ie, in general, sound and in good conditiou, but is a purple black—the result of the actiou of the water.

Of the twenty-seven killed in that naval engegement twenty-two were killed iu the *Lawrence*, on board of which was the intrepid Perry, whose monument ornaments our public square. The *Lawrence* wae 100 feet long, twenty-eight feet heam, and nine feet depth of hold. In her time ehe was a model war vessel, but in these days of ironclads, monitor rame aud heavy armament she would not last as long in an engagement ae a yawl hoat in a hurricane. She fulfilled hor mission, however, and gave her Englieh consins cause to remember her contemporary with Perry's famous victory. —*Cleveland Plaindealer.*

A New Invention Relating to Steam Engines.

A new invention relating to steam engines is described in the *Trade Review* as helow. The inventor is a Cleveland man:

"The invention consists of a new and simple mechanical movement, wherehy the power of two cylinders is applied to the crank, in snch a manner ss to mske it a lever of constant value, and the full power of both pistons is exerted in opposite direotione on the crank wrist at the time the latter passes the center; this power is constantly transmitted in the direction in which the crank moves, and never, at any point of the revolution, is there any thrnst towards the shaft. The following is an outline description of the main features of the invention: The rectilinear motion of the pistons is preserved hy means of cross heads and gnides, in the usual manner; connecting rods extend from these cross heads to the opposite horizontal arms of a cross. The upper vertical arm of the cross is pivoted to one end of a vihrating heam, which is in tnrn pivoted, at the other end, to the frame of the engine; thie allowe a rectilinear, oscillating motion of the cross. The lower vertical arm of the cross is connected with the crank wrist. The valves of the cylindors are set to give to one pieton an advance or lead over the other, by which means the one piston will have reached the end of its stroke and he ready for the return, before the other will have completed two-thirds of its stroke, and the oross, acting ae a lever of eqnal arms, receives the full power of both pistone from opposite directions, thereby forcing the crank wriet up to and heyond the line of centers; having accomplished this much of a complete revolution, both pistone now act npon the oroes in the same direction, the crose movee hodily, until the crank wrist reachee a point forty-five degrees in advance of the line of centers, when the relative position of the stroke of the two pistons will he reversed from that stated ahove, and the same action is repeated to hring the maximnm power of the two cylinders to hear upon the crank wriete, at the time it passes the line of centers. The avoidance of all shocks, hy the uniform appl cation of power, rendere a great rednotion of the etrength of different parts possible, and great economy of space is gained by a material shortening of the connection.

"Mr. Miner has for a reverse and cnt-off gear, a moveahle eccentric, which secnres all the advantagee possessed hy the hest srrsnged link motion, while, at the same time, there is no variation in the lead of the valve; thie allows of operating the valves of both cylindere hy one single eccentric."

An engine conetrncted on this plan ie in use at the Cleveland *Herald* office, and it ie claimed that it savee a large percentage of fuel. Another has heen placed on a new tng at Cleveland now receiving its finishing touchee.

Government Survey of Lake Ontario.

The following are some of the partionlars in regard to the United States survey of Lake Ontario:

The survey party in charge of the work consisted of five distinct corps, each numbering about twenty men. Each party takes a section of ten miles—making a survey of coast line of fifty miles at one time. They have just completed the survey of the whole shore of Lake Ontario, topography of the shore and soundings heing olearly marked. The party at the mouth of the Niagara river are just finishing the survey of the river, from Lewiston to Navy island. The soundings at these points have not been so satisfactory as at other points of the river. At the new enspension hridge good results were ohtained, the lead nnder the hridge showing a depth of 192 feet, while a little below the depth varied from 162 to 165 feet. The hight of the American falls is 158 feet—an accurate meaenrement, as hy the assistance of a guide the lead wae placed at the base of the falls near the "Shadow of the Rock." It will be observed that the above measurement of the American falls is the same as former surveys give of the Horse Shoe or Canadian falls, viz., 158 feet, while the previous measnremente of the American falls is stated at 164 feet in perpendioular hight. The line of the Americau falls, nsually stated as 200 feet in length, is so rsgged that it is difficnlt to obtain any exact meaenrement. The survey party intend to overcome this difficulty hy the nse of mirrors, hy throwing a light from one side to any deeired point on the other shore. It is believed that the disputed question whether the line of the falls te extending np the river will be settled, tbough doubts are entertained whether the snrvey of 1842 can he relied npon as a correct hasie of calculation. The reenlt will be watched with interest, as will aleo the survey of the Horse Shoe falls.

Poor Oil.—Nothing is worse economy than poor oil, whether for lubricating, tapping, drilling, or whatever use it may be put. Oil that contains grit or earthy matter is nothing but liquid grindstones, and it cuts or ahrades the edge of the tool precisely as doee a grindstone or emery wheel. Gnmmy oil is nearly as had, for it adde to the friction of the tap and waetes power.

Old gilt window cornices and frames may be made to look like new by using a very soft sponge and tepid water.

SCIENTIFIC PROGRESS.

The Late Texas Cyclone and the Signal Service Bureau.

The efficiency of the United States Signal Service department hos been olearly dleplayed on a great number of occasions, and oos particularly on this coast, whereby, no donbt, mnch damage and dismstsr wns saved to shipping in this harbor. The last, and psrhops one of the most notable instances of its efficienoy, was evinced on the occasion of the late cyclone, which borst with such terrific violence on the coast of Tsxas.

This storm origiosted, probobly, in the Carribean sea, or to the ea-tward thereof, and thus mostly ontside the stations of observation, either nnder the direction of the Bureau or connected with it. Bnt certain marked atmospherio distnbances wore noted npon its northern nurgin in Georgia ond Florida, from which it was interred, three days before it had reached Texas, that a cyclone was raging somewhere in the neighborhood of Cuba. The indications grew quite dacided on the 13th ult, and danger aignals were ordered up nlong the Atlantic coast from southern Florida to Cape Hatteras. On the 14th tha indications were still more decided, but it was evident that the cyclone was moving more directly west than was at first snpposed, and it was ordered that the signals on the Atlnntic coast should be lowered nnd thosa on the Gulf from Mobile to Texas should be raised. Had thera been stations at Galveston and Indianola, danner signals could have been ordered np there also. The next dny, Sept. 15th, the storm burst with the most intense fury on the ooast of Texas, where it wrought the terrible destruotion, the full particulars of which are now reaching ne by mail.

Important Oaseavations on Sound.—Prof. Osborne Reynolds, read a paper at the late meeting of the British Science Association, on the refraction of sound by the atmosphere, nnd related the effect of experiments which he had recently made, with a viaw of throwing light on the subjeot. He had confirmed his hypothesis that, when sonnd proceeded in a direction contrary to that of the wind, it was not destroyed or stopped by the wiud, but that it was lifted, aod that at sufficienily high elevations it could be heard at as great distances as in other directions, or as when there was no wind. An upward diminution of temperature has been proved by M. Glaisher's balloon ascents, and he showed, by experiments with the sounds of firing of rockets and guns, that the upward variation of temperature had a great effect on the distance at which sounds ooald be heard. By other observations he found that, when the sky was cloudy and there was no dew, the sound could invariably be heard mnch farther with than against the wind; but that, when the sky was olear and thera was a heavy dew, tho sound could be heard as far against a light wind as with it. Professor Everett remarked that Professor Reynolds had given the most important contribution to the subject that had been given for very many years.

The scienco of paleontology forms on immense field of observation, and one that widens more and more every yesr. It is now estat-lished (1st) That the stratified rocks containing organic remoins admit of a division into four great groups, representing four great periods of time—*a*, the palæozoic or ancient; *b*, the mesozoic or middle; *c*, the Cainozoic or tertiary; and *d*, the qoaternary or modern periods. (2d) That each period is distinguished by its own hieroglyphio characters, which are engraven on the rocks in definite and determinable characters. (3d.) That these hieroglyphios are the fossil remains or imprints of aoimals that lived in the water in which the sediments were formed in snccessive layers on the earth's crust, and are only found in tha rocks they distinguish, so that it is possible to determine the age and position of the strata from which they have been collected, or, in other words, *identify the strata by organic remains;* and by this key we are enabled to read the pages of the rock book, study the history of extinct forms of life, and determiue their distribution in time and space.

Ruaaer from Milkweed.—A substance similar to and answering all the purposes of India rubber, has been prodnced from the common milkweed—*asclepias cornati*. By the action of fermentation on this weed, the yield of elastic vulcanizible gum is largely increased and very much improved in quality, as compared with that obtained from the unfermeuted weed. The result of experimenta give a yield of five per cent., and it is thooght the yield might be inoreased if the weed was ground to a greater degree of fineness before fermentation.

A Moving Panoaama.—Among recent curious inventions is the application of the camera obscura to a railroad car, imparting to the traveler and wondering beholder a moving diminutive piotnre of the oountry through whioh he is passing.

Fused Boracio Acid.—Fused boracic acid, which spproaches glass in some of its external charactsristics, presents some propsrties worthy of note. In tho viscid stats it may be drawn out into threads, which sobdify rapidly, and from this point of view its ductility rsther resembles thot of silica than of glass. Its hardness, between foor and fivs, places it betwsen fluor spar and apatite; it scratches glass, and is with difficnlty attacked by sand, aod evsn by emery, dry or with oil. It takes seven to eight times as much time in grindiog as glass nnder the same oircumstaoces. This resistance to friction, which does not accord with its hardness, dspends, doubtless, as M. Damour hns recognizsd in the case of other minerals, on a specialty of structure. Melted boracio acid, in mass, becomes slowly hydrated in contact with water. In powder it is ooted on rapidly, as shown by Ebelmen. If the powder is sprinkled with water, its temperatore may rise to 100°. Boracio acid is ohi fly remarkable for the persistence of its temper. If poured upon a cold metallio snrface, glassy plates are obtoined, the undor surface of which, obilled by the metal, is moro strongly tempered and expandad than the upper. Henco results a flection which may be strong enough to caose the ruptura of the plate and its projection in fragments. If poured into oil it may be obtained in small masses with short tails, under the same conditions as Prince Rupert's drops. A tempered plate of boracic acid, with parallel surfaces, acts upon polarized light like tempered glass; but while the latter loses this property by reheating, boracic acid preserves it with great tenacity.—*V. de Luynes.*

Wave Motion.—Prof. Gntbrie, of England, has been investigating the question of wave motion, and in a paper read nt the meeting of the British Science Asaociation, he said his endeavor in various inquiries was to determine the rate of wave progress. The rate at which the wave moved along depended very little indeed upon the hight of the wave, nothing at all upon the breadth of the wave, nothing upon the density of specific gravity of the liquid, but almost entirely upon the wave length—that was, the distance from crest to crest. The learned professor demonstrated by means of experimeuts that, in circular troughs, the smaller the diameter the more rapid was the pulsation, and that the rate in different sized troughs varied inversely as the square root of tha diameter. It was also found that in a circular trough a wave 39.4 inches in length traveled in one minute over 270 feet.

Lighting up Solid Bodies.—Cadogan Morgan, in 1785, was the first experimenter who produced the electrial light in the interior of solid bodies. He inserted two wires in wood, and caused the spark to pass between them. The wood was illuminated with blood-red or with yellow light, according as the depth at which the spark was produced was greater or less. Many of our readers have doubtless seen an egg or a series of eggs lighted np by being placed in the line of the discharge of a Leyden jar. An ivory ball, an orange or an apple may be illuminated in a similar way. According to Tyndall, a lemon is especially suited to this experiment, "flashing forth at every spark as a spheroid of brilliant golden light. The wires used for the discharga should be brought within about half an inch of each other inside the lemon or other object.

Sun Spots and Ozone.—Careful observations appear to show that sun spots have an important bearing on the prevalence of ozone in the earth's atmosphere. Mr. T. Moffat (Eng.) states that from 1850 to 1869 he discovered that the maximum and minimum of atmospheric ozone occured in cycles of years. He had compared the number of new groups of sun spots, in each year of these cycles, with the quantity of ozone, and the results showed that in each cycle of maximum of ozone there was an increase in the number of new groups of sun spots. He also showed that there is an increase in the quantity of rain and the force of wind with the maximum quantity of ozone and sun spots, and a decrease in these with the minimum of ozone and sun spots.

Cnarents of Aia Within Cyclones and Water-Spouts.—In a memoir on cyclones and water-spouts, Mouchez publishes some observations made by him while upon the ocean, and which, if correct, are quite important. According to him, at or near the surface of the ground, the movement of air in the cyclone is always from below upward, while in whirlwinds the movement is, on the contrary, from above downward. In the former case the winds are winds of aspiration; in the latter the wind descends from the cloud in the form of a bag, or tube, which terminates in a point. He believes that water-spouts have no relation whatever to cyclones, having an opposite appearance and cause. In this opinion Renou also coucurs.

Chemical Action in Porous Filters.—In the course of an examination of filters, at the instance of the *British Medical Journal*, Prof. Wanklyn has had proof that filtration through beds of porous materials includes very powerful chemical action, albuminoid matter being instantly resolved into ammonia and other products by the action of the filter, which, indeep, behaves in this respect like a boiling solution of permanganate of potash. A good filter is a sanitary engine of great power.

MECHANICAL PROGRESS.

An Adding Pencil—A Novel Device.

A potent is now pendiog before the Commissioner at Washington for an odding peucil, which the *Scientific American* pronounces ingenious and useful. The object, saya that jouroal is to facilitate ths labor of account ants in oddiug np long columns of figures. It is a minatnre calcoloting mochine, which performs its work with unfailing scoorocy aod without reqoiring any thonght on the port of the operator, other than that involvsd in notiog that a pointer points to the proper figure to be added. In shape it resembles a pencil, being no larger, and as easily manipulated.

The device has a metal case, the lower portion of which is provided with a longitudinal slot, similar to the old fashioned pencil cases, with each of the figures from one to nine marked upon its margin. A small pointer works up and down in this slot operated one way by presure with the point of the pencil upon the paper, and the other way by a coiled spring within the case. The upper portion of the pencil is grooved spirally, and marked with figures from 1 to 700, this last nnmber being considered as large as any convenient column of figores will aggregate. These fignres have also a pointer, which is raised by the same presure, which raises the digit pointer.

In adding a column of fignres the operator presses the peocil upon the lower fignre in the column until a correaponding number is noted by the lower or digit pointer. This involves also the pushiug up of the upper pointer to the same figure. The pencil is then raised, the lower pointer forced back by the spring to 0, and now pressed upon the next figure, say six until the lower pointer indicates that fignre, when it will be found that by the same action the upper pointer indicates eleven—the sum of the two, and so on through tha column, when the total is set down—and if there be any number to carry from one column to another, instead of being set back to zero, it is adjusted to that oumber, so that that is added in, as it should be, with the next sum.

There is simply no possibility of error in the operation, unless the user deliberately sets the digit pointer to tha wrong number. A little practice will enable him to cause that pointer, however, to stop at the right figure almost instantly, so that the column will be cast up nearly as quickly as he can touch the separate figures, and as claimed by the inventor, much quicker than the average arithmetician can perform the same mentally. Interruption during the computation is no annoyance, and, indeed, the motion may proceed almost mechanically while engaged in conversation. Or he may stop work in the middle of a colnmn, attend to other matters, and resume it after any period of time. So long as the pencil is not altered in the interval, the results will be absolutely correct.

An Iron Safety Railway Caariage.—We have lately seen a small model of the frame work for a railway carriage which its inventor, a Mr. Massey, hopes to introduce as a means of alleviating the horrors of a collision when such a casualty occurs. It is well known that the splinters of an ordinary carriage, when it is smashed, do almost, if not quite, as much harm to passengers as the shock of an accident. In fact the idea has been suggested, and we think patented in the United States, of employing papier mache as a constructive material, on the special ground that it would do but little damage in accidents. Mr. Massey proposes to construct the framework and partitions of his carriage of iron hoops, put together in a manner which must be seen to be understood, but which reminds us more of an iron bedstead of intricate pattern than anything else. An elastic framework is thus provided which will certainly withstand a considerable pressure, but experiment and calculation alone will decide how far it will resist the shock of a collision. Of course, it is to be encased and finished with some other material more pleasant to come in contact with than "cold iron." The inventor, besides claiming increased safety for this carriage, is confident that it is stronger and more economical than those of the present pattern.—*Iron.*

Science and Work.—With all the enthusiasm that has been excited of late years on the subject of technical education, the question does not seem to progress with anything like a speed commensurate with its importance. That, however, chiefly obtains in the higher departments of labor, and this often seems to be somewhat overlooked. A navvy wheels his barrow with no more speed and deftness from knowing the laws of motion; and even in departments of work considerably higher than mere hand labor, what education may be expected to do is more in the general elevation of the workman's character than in any special or direct assistance in his task. For once that a workman requires to refer to first principles there are a score of cases on which his competency must depend on training under the eye and the conscious or unconscious imitation of the methods of his seniors; and still more of his efficiency depends, as the correspondent of an evening contemporary, writing under the signature of "An Artisan," insists, upon his putting a due proportion of conscience into his work.—*Iron.*

The Steering of Screw Steamers.

In a paper read before the mechanical section of the British Association, Professor Osboros Reynolds, says: 1. That when the screw is going ahead, the steamer will turo as if she were going ahead, although she may have stern way on. 2. That when the screw is going reversed, the rudder will act as if the vessel were going astern, although she may be moving ahead. 3. That the more rapidly the boat is moving in the opposite direction to that in which the screw is acting to drive it, the more nearly will the two effects on the rudder neutralize each other, and tho less powerful will be its action. In reference to the effect of the screw to torn boat independently of the ruddor, the author states the following law: 4. That, when not breaking ths surface, the screw has no considerable tendeocy to turn the ship as long as ths rudder is straight. On the subject of racing, tho author stated that his experiments had enabled him to establish the following laws: 5. That when the screw is frothing the water, or only partially immersed, it will have a tendency to turn the stern in the opposite direction to that in which the tips of the lower blades are moving. 6. That when the boat is going ahead, its effects will be easily counteracted by the rnddor; but when starting suddenly either forward or backward at first the effect of the screw will be greater than that of the rudder, and the ship will go accordingly. 7. That if, when the boat is going fast ahead, the screw is revered, at first it almost destroys the action of the rudder, what little effect it has being in the reverse direction to that in which it usually acts. If then the screw draws air or breaks the surface, it will exert a powerful influence to turn the ship.

Paopelling Ships by Wave Motion.—Mr. Beauchamp Tower, read a paper before the engineering section at the late meeting of the British Association, on a machine for obtaining motive power from the motion of a ship among the waves. The machine, as described, consists in principle of a weight supported on a spring, so that it can oscillate on the spring through a considerable range in a vertiole line. The scale of the spring, and consequently the natural period of oscillation of the weight, can be varied at will. When it is so adjusted that it synchronises with the waves, the oscillations become very violent, and a large amount of power can be obtained from them. In practice, the springs consist of highly compressed air pressing on the rims of the hydro-pneumatio cylinders, and the arrangement is such that the vessel containing the compressed air forms the moving weight. The author exhibited a design of a machine for working an auxiliary propeller of a sailing ship of 1,800 tons displacement. The moving weight in this case is 200 tons, and he showed by calculation that it would give about 30-horse power in the long swell met with in the tropical calms, 260-horse power in average ocean waves, and more than 600-horse power in a heavy head sea. The space occupied by the machine compares favorably with a steam engine of the same power. M. B. exhibited a model of the machine, which recently, in a moderate sea, had yielded power at the rate of one and one-half horse power per ton of moving weight.

Paucellier's Parallel Motion.—Professor J. J. Sylvester, the celebrated English mathematician, in a contribution to *Nature*, of July 15th, states that this parallel motion is perfectly accurate, and that the Institute of France has quite recently adjudged its great mechanical prize—"Prix Montyon"—to Colonel Paucellier for his discovery. He states further that the "first practical application of this discovery, made by Mr. Prim under the sanction of Dr. Percy, may be seen daily at work in tha ventilating department of our Houses of Parliament. The workmen there, who never tire of admiring its graceful and silent action, have given it the pet name of the 'Octopus,' from some fancied resemblace between its backward and forward motion and that of the above named distinguished cephalopod. I feel a strong persuasion that when the inertia of our operative classes shall have been overcome, this application will prove to be but the signal, the first stroke of the tocsin, of an entire revolution to be wrought in every branch of construction."

A Novelty in Rifles.—The British Secretary of War has ordered an official trial of a newly invented rifle by Major J. P. Pieri, of the French army. The great novelty of the rifle consists in the position of the trigger on the top of the stock instead of underneath it. The trigger is attached to the cylinder which closes the breach, and forms the rear end of the spring, which retains the striker at full cock, and is protected against any injury by the two wings of the breech shoe. The situation of the trigger on the top of the stock has simplified the mechanism for closing the breech and firing, which consists of six pieces held together with a screw.

Wooden Linings for Furnaces.—As singular as it may seem, Mr. C. W. Siemens proposes the use of blocks of wood as a lining for rotary and other reduction furnaces employed in the production of iron. He would have the wood rendered incombustible by impregnation with metallic salts, and set in refractory mortar. He has made the idea the subject of a patent, application for which has been made at the English patent office.

MINING SUMMARY.

THE following is mostly condensed from journals published in the interior, in proximity to the mines mentioned

California.

AMADOR.

GOOD HOPE MINE.—*Foothill Ensign*, Oct. 2: This is a new mine, situated just outside the limits of Jackson. It has only been worked for about three months, and cannot be said to be more than a promising prospect at present. Charles Peters is the original locator, and still holds the principal interest in the claim. Being a poor man, and believing that the mine was valuable, some time ago he had it incorporated, dividing it into 50,000 shares, $2 per share, with the idea of securing some money to prosecute work upon it. The shares, however, did not sell rapidly, and Peters has been working it in the manner which his limited means will allow, raising the rock by horse power and striving to keep the shaft free from water by means of a whim. The shaft is now down 100 ft, the ledge continuing the entire depth, varying from 4 to 12 ft, and showing the widest at the bottom. The flow of water is now too great for the rude pumping apparatus to dispose of, and work in the shaft has been abandoned until better machinery can be procured. Rock is being raised from the 70-ft level, and 150 tons now lie on the dump ready for shipment. The value of the ore has never been ascertained by actual working, but it is estimated from $8 to $15 per ton. The mine is evidently in the great mineral bearing belt, and a part of the primary vein, and with the outlay of a small capital might be developed into a paying property.

RICH STRIKE.—One day this week, as a man known as French Bob was engaged in mining operations near Amador City, he struck an 8-ft quartz ledge, which is said to be exceedingly rich. We hear rumors to the effect that the discovery is upon the Keystone grounds, but whether this be so or not we are not prepared to say.

VOLUNTEER MINE.—The scarcity of water has compelled the mill belonging to this company to suspend operations until the rains set in. Nevertheless work is being pushed upon the mine. Five men are employed in taking out rock, and upwards of 160 tons of ore are now lying at the mine and the mill.

CALAVERAS.

NEW MILL.—Calaveras *Chronicle*, Oct. 2: The work of putting a mill on the Mount Tmolus mine, located in Jesus Maria district, is progressing favorably. The proprietors of the Mount Tmolus have purchased the 5 stamp battery formerly used at Lloyd's gravel claim in San Andreas, and are now hauling it to their mine. They have also bought an engine and boiler of the Kennedy mining company, in Amador county, and will soon have the machinery upon their mine. It is expected that the mill will be in readiness to commence crushing rock by the time the rainy season sets in. There is no question but that the Mount Tmolus will render a good account of itself when it is supplied with milling facilities.

WEST POINT DISTRICT.—Still another of the "worked out" quartz mines is being reopened by Mr. Ivancovich. It is situated some 400 yards west of the Mina Rica. The working shaft, 4x8 ft in the clear, is down 50 ft. Steam hoisting works will added as soon as the machinery arrives. The former workings were noted for high grade ore. Mina Rica shaft 180 ft. The rock in the bottom is harder, but the rich ore, struck last week, is swelling. The smallest portion of the ore shows free gold in abundance. The new hoisting works of the Cheeno work to a charm. Excellent progress is being made in the shaft; yielding ore worth $40 per ton. The scarcity of water prevents the mills from running steadily.

CONTRA COSTA.

QUICKSILVER PROSPECT.—*Gazette*, Oct. 2: The company owning the old Weloh quicksilver mine near Clayton, of which Mr. E. J. Ryan is the superintendent, have been now some months running their tunnel for the ore lead, and have recently struck it, in 300 ft and about 100 below the surface outcrop. The lead at this point has defined walls and is about 11 ft in width, with very rich ore, of which specimens were on exhibition at the Fair this week, estimated to be good for 50 per cent. of quicksilver. Everything in the appearance of the lead indicates its permanence, and even improvement at greater depth. With the assurance they now have of a rich and permanent vein, it is the intention of this company soon to run another tunnel on a level 100 ft lower.

INYO.

WORK AT DARWIN.—*Panamint News*, Sept. 29: By a letter from G. H. Willard, president of the company, owning the celebrated Defiance mine in Darwin, of which P. Reddy, Esq., is superintendent, we learn that Archie McDonald has received the appointment of foreman, and he is instructed to proceed to Darwin at once, take charge of the mine and place men to work by the first of next month. This is as good an appointment as could have been made, as Mac is not only an old and experienced miner, but is a gentleman in whom the greatest reliance can be placed, and who will leave nothing undone to advance the interests of his employers. The machinery for the furnace of the company will be on the ground, so we are told, in two or three weeks, and the furnace will be in operation by the 10th or 12th of November.

THE SUNRISE MILL AND MINE.—The Sunrise mill is running splendidly and has quite a large amount of amalgam on hand from which bullion will be made for shipment by the 1st proximo. Although but a 5-stamp mill we think, at the rate she is now working, that $28,000 to $30,000 per month will be turned out, and this without roasting the ore. The work of sinking on the ledge goes constantly ahead and the ore is constantly improving in quantity and quality. Altogether we think there is not a doubt but that the success of the mill and mine is assured.

NEVADA.

THE ARGENTA.—*Foothill Tidings*, Oct. 2: The tunnel running to open up this mining property is now in about 200 ft, and has just passed through a belt 52 ft thick of very hard blue rock, which impeded progress somewhat. The rock is now lighter, softer, shows a large percentage of pyritic mineral, and assays $12 per ton in gold. At 350 ft they expect to strike the ledge, and the miners at work say they have a sure thing on lots of pay quartz.

MANZANITA MINE.—The Nevada *Transcript* says: "W. A. Roberts is still making the claims of the Manzanita gravel mining company to disgorge heaps of gold. The center of the ancient river channel has been reached, and the gold is found to be considerably coarser. Pieces of gold worth $2.50 are frequently found now, and gravel from the bed rock was prospected the other day, which yielded $120 to the pan. Three shifts a day of eight hours each are employed in the several drifts, and the gravel is drifted out to the hight of six feet. Last week about 2,865 car loads of gravel were washed from this mine, which at four dollars a load, a very low average, would yield $11,460 for the week's work. The ground is also prepared for hydraulic next winter, without the aid of gun powder, which has been a very important item in loosening up the high banks of gravel. Manzanita is a dividend paying mine, and will be for years to come."

PLACER.

A VISIT TO THE LINCOLN COAL MINE.—Placer *Herald*, Oct. 2: We paid a visit to this mine last Wednesday. The drifts, cross-cuts, side chutes, etc., for some hundreds of feet from the main shaft, from a perfect network of underground passages. As we passed through these, we noticed on either hand, and at each extremity, beds of glisteuing coal, from four to eight feet in thickness. In some places the coal seemed to almost pinch out, or, in other words, to become so soft and badly mixed with clay as to be comparatively worthless. These streaks, though, we understand, are small and few. The extreme western drift faces a bed of the best coal yet found in the mine. Indeed, the general average of the coal now being extracted, is much superior to any taken out during the early history of the mine, a feature very encouraging to all interested.

QUARTZ AT GOLD HILL.—Gold Hill, in this county, was once one of the liveliest mining camps in the State; but, like many other places which depended entirely on surface diggings, it has gone down, until one store, still kept by one of its oldest settlers, Thatcher Ross, and a few scattering dwellings, are all that remains to tell the story of its departed greatness. But, with pleasure, we record the fact which seems plainly to indicate that this town, if town we may call it, has reached its lowest level. A new interest, of a character rather unexpected, has recently obtained a foothold there, which now bids fair to prove rather extensive, and eventually do much to rejuvenate this historic town. We refer to the quartz interests. For some time several quartz mines in that vicinity have been tinkered with more or less, but for want of capital by the owners, have never been worked down to a paying base. Several of these leads, viz.: The Quadrille, the Pine Top, the Colter, the Phœnix and the Bantam, have recently been purchased by a company of San Francisco capitalists. They have consolidated the whole, under the name of the Quadrille consolidated mill and mining company, and with a large force of experienced miners, under the superintendcy of Thomas McGlew, are sinking on the different ledges, intending to prospect them thoroughly, and work the ores for all they contain; and that they contain precious metals in paying quantities, seems an established fact. Assays of the ore from the Quadrille shaft have been obtained, which reach from $300 to $700 per ton. With the purchase of the mines, the company obtained an old five-stamp mill, which they intend moving to a more favorable site, and adding another battery of five more stamps. They also contemplate the erection of chloriniziug works at an early day, by which they hope to save from 85 to 95 per cent. of metals contained in the ores. The company, we are assured, have money, and every move shows they mean business. We hope they will meet with success equal to their brightest anticipations.

SANTA CRUZ.

GOLD IN THE SAN LORENZO.—*Sentinel*, Oct. 2: It has long been known that gold in considerable quantities existed in Santa Cruz county, notably on the San Lorenzo river, a few miles from town; but up to this time the deposits never have been found rich enough to pay wages for washing. During the progress of the grading on the Felton railroad a heavy deposit of auriferous gravel, with all the appearances of pay dirt, was cut through in making the roadbed, this side of Felton; and Mr. Silent informs us that it was with much difficulty that he was able to retain the Chinese force at work on the road, as they asserted that they could make better wages mining than they could in the employ of the railroad company. Within a few days it has been ascertained that a man has been quietly mining in the same vicinity for many months, earning, with his rude and primitive appliances for saving the gold, $3 or $4 per day. He has been plodding along quietly, keeping his own counsel, and making money all the time. Within a few days a quartz ledge has also been discovered, which it is said can be traced for a mile. Mr. Treat informs us that he saw a piece of the rock pounded up and washed out that contained gold in considerable quantities. We examined several specimens of ore from the same ledge, and have no hesitation in saying that it resembles gold bearing quartz. So that it would not be surprising if in addition to all our other resources a large force of men would be successfully mining for gold at our very doors, as it were.

SISKIYOU.

MINING ON THE KLAMATH.—Yreka *Union*, Sept. 25: From John O. Harrison, who came over from the mining section on the Klamath river on Thursday, we learn that the prospects of the claims in this section are very flattering, and that considerable money is now being taken out. The Enterprise, a bar claim, and the farthest up the river that is being worked at present, got down to the pay dirt on Tuesday, and have got excellent prospects. They will wash up for the first time to-day. Jackson's claim just below them, also a bar claim, has been paying $5 a day to the hand for some time past. Stewart & Co.'s claim in the river has not yielded much as yet, but they get some splendid prospects. The claim of Keonedy & Gregory next below Stewart & Co., also a river claim, has not paid, and we understand the company abandoned it once, but have gone to work again, and have since got a prospect. In Little & Swan's claim a good prospect was found last Saturday. Kleaver & Co. are now taking out money in paying quantities. This company put a wing dam in the river at the commencement of the season, but failed to find any of the glittering metal. They then went back to their bar claim which paid so well last season, and again found good pay. Next below this claim is what is called the "long wing," which is a wing dam over 1,100 ft long put in the river by 4 companies combined. The first of the companies, Love & Co., have not succeeded in getting pay as yet, though they have undoubtedly got a good claim. The others, Dusel & Wiley, Ship & Co. and Smith & Co., are paying very well. Beyond these are several other claims, among them Pullen & Co. and Jeff Romaine's, which are paying very well. Taken altogether, although some of the claims have not paid as well as was expected, the present season, by the time the river rises, will be found to have been a very successful one for the miners on this river.

SAN LUIS OBISPO.

ALMADEN CON.—*Tribune*, Oct. 2: Maboney quicksilver mine has been reorganized under the name of the Almaden Consolidated mining company. From Mr. N. S. Hoffer, superintendent of the mine, who visited us a few days since, we learn that the company is making fine progress in developing its property. They have two large furnaces nearly completed. One of them of 15 tons capacity will be started up the first of this month, and the other a 45 ton furnace, by the middle of November. They have been running a little concern of only a ton and a half capacity for the last few months, and have averaged 20 flasks per month. This has paid the expenses of the mine. With several thousand tons of ore on the dump, and a large amount in sight, the company was justified in their present heavy outlay. This valuable property is near the Lockhart mine. It would seem that the quicksilver deposits in this county are without limit.

Nevada.

WASHOE DISTRICT.

CON. VIRGINIA.—Gold Hill *News*, Sept. 30: Daily yield, 650 tons of ore. The ore breasts are looking splendidly throughout the entire mine, the ventilation first-class, and everything working to as near perfection as it is possible for it to do in such extensive operations. The bullion yield for the present month will reach between $1,700,000 and $1,800,000, which needs no comment, as the amount speaks for itself. The up raise in the ore body over cross-cut No. 2 on the 1400-ft level has been connected with the 1300-ft level, and proves the ore body in the southeast portion of the mine to be much better than was expected. The new pump at the C. & C. shaft was started up last Monday and works splendidly. Sinking the shaft has been resumed. The new building is covered in and will now soon be completed.

OVERMAN.—The prospecting drifts on the 900-ft level are steadily advancing without change of interest to report. The south drift from the bottom of the winze on the 1100-ft level is steadily pushed ahead without change of value to record. More of a delay has been experienced in getting the new spur wheel from the foundry than was at first expected, owing to a lack of a sufficient quantity of metal from which to manufacture it. The wheel is now on the way from San Francisco, and everything will soon be again in good running order. The water is rising but very little in the shaft, showing conclusively that the strong head recently encountered has been exhausted, so that no great trouble from that quarter need again be expected.

SIERRA NEVADA.—Sinking the new shaft goes steadily forward at a fair rate of progess. The rock in the bottom is a little hard but blasts out well. The main west drift is being rapidly advanced toward the ore vein by aid of the new drills. The drills are of the English (Ingersol) patent, being the only drills of that make on the lode, and are being closely watched by the drilling experts along the entire line. So far as yet tried, they are fully the equal, if not superior, of the best American patents, and show great merit wherever and in whatever character of rock they have been tested. The north and south drifts on the 700-ft level of the old shaft are steadily advancing in ledge material, without change of interest to record.

CALIFORNIA.—The machinery of the new mill is nearly all on the ground and both the reduction and amalgamating mills are being pushed to completion with all the energy possible. The winze below the 1560-ft level is down 69 ft, the bottom still in rich ore. Timbering the cross-cuts and drift on the 1550-ft level is making excellent headway. The north drift on the 1400-ft level has passed through the poor streak recently cut and the face is again in fine ore. It is now in 285 ft from cross-cut No. 3, the place of starting. An unprise has been made from this drift which is now up 64 ft in low grade ore.

JUSTICE.—Drifting and cross-cutting in the old south mine, or Waller Defeat section, goes energetically ahead, and a splendid body of ore is being developed at the 600-ft level, considerable of which is high grade. At the 800-ft level the south drift is now running in quartz and vein matter of a highly promising character.

LADY WASHINGTON.—All the machinery has arrived and nearly all is placed in working position. The large new pump is also nearly all in place, and the works will be ready to start up at an early day, when sinking the shaft will be resumed, as soon as the balance of the water can be pumped out. As is well known, the indications found at the bottom, before the huge flow of water was tapped, were of the most flattering character, and the prospects are that a very acceptable bonanza of ore will be developed in the Lady Washington as soon as the massive new machinery can be effectively brought to bear in the case.

OPHIR.—Daily yield, 300 tons of ore. This increase of ore production has been made to furnish a supply of ore for 2 additional mills, the Pacific and Kelsy, which started up on the Ophir ore the 1st of October. These 2 mills have a crushing capacity of 150 tons per day, and will add greatly to the bullion production of the mine. The Ophir is steadily verging on toward a return to her old dividend-paying rank, and may yet astonish some of the bears and doubters. Work is progressing well and favorably at all points in the mine.

SILVER CENTRAL CON.—This valuable mining location, near Silver City, is now coming into prominent notice through more active and efficient development than ever. The company have recently been putting up first-class steam hoisting works, and the machinery was started up for the first time yesterday. It operates smoothly and good as could be desired. Work is resumed in the mine itself to-day. The shaft is 175 ft in depth, at which point a station is to be opened for a drift to the ledge.

ROCK ISLAND.—Putting in the new pump station at the 650-ft level, is making excellent progress. On the 450-ft level the ore vein has been cross-cut for a distance of 210 ft without yet reaching the west wall. Of this distance 88 ft passed through a solid ledge of quartz of a fine character with many encouraging prospects of ore; and the remainder through a broken, mixed body of quartz, clay, and porphyry. The main north drift on the 450-ft level has been extended into the Pacific company's ground where the ledge is looking very promising.

JULIA.—The shaft is down 1500 ft, the bottom in good working ground, and the sinking making splendid progress. The southwest prospecting drift, on the 1400-ft level is rapidly advancing, with strong evidences of soon reaching the vicinity of the main ore vein. The prospects in this drift are very favorable. The main south drift on the 1000-ft level is steadily advancing, the face in very interesting ledge matter, and with still better prospects ahead.

CALEDONIA.—Work in the old incline shaft has been suspended for the present, as great a depth having been reached as it is profitable to continue the work until connection with the new shaft is completed. The new shaft is down 500 ft, and two pump stations are being put in, one at the 300-ft level and the other at a depth of 505 ft. As soon as these stations are completed, sinking the shaft will be resumed. Everything in and about the mine is working splendidly.

UTAH.—A strong flow of water is still encountered at the bottom of the shaft, which, however, is easily handled by the powerful pumps. The shaft is now down 165 ft below the 400-ft level, the sinking making steady and favorable progress. But a small amount of work is being done on the 400-ft level, as the energies of mine are concentrated in forwarding the shaft work, so as to open a new level 200 ft below the 400-ft at the earliest moment possible.

IMPERIAL.—The extraction of ore is progressing as usual, the mill giving good returns. The ore body appears to be gradually widening, and the prospects of the mine generally, are on the increase. Daily yield, 40 tons of ore, the assay value of which, ranges from $60 to $100 per ton. No new or important changes or developments to chronicle in any of the prospecting drifts on the lower levels.

IOWA.—The upper tunnel running west under

the croppings, is making steady progress, still opening up large masses of fine looking quartz, but as yet finding no ore that will pay for milling. The west drift on the 400-ft level is steadily advancing, the face still in favorable ledge matter, and occasionally encountering streaks and stringers of rich ore. The prospects of this drift are quite favorable.

New York.—Placing the powerful new machinery is fast nearing a successful completion, and the superintendent thinks it will be ready to start into full working operation about a week from next Saturday. After clearing the shaft of water, which will take a couple of weeks, sinking will be resumed to develop the excellent ore prospects found at and near the bottom of the shaft.

North Con. Virginia.—Sinking the shaft is making splendid progress, five feet and a set of new timbers being added to the shaft every other day. The bottom still in soft ledge matter of a very encouraging character. The erection of the new machinery now places the North Consolidated Virginia on a first-class working basis.

Leo.—Still making good progress in driving the main north drift; it is in 77 ft from the bottom of the winze to-day. The material in the face is becoming softer, and shows considerable improvement in character; more quartz is coming in and it is of better quality, some of it being highly charged with sulphurets. No increase of water since last report.

Bullion.—Sinking the main incline goes steadily ahead, the rock working well and the retimbering making good progress. The north drift on the 1700-ft level is steadily advancing, the face in very promising quartz and ledge matter. Work in the north drift on the 2000-ft level of the Imperial progressing as usual.

Chollar.—Daily yield, 50 tons of ore. There is no change of value in either of the south prospecting drifts on the 1150, 1250 or 1350-ft levels. Sinking the new shaft is going steadily ahead, the rock in the bottom blasting out well. The new building is about completed. Good progress is being made at all points.

Crown Point.—Work progressing well at all the points as usual. No new discoveries to report of the prospecting operations on the 1000 and 1700-ft levels. The machinery is all working well, and the present prospects are quite favorable for good developments.

Belcher.—The improvements and repairs are making rapid progress, and the prospects are that everything will be in readiness to start the entire mine into full operation by about the second day of October. No changes, whatever, of value to report.

Yellow Jacket.—The south winze on the 1740-ft level is down 360 ft to-day, the bottom still in dry working ground. The north winze on the same level is down 303 ft, also dry. There is no change to note of the cross cuts on this level. The water in the incline remains about the same.

Amazon & Glasgow.—Sinking the joint shaft is making the usual good progress. It is now down 92 ft below the first station, the rock blasting out well. Stringers of quartz and ore of an excellent character are frequently met with. Another station will be opened at a depth of 100 ft below the first, and a drift started to cross-cut and prospect the ore vein, which will give a total depth of 309 ft from the surface. The machinery is working well, and the prospects are certainly very promising.

Florida.—The main drift west is progressing into the ledge matter, it having been well timbered and secured against further caving. Considerable water flows from the face, and some very good assays are obtained from stringers of quartz passed through. The main ledge itself is evidently close at hand.

Globe Cons.—The main drift tunnel is being steadily advanced, with a very favorable indication of soon reaching the ledge. On the 350-ft level the ore vein is opening up finely, with every prospect of yet developing good paying bodies of ore. The grading for the new machinery is about completed.

Hale & Norcross.—Cross-cutting and prospecting the 2100-ft level is still prosecuted with great vigor. While there are many favorable features in the quartz and ledge development on this level, no extensive paying bodies of ore have yet been developed. Work progressing well at all points.

Savage.—Sinking the main incline is making the usual headway. The north prospecting drifts on the 2100 and 2200-ft levels show no particular changes during the week. No change to report of the south winze below the 2200-ft level.

Gould & Curry.—Retimbering the tenth station and the main incline below that station is making all the progress possible. It is now hoped that everything will be in readiness to commence cross-cutting and the thorough prospecting of the 1700-ft level in a very short time.

Union Con.—The streaks of quartz and ore in the face of the north drift on the 1300-ft level are looking much more favorable for a good development at no very distant day. Sinking the winze on the same level is making good progress.

Buckeye.—Sinking the shaft was resumed last Tuesday morning, and is being again vigorously prosecuted. The new and powerful hoisting machinery now enables the working of the mine to a much better advantage than ever before.

Sutro Tunnel.—The vein matter in the face of the header is somewhat harder, and therefore more easily managed than it was last week, allowing of better work being done and faster progress. Total length of tunnel to-day, 11,044 feet.

West Belcher.—The main tunnel is steadily advancing, the rock in the face working well. The ore indications are excellent, and everything is fast putting on a very encouraging look for the stockholders.

South Comstock.—The indications at the face of the cross-cut at present show close proximity to the main west ore vein. No water to contend with, that being drained by the deeper mines of that vicinity.

Knickerbocker.—Some necessary repairs are being made to the pumping engines. As soon as completed, draining the water from the shaft and work in the mine will be resumed.

Europa.—The station at the 320-ft level is nearly completed, and sinking the shaft resumed. Everything is working splendidly and the prospects of the mine never were better.

Cosmopolitan.—The face of the main tunnel, as well as the other points of ore development in the mine, are showing well, and the prospecting work is pushing forward lively.

Sutro.—The rock in the face of the main west tunnel is softer and admits of much better progress than for some time past. The flow of water is still on the increase.

Senator.—The water nearly drained from the 400 ft level. It is the intention to commence cross-cutting the ledge from the south drift as soon as the water will admit.

Mint.—The shaft is down 850 ft, the bottom in ledge matter of a very encouraging character. The flow of water is slight and good progress is being made.

Succor.—The main west drift on the 550-ft level is steadily advancing, the face in soft ledge matter, with streaks of very favorable quartz and ore coming in.

Best & Belcher.—The face of the north drift on the 1700-ft level is still in hard blasting rock. The repairing of the main drift on this level is completed.

Lady Bryan.—Sinking the main shaft and driving the north and south drifts on the 380-ft level as usual, with no new features or developments to note.

Original Gold Hill.—The ore developments in the southern portion of the mine are showing finely and promising better, showing continual improvement.

Baltimore and American Flat.—The main incline is being sunk with all the energy possible, the bottom in good blasting ground, the best of progress being made.

Mexican.—There is no change in the character of the quartz in the bottom of the winze below the 1465-ft level. Sinking progressing as usual.

Pictou.—The rock in the main shaft is softer and looser than last week. No increase of water.

Wells Fargo.—Sinking the shaft as usual, with no new features to report.

Nevada.—The ore body developed by the cross-cut at the lower level is of low grade, yet shows continued improvement as the work progresses.

Prospect.—Shaft sinking in very favorable material at present. Tunnel shows no material change.

Woodville Consolidated.—Work on the new pumps is rapidly advancing. A drift is being run to connect the old works and the new shaft.

Sullivan. — Shaft making excellent progress downward, with a full force of men both at that and the surface grading.

Silver Hill.—The cross-cuts and drifts at the third station level are still progressing without change of value to chronicle.

Leviathan.—The face of the drift at the 420-ft level is in splendid looking quartz, some of which assays very well.

North Chipman.—Shaft down 62 ft to-day. The bottom is in good sinking ground. Everything going ahead finely.

Moore & Monoan.—Good assays continue to be obtained from the vein matter passed through in sinking the shaft.

Dayton.—The new pump engine is working splendidly, and sinking the shaft will be resumed to-morrow.

Idaho.

The Oro Fino.—Owyhee *Avalanche*, Oct. 1: Some choice rock was taken from the first level of the Oro Fino yesterday, on the north side of the shaft. On the same side of the shaft, 40 ft further down, there are indications of similar rich developments. A winze is being sunk from the second to the third levels south, and from both the lower level and the winze some good milling ore has recently been taken out. The ore from the first level is the continuation of a rich vein, which existed in the old Oro Fino, and that from the second level is regarded as even superior in quality to that which has recently been taken from the first level. Fifty-eight tons of ore were shipped from the mine on Thursday. Three quartz teams are constantly employed, and the Golden Cheriot and South Chariot mills are running day and night on Oro Fino ore. Seventy men are employed in and about the mine. Altogether, the Oro Fino is making very encouraging progress. It is only a little more than four months since the work on this mine were commenced, and taking into consideration the splendid character of these works, the recent rich developments and the active and successful operations that are in progress, it is a subject of general congratulation, and superintendent Catalow and others interested will at no distant day reap the reward of their energy and enterprise. Among the recent improvements completed are new blacksmith and carpenter shops, also a spacious and well arranged office, comprising in all a model establishment and a thoroughly equipped mine.

Golden Chariot.—There are fifteen carpenters at work on the frame of the new building at the Golden Chariot, and the works are making rapid progress. The new structure is being erected directly over the old one, which is to be torn down. The best quality of timber is being used throughout, and the structure bids fair to be a most solid and substantial one throughout. All the machinery except the mining gear is on the ground. The engines are as large as those used at the Comstock mines, and the boilers and other appertenances are in keeping with the general solid character of the iron material used, which will make the works of the Golden Chariot, the most substantial and commodious of any to be found in this section of the country. The mine is looking well, and the rich ore recently taken from the second and ninth levels affords a cheering hope for the future of the mine. Only a limited quantity of rock is being taken out at present. There are about 50 men employed at the mine, most of whom are engaged on the new works.

Silver Cord.—Stoping has been going on for the past few weeks at the Silver Cord, and there are now about 70 tons of assorted ore in the ore house. It will probably be a few weeks before the new machinery will be ready for active operations. The new boiler is in position on a first-class foundation, and steam pumps will soon be erected to take the water out of the mine. The timbers for the gallows frame, engine bed and reel blocks, are all ready for the machinery, and the Silver Cord will soon present a new visage. Externally many improvements have been recently inaugurated. A new blacksmith shop has been built, and the old one has been converted into a carpenter shop. Several carpenters are at work on the old shaft house, which is to be converted into a boarding house, and when completed, the present eating establishment will be turned into a sleeping house. Several new roads have recently been built in the vicinity of the mine, which will greatly facilitate the transportation of ore and material. The Silver Cord boys are in a happy frame of mind just now, and the prospects of the mine doing a good business for the fall and winter are very encouraging.

The Blazing Star is the name of a little mine not far from the Minnesota, where the patriarchal Cris. Kelsow is operating, and where he intends to "stick" until he strikes it. He is laboring energetically in the sinking of the shaft, which is now down 50 ft, and his labors thus far have been rewarded by the appearance of many rich streaks of the precious metal in the rock which is being taken out. The "old man" is full of hope, and pronounces it the best thing his eye has met for the last quarter of a century. At a depth of 80 ft he intends to cross-cut. The assays thus far are very favorable. The rock is similar in appearence to that which was met in the early days of the Golden Chariot. It shows considerable antimony, and bears evidence of richness, which increases as the shaft goes down. The owners will cross-cut at a depth of 80 ft, and something pertaining to the character of the ledge, which is quite large, will soon be more definitely known. The claim was located in 1865. It has been worked since the 10th of August by Messrs. Kelsow and Blackinger. The former will soon build a house on the ground, and remain for the winter on the spot where his hopes for the future are centered.

Empire.—The rich strike just reported in the Empire turns out, according to all accounts, to be a *bona fide* and magnificent development. A sample of the rock picked up from the ledge, which has just been reached, has all the characteristics of first-class ore. A piece exhibited yesterday at Glover & Co.'s is rich in streaks of gold, and has attracted much attention. It will assay about $6,000, and several parties who have been working in the mine pronounce the ledge the best in the camp. The discovery was made at a depth of 50 ft, where the surplus of water will prevent immediate active operations. The mine has not been worked on a large scale hitherto, there having been at work during the summer six contractors, two bucket tenders, two engineers and one blacksmith. It is hoped that there will be no delay in pushing the work, as the gentlemen interested in the operations are sanguine of success, and believe that the mine has all the elements of richness in it.

Leonard.—The Leonard mill has been in full blast for several days, and works splendidly. It has 5 stamps and a capacity of 15 tons per day, which is equivalent to the work of an ordinary 10-stamp mill. All the machinery is new and is of the very best description, giving promise of doing the most satisfactory work. A considerable quantity of rock has already been crushed, consisting of 3 lots from the War Eagle mountain, about 60 tons from the Florida mountain, and 1 or 2 lots from Wagontown. The mill is now working on ore from the Elmira, and when this is finished a lot of Pauper ore will be crushed, to be followed by the Poorman ore, of which there are several hundred tons at the mill. There is a force of 10 men employed at the mill, which is kept going night and day. It is in complete running order and is regarded as one of the most compact and best arranged establishments of the kind in the country. Mr. Leonard has also the supervision of operations at the Golden Chariot mill.

Mahogany.—About 70 men are at work in and about the Mahogany. We were shown yesterday by Mr. Thomas, foreman of the mine, 2 large samples of rich rock weighing about 15 pounds each, taken from the 9th level south, and at a distance of nearly 600 ft from the shaft. Mr. Thomas says it is the best rock he has ever seen taken from the mine, and the indications are that there is plenty of it. The ledge is about 2 ft wide and is a continuation of the rich ore shute south, that yielded so favorably some months ago. There are well defined streaks of gold and silver in the new development, and no better looking rock has come from any part of War Eagle mountain. There are about 220 tons of ore at the mine ready for shipment, and as soon as certain questions pertaining to the welfare of the mine are settled, the work of crushing the rock at one of the mills, probably the Ellmore, and the shipment of bullion will go forward without delay.

Poorman.—At the Poorman, active operations are being made for stoping, several timbermen having been employed during the past few weeks. The shipment of ore from the mine will soon be commenced on a larger scale than usual. There is now a large quantity of ore at the Lenoard mill awaiting crushing. This has been mainly taken out of the tunnels. Active work will be begun on the new quartz hoist next week and there will be lively operations at the Poorman before the expiration of many weeks.

Pauper.—The Pauper is looking well, and the developments generally continue to be quite favorable. Mr. Carey, formerly of the Red Jacket, is now foreman of the Pauper.

Illinois Central.—At the Illinois Central work is going actively forward as usual. Abundance of good ore has been met recently, and Supt. Linkton is endeavoring to have a larger quantity crushed. The Cosmos has been running on Illinois Central ore for several weeks.

Ida Ellmore.—Cross-cutting is still in progress at the Ida Ellmore. A considerable quantity of ore has been taken out the past week, and most of it is of a superior quality. Preparations are being made to work the mine on a larger scale; a larger force will be employed early in October, and the quartz on hand will be forwarded to the mill and crushed.

War Eagle.—There is no change to report in the status of operations at the War Eagle mine. A small force is employed there and impression is generally that the mine is capable of doing a good business for its owners.

South Chariot.—The ore which is being taken from the 7th and 9th levels of the South Cheriot is looking first rate. The mill commenced crushing it yesterday, and a favorable return is expected therefrom. There are about 25 men at work at the mine, and a promising fall business is anticipated.

Elmira.—At the Elmira the drift is being run south, and the complexion of the ledge is very encouraging as far as examined.

Wire Work.

For garden seats and arbors where rustic wood work would be inappropriate, those of metel or wire work will be found of the greatest value. Messrs. Eckfeldt & Co., of Clay street, in their large compartment for the display of their manufactures at the Fair, on the right, before entering the garden, produce some fine examples of artistic wire work, in a splendidly ornamented and graceful summer house, plant stands, settees, chairs, and a multitude of other both useful and ornamental articles. Many of these are of almost incomparable beauty in design and workmanship. The pliant nature of the metal they employ is most favorable for the elegant traceries, waving lines and light flowing scrolls which adorn these admirable pieces of furniture. Perhaps, in addition to the forms presented in this fine display, we may be excused in suggesting to this enterprising firm, that some of the most useful of all the metal embellishments for gardens, are arches and canopies of wire work for spanning paths or as affording proper sites for the growth of a variety of elegant climbers. There can be nothing cheaper or more durable, while the gracefulness of these ornaments, when covered with fine climbing masses of *Stauntonia*, or the verdurous tendrils of *Astrolobium niphon*, or even common ivy, is unmatched. The canopies are suitable for plants of less rapid growth, and are in themselves elegant structures, though, of course, still more so when skilfully covered with the tendrils and blossoms of suitable plants. We strongly recommend these useful and beautiful structures to all lovers of elegance in gardening. Trellises and wire work of such light character as wire affords, are very appropriate for such climbers as *Passiflora rhodochiton*, *Cobœa scandens*, the tuberoses, *Tropœoleum*, manraadeas and fuchsias of pendant habit. Trellises fitted to pots, and covered with climbers, make noble window and terrace ornaments.

Two of Wells, Fargo & Co.'s treasure boxes were cleaned out yesterday and the day before in different sections of the State.

The famous trotting mare American Girl fell dead on the track at Elmira, New York, last Saturday. She left a record of 2:17.

All kinds of building is going very briskly in Antioch.

Reports from the national banks are called for.

Galvano-Plastic and Bronze Work.

A very curious collection of galvano-plastic, bronze, gold and silver plating work, may be seen in the Art Gallery at the Mechanics' Fair. One case contains a number of strange looking molds and patterns, and another has a number of statuettes, medallions, figures, etc. Within the railing are shown several ornamental grates, large massive candelabra, bronzes, etc. The articles are unique and many of them are real works of art.

The display is that of R. F. Rochicioli, who has been in business in this city since 1858. He has every facility for conducting the various departments of his establishment, which embraces a considerable range. He manufactures bronze figures, imitation bronze figures, chandeliers and ornamented gold and silver plated work, material for military companies, etc. He also makes seals, stamps, galvano-plastic work, and, in fact, everything in this line. His principal trade lies in the direction of ornamental work for furniture, grates, frames, etc., although he does some very fine bronze work. Some of the large bronze figures exhibited by him are very elegant, and few people imagine that they are made in San Francisco, as they look like French or English goods.

Mr. Rochicioli is the only one here who has turned his attention in this direction. Of late years, since the population has become richer and more permanent, the demand for these ornamental goods has become greater, and considerable work of this character is done to order.

Bronze figures, for instance, either for ornaments or gas lights, can be made in any style or size. He makes his own molds or patterns, so that if any one desires a certain design, by simply furnishing a drawing or sketch the subject can be worked up in metal. The process of casting these bronze figures is quite simple in itself, although the details are difficult to carry out. After the design is selected a model is made by hand in clay or wax, and from this a plaster of paris mold is made. If only a plain pattern a brass mold is easily made from this plaster one, from which to cast similar patterns. But in the case of bronze figures like the figure of a woman with arms outstretched, a man on horseback, or anything of a similar complex nature, the figure could not be taken from the mold without destroying the latter. To remedy this, when the plaster mold is made it is cut in pieces or sections, and another mold cast around them. Each of these sections in plaster is then cast in brass. All these pieces fit together closely and form the mold from which the figure is made. By examining the case in the display, a number of molds, finished and unfinished, will be seen. Of course each piece must be carefully finished up. It will be seen from this that after the molds are all made the work is comparatively easy. Several very handsome bronze figures made in this manner are exhibited by Mr. Rochicioli. Two of "Tancred" and "Florinda," on horseback, are especially fine. Another of "Agriculture" is a well made piece.

When they come from the cast they are, of course, rough, and have to be finished up by chasing. Some of the molds mentioned have from thirty to fifty sections in them.

The galvano-plastic work, another specialty of this exhibition, is curious and interesting. It is a process of reproducing medallions, etc., on a large or small scale, or reproducing busts or figures in basso relievo. A great deal of ornamental work is done by this process, which is not generally well understood. In the eighteenth century two distinguished scientists, Galvani and Volta, revealed to the world the wonderful effects of a power unknown until then. From this discovery the voltaic and galvanic piles are named, which in later times have had so many wonderful applications. Galvano-plastic and electrotyping work are two discoveries resultant from these.

To make a bust, for instance, by the galvano-plastic art, the process is different from that of casting. A model is made in the usual way; then gutta percha, prepared for the purpose, is pressed around the model in such a way as to receive an exact counterpart. The gutta percha is then split down one side, so as to get the model out. It is fastened together again and the seam smoothed over. The inner surface is then coated with plumbago or nitrate of silver, and it is placed in a solution of copper. The positive and negative poles of a galvanic battery are then admitted to the solution, the positive touching the mold, and the copper is precipitated on the surface of the mold, giving an exact counterpart of it. The longer it is left in the bath the thicker it becomes, so that articles can be made of any desired thickness. When removed the gutta percha is taken off and the medallion, bust, or other article is in metallic form. It can then be silver or gold plated, or bronzed, as desired.

Mr. Rochicioli shows a number of specimens of his skill in this line, some for ornament and some for use. Among the latter are a number of plates for stamping leather for Mexican saddles, for book binders, etc. The molds for these being flat, could be made of leather, paper, or plaster of Paris, coated with plumbago. The exact impression of the original is of course taken. These latter patterns are a quarter of an inch thick and of pure copper. Of course any figure or article can be made by this process, and if any one has anything they desire duplicating it can now be done here.

A specialty is made by the exhibitor of ornamental work for fire places, grates, etc. He procures rough castings from the furnace and finishes them up smooth, afterwards nickle or silver plating them, or making them up in bronze. He puts on fine trimmings and ornamental work, making the grates have an elegant appearance. A great deal of this work is done in the East, but has only recently been introduced here, although considerable is now done. Most of the grates and mantel-pieces shown in the Pavilion, were ornamented in this manner by Mr. Rochicioli.

He also does considerable ornamental brass work for buildings, etc. He can make up any desired article in this line from drawings, or draw the designs himself. He has a foundry for fine work connected with his works, and makes ornamental castings of all kinds.

This is a home industry of an artistic nature, and one which is gradually increasing its sphere and giving employment now for from ten to twelve men. The churches, military companies, mantel makers, etc., get their ornamental work done here now instead of in the East. The display in the Fair is composed entirely of articles made at Mr. Rochicioli's works. A fine specimen of galvano-plastic work is the large salver in the glass case. It has upon it the Declaration of Independence with signatures, medallions of Washington, Webster and Clay, and a representation of the Congress of 1776. A number of medals, vases, masonic emblems, military ornaments, busts, basso-relievo plates, etc., are shown in the large case. A few plaster figures, over which a coating of copper has been precipitated by galvanic battery, are also shown. This is a good way of preserving large garden stands, fountains, or ornaments exposed to weather, as they can be bronzed after being covered with copper, so to be impervious to moisture. A visit to the works, Nos. 6 and 8 Tyler street, would be of interest to any one, as will be the display, when it is examined understandingly. Mr. Rochicioli has sacrificed a good deal of time and money to establish this business in California, but is now being paid for his work. Artistic work of this nature is now more in demand than formerly, and the demand is sure to increase steadily from this time forward. Home industries of this sort should be fostered and encouraged.

The Decoration of the Main Centennial Building.—Messrs. A. Goth & Co., of Bethlehem, Penn'a., are now engaged in making experiments in decorating the interior of the main Exhibition building with a new preparation of oiled paper which is designed to take the place, to a certain extent, of frescoing. They have decorated a small strip of the side and roof of one of the main spans of the building, and the effect is very pleasing, it being impossible, by simple observation, to distinguish the decoration from fresco painting. The colors are very brilliant and are capable also of being very delicately shaded. The iron columns supporting the superstructure have been covered with blue paper with stripes down the center, which towards the base of the column are relieved with various colors in fancy designs. The wide panels immediately below the sash are covered in blue, and ornamented with designs in blue, red, black and gold, and coats of arms of the States. Above the sash are small, circular windows, which are covered with transparent paper, decorated with emblematical designs representing the Arts. The construction between the column is blue, and the roof is covered with light drab, the rafters being blue, relieved with red and brown. It has not yet been determined whether this method of decorating the building will be adopted. It is claimed that the paper is durable and entirely water-proof, and much cheaper than any method of painting.—*Philadelphia Ledger.*

Camphor Wood.—Attempts have been made during the past twenty or thirty years to introduce camphor wood for various purposes of cabinet making and trunk work; but though it is light, durable, and not liable to injury by insects, its cost keeps it from being in much demand. What has been used is brought mostly from China, but it grows freely in tropical countries, without cultivation, and especially thrives near the sea-coast, where it may be easily obtained for shipment. It attains large proportions, being sometimes found fifteen feet and upwards in diameter, and proportionly high. It has an agreeable, aromatic odor, and, for trunks and boxes, is admirably adapted, but being double the cost of cedar, will not be likely, at present, to supersede that popular wood. It is strong and durable, and may be extensively used for ship-building. Camphor wood piles have been known to remain in a good state of preservation over a century, and it may be successfully applied to all purposes for which teak-wood is used.

Rich.—We yesterday saw a very rich specimen of quartz rock from the ledge of Joseph H. Colt, of Mormon Basin. If the sample brought into our city is anything like a fair sample, he certainly has a bonanza far surpassing anything ever struck in the most noted mines of Nevada. The gold is thick and heavy on the rock we looked at. We congratulate our friend on his rich strike. We would like to have an interest in his mine.—*Bedrock Democrat.*

The Fast Mail Postal Cars.

The fast mail postal cars of the New York Central railroad were built at the shops of the New York Central and Lake Shore roads, and consist of three styles or classes, one for assorting and distributing newspapers, another for letters, and a third, called tenders, for stowing through mail matter. The one for newspaper service is sixty feet in length, nine feet eight inches wide outside of sills, and is mounted on six wheel trucks. The outside, below the letter boards, is painted almost a pure white, the letter boards being a shade darker. In the center is a large oval raised panel bearing the name "Gov. Tilden," and on either side toward the ends, is a shield, one representing the national coat of arms, and the other a design with the Latin inscription, "Novus Ordo Seclorum." The letter car is fifty feet long and runs on four wheel trucks. Each car is lettered "The Fast Mail," and also with the names of the two roads, N. Y. Central and Lake Shore. There are two double doors on each side, and also two of Ward's mail-catchers for receiving mail bags at the various points without stopping the speed of the train. The interior of the "Gov. Tilden" is fitted up with all the necessary facilities for assorting newspaper mail matter. These consist mainly of ninety-four chutes to which the bags are attached. The letter distributing car is fitted up with 946 letter boxes. The platforms are inclosed with side doors, so that there is communication from one car to the other with but little exposure to the wind and weather. The lighting is by student lamps. The letter distributing car is named "Gov Dix," and has the same ornamental features and general outside appearance as the "Gov. Tilden." The tender cars to which we have referred, are all fifty feet long and painted pure white, except the frezes which are a trifle darker. They also have four wheel trucks. There are no inside fixtures except a double row of stanchions extending from roof to floor, and six candle burners suspended from center of dome. The side lights are wider than usual, and are continuous, without division panels, for the purpose of admitting as much light as possible. — *National Car Builder.*

The Suggestiveness of Smells.

The great practical object of the sense of smell is, doubtless, in man as in other animals, to assist in the choice of food. In this it acts preliminary to the organ of taste; and there exists a natural sympathy between the two organs. Besides this practical employment of the sense, it affords to a man a refined and delicate, and not over-obtrusive enjoyment; silently, and perhaps unobserved, enabling him to stamp an additional character of sweetness upon what is lovely in form and color; and, fortunately, the beautiful in scenery is generally allied with what pleases and gratifies this sense. The mountains of Switzerland we associate with the flavor which the sun exhales from her pine forests. The banks of Tweed's "silvery stream, glittering in the sunny beam," are ever in our minds seasoned with the odor of the whin blossom, among which, in boyhood, we searched for the linnet's nest. A single puff of peat-reek will make the man of business, immured in his counting house, stop his pen that he may muse on the seclusion of the highland glen. Many persons find the suggestive powers of odors greatly superior to those even of vision; the reason may be, that whereas vision at once reveals its object, and in the act satisfies our intelligence, the sensation of scent is generally anticipative, the mind is for a time in a suspicion of suspense, dwelling on the sensation, and busied predicating the cause; the impression thus becomes vivid and indelible. Thus every country and every large city we visit has the distinct savor interwoven with its other wonders into the mind, and which, like a mysterious and invisible genius, hovers over it. The coal smoke of London fills the nostrils of the visitor, and never leaves them; the damp, greasy flavor of the narrow streets of Paris, the turfy smell of Holland, and the putrid effluvia of Constantinople, give a smack and character to each place which is not easily forgotten.—"*The Physics and Philosophy of the Senses,*" *by R. S. Wyld.*

American Street Cars For Russia.—The shops of John Stephenson & Co., in New York, have recently completed and shipped several cars for the St. Petershurg tramway company, of St. Peterebnrg, Russia. That company has also ordered several cars from English and Belgian makers, which are to be used in competition with the American cars, and the final contract for a large number of cars will be given to the maker whose work proves most satisfactory. The cars are somewhat different from those in use in this country, being arranged for twenty-two seats inside, and the same number on the top. The length of the cars is twenty-six feet. As no passenger will be allowed to stand, the cars, when loaded can be drawn by two horses. The roofs are curved, and the seats on the top are reached by stairways at each end of the car. The empty cars weigh about 4,650 pounds and cost, at schedule prices, $1,125 each.

The Imperial mine, at Gold Hill, has begun to turn out bullion. The Douglas mill began crushing ore on the 16th instant, and $8,000 of bullion had been turned out several days ago. The monthly clean-up will probably show a respectable row of figures.

Ice Machines.

Ice is a luxury which few families can indulge in at the prices at which it is generally sold in the cities. During the warm weather people of course feel the want of it, and it is then that it brings the highest prices. It is only of late years that artificial ice, or rather ice formed by machines, has been in use; but generally these machines are so bulky and expensive that their use by families is prevented. Now, however, small machines are made, by which a few pounds of ice can be made.

A machine of this kind can be seen at the Mechanics' Fair, under the stairway of the machinery department. It is manufactured in Paris and exhibited by John Hahn, of 502 Montgomery street, sole agent for the Pacific coast. It is used either to make in ice, ice cream or as a champagne freezer. As few persons understand the *modus operandi* of making ice, some little description of this machine may not be out of place.

The refrigerator is placed in a tub of cold water, with about three-quarters of an inch of water above it. The boiler is then put on the stove and its contents heated until the thermometer attached indicates 130° cent. The refrigerator is then taken out of the tub, and the water allowed to run out at a compartment, and the hole in its lower part is stopped up. The boiler is then put in the tub (the cork being taken out) so as to have it plunge in the water about three-quarters of its hight. Whatever it is desired to freeze is then put in the cylinder and placed in the cistern. The empty space between the cylinder and cistern is then filled with alcohol or brandy. As soon as the refrigerator is wrapped up in a dry flannel or blanket the freezing goes on without further manipulation. The alcohol may be used over and over again. The ice may be detached from the vase by dipping it in water.

The cold is produced from these reasons: The boiler is full of concentrated ammonia, which is everlasting. During the time the heat is applied the ammoniacal gas escapes and passes into a liquid form in the refrigerator. During the freezing the gas forms again and returns to the boiler. It is sufficient to have the water in the tub changed once or twice during the operation to make this second transformation, which produces enough cold to freeze the liquid in the refrigerator.

The machine, when working, must neither be moved or leaned over to any great extent. Whenever the machine has been subject to much disturbance, or when being transported from one place to another, it should be set in one position for at least an hour before using, so that none of the solution may remain in the refrigerator. The latter is then plunged into a bucket of warm water, for almost fifteen minutes, and then placed in its proper position. A funnel is placed in the tub in such a way as to conduct the cold water to the bottom, whilst the warm water escapes by a hole near the surface. In every case the cooler the water the better.

The temperature, 130 degrees, indicated for the heating, is sufficient when the water in the tub is at the ordinary degree of temperature of well water—that is 12 degrees centigrade. If this degree is higher the heating will have to be stronger. For instance, if the water in the tub is at 25 degrees the heating would have to be carried up to 150 degrees.

The length of time required for heating a machine, such as we have described, with a capacity of ten pounds, is fifty-five minutes. One hour and a half is required for a four pound machine. The same time is required for freezing. These little machines may be examined in detail, at the Fair, by those interested.

An Assayer's Paradise.—The *Mining Review*, of Georgetown, Colorado, has the following: Boulder county is the assayer's paradise. Not only can the diligent chemist find ores in plenty upon which to test his skill, but we doubt if there is a piece of rock in the entire county that would not consider itself a disgrace to its paternity if it did not go at least 1,000 ounces, while the vast majority of bedrock and pebbles from the plains to the range, are capable of soaring up to five or ten thousand, without boasting in the least of the feat. And even if an unfortunate piece of granite finds itself lying around loose without a chunk of native silver or virgin gold, or a seam of ruby or glance attached, it never is happy until it has squared things by forming a close acquaintance with a piece of tellurium or bismuth, or some other wonderful and rare element. We reflect, with envy, how frequently the native assayer, there, must be forced to gather up his big assay buttons, melt them into a gold and silver brick, express them to Denver in his valise, and then follow to spend a few jolly days in the metropolis.

The Brunswick mill, on the Carson river, has been purchased by the Consolidated Virginia mining company, and in a few days will be started up on ore from the Consolidated Virginia mine. This mill has fifty-six stamps, twenty-six pans and thirteen settlers. The motive power is water, with a Leffel turbine of fifty-six inches. The mill is capable of crushing 170 tons of ore per day. This mill will now be run upon Consolidated Virginia ore, and shipments have already been commenced. This will add about $500,000 per month to the crushing capacity of the company.

Useful Information.

A Novel and Startling Proposition.

The *Scientific American* proposes a new and somewhat startling substitute for hanging, and some of the minor forms of punishment. We quote from that paper, as follows:

Our suggestion would therefore be that such a portion of the criminals convicted from day to day, as might be found available, should be turned over to boards of surgeons and physicians, duly appointed, under whom they might be used for the investigation of sanitary problems, for the good of humanity.

For example, men convicted of capital crimes, instead of being uselessly hanged, might be employed in the study of diseases usually fatal, or of other diseases whose effects in their various stages would need to be studied anatomically. Especially atrocious murderers might be reserved for cases involving vivisection. Criminals of lower grades could be utilized in the study of diseases of minor severity, according to their physical adaptation and the nature of their crime. Having their subjects under absolute control from the inception of a disease to its termination, the investigator could not fail in time to arrive at certain knowledge both as to its prevention and mitigation, if not its cure. Medicine is full of problems whose solution might be greatly hastened by such means.

The same may be said of other departments of social science. How for, for example, is the criminal diathesis curable, and under what conditions? What is the comparative influence of the different sorts of mental and moral training? How can the taint of hereditary crime be averted? How are the various grades of criminality affected by surgical operations, especially those calculated to make the perpetuation of hereditary crime impossible? And how far may the subjects of such treatment be safely allowed at large?

But the field of investigation is limitless. The possible advantages of its systematic prosecution are correspondingly great. The right of society to defend itself against its internal enemies, even to the taking of life is unquestioned. To attempt it by means of punishment has proved unavailing and costly. It is time that a different plan be tried. Suppose we sink the idea of retribution—if need be, of reformation also—and seek to make all human vermin first harmless, then useful, either by their productive labor or by their subjective contributions to human knowledge for the protection of health and the saving of life. * * * We are disposed to think that the possibility of basing made a subject for the study of small-pox, cholera, typhoid fever, or even a bout of measles or the mumps, would restrain a pickpocket or a burglar quite as efficiently as the chance of a few weeks on the island, or a few months at Sing Sing. At least the knowledge gained by means of him and others like him, would go far to recompense society, for all it might suffer from his depredations.

A new and remarkable variety of bamboo has been brought before the French Acclimatization Society by M. Ed. Renard. This bamboo comes from the distant provinces of Honan and Su-Tchaen, China. Contrary to the usual form of stem growth, this bamboo is said to be veritably square in its cross section. At one time it was thought that bamboos of this kind were produced by pressure from the round bamboo; but M. Renard states that the canes grow in the form exhibited, and he placed at the disposal of the Society a bundle of specimens which he had collected in Japan. This bamboo grows from thirty to thirty-five feet in hight, in very close clumps. The bark is of a deep green color, which becomes of a lighter tint as it dries, but never turns to pure white. Its stems without exception are square, or square with the corners rounded off. The bamboo is described as being very straight, uniformly tapering, elastic, and admirably adapted to the manufacture of fishing rods. M. Renard attempted to send home a live specimen of this bamboo, with stems and roots, but although he carefully packed the specimens in earth in a cask sawn in halves, when they arrived at Brest, which chanced to be at the time of the French war, they were thrown into the River Garonne. Other varieties of bamboo, which were sent at the same time, unfortunately shared the same fate.—*American Artisan.*

A screen or blower of wire gauze, from thirty-six to forty wires to the inch, placed in front of range or stove fires, will prevent, it is said, smoke coming into the room when the chimney fails to draw well.

To prevent condensation in a steam pipe laid under ground, place it inside another larger pipe, filling the intervening spaces with pulverized charcoal. The outside pipe should be watertight.

Paint skins, boiled with linseed oil, and having, while hot, a quantity of sand and lime stirred in until the requisite thickness is obtained, make a durable cement for leaky roofs.

The evaporative efficiency of American anthracite and American bituminous coal is in the proportion of 8·9 to 9·9.

Butter is said to be a very sensitive reagent to reveal the presence of copper.

Plating and Gilding without a Battery.—A very useful solution of silver or gold for plating or gilding without the aid of a battery may be made as follows: Take, say, one ounce of nitrate of silver, dissolved in one quart of distilled or rain water. When thoroughly dissolved, throw in a few crystals of hyposulphite of soda, which will at first form a brown precipitate, but which eventually becomes redissolved, if sufficient hyposulphite has been employed. A slight excess of this salt must, however, be added. The solution thus formed may be used for coating small articles of steel, brass, or German silver, or by simply dipping a sponge in the solution and rubbing it over the surface of the article to be coated. I have succeeded in coating steel very satisfactorily by this means, and have found the silver so firmly attached to the steel (when the solution has been carefully made) that it has been removed with considerable difficulty. A solution of gold may be made in the same way, and applied as described. A concentrated solution of either gold or silver thus made, may be used for coating parts of articles which have stripped or blistered, by applying it with a camel hair pencil to the part, and touching the spot at the same time with a thin clean strip of zinc.—*Ex.*

The paper upon which the Bank of England notes are printed has been made, since 1791, at Laverstock, Hants. It is noted for its peculiar whiteness; its thinness and transparency; its crisp and rough feel; its water mark—made in the paper, and on the same side as the printing; its three uncut edges, and its strength. It is made of new linen and cotton. A bank note will support thirty-six pounds before it is sized, and it is thought will afterward support a man for years, if it is for a right amount.

Using Hard Water for Steam.—When boilers are ordinarily fed with hard water, it is worth while to save the drippings of the exhaust pipe, the condensation of the safety valve blow-off, and that from the cylinder, and use the water thus obtained to fill the boiler after blowing off. The result will be surprising in effect in loosening scale. So says the *Scientific American.*

Carbolic Acid for Cattle Disease.—Carbolic acid is being used in England as a preventive and cure for the cattle disease. An Essex farmer informs the London *Times* that he had used carbolic acid freely, and that out of about 1,000 head of cattle he had not lost one.

Good Health.

Dietetic Effects of Water.—Certain experiments made by a French savan, with the view of ascertaining how far the phosphate of lime in bone may be replaced by other phosphates, have been used by Mr. W. J. Cooper, of London, England, to illustrate how profoundly the bodies of animals are influenced by the waters they drink. This is an aspect of the water question which will be new to most people; but there is no doubt that the composition of the body is materially influenced by the mineral constituents of the fluids we habitually drink. The active effects of several mineral waters upon the functions are well known; it is not so generally known that water from artesian wells, so pure from organic pollution, sometimes contains sulphate of magnesia and other salts to such a degree as to be positively injurious. On the other hand, in some districts in Holland, where there is only rain water to be obtained for drinking purposes, softening and distortion of the bones are frequent. That, as shown by the experiments referred to by Mr. Cooper, the use of natural waters may tend to alter the structure of our bodies, introduces another element into the much-vexed question as to the proper source whence to draw the supplies of potable water for towns, by showing that the inorganic impurities of water are of more importance to health than they have been usually considered; while it lends support to the opinion that the same conditions have something to do with the goitre and other glandular affections endemic over certain regions.

Arsenical Wall Papers Again.—This matter has been so frequently brought before the public of late, and so many facts adduced to show the dangerous character of arsenical papers, that we are persuaded but few people place a paper upon their rooms without taking the precaution to know that the colors are free from this dangerous poison. Still, cases do yet once in a while come up, where the proper precaution is not used. The latest case which has come to our attention, is one where unmistakable symptoms of arsenic poison were found in a family, which was traced directly to the paper upon the walls. It was found on examination, that upon the walls of their house, out of seven kinds of paper covering them, six contained the poisonous mineral to a greater or less, in one case to a very large, amount. On leaving the house, preparatory to the removal of the paper, the family speedily got rid of the symptoms of arsenical poisoning. Cases like this show the necessity that exists for the protection, by legislative enactment, of the public health to a greater extent than is at present afforded.

Growth of Country and City Boys.—According to Mr. Oalton, country boys of fourteen years, in England, average one and one-fourth inches more in hight, and seven pounds more in weight, than city boys of the same age, as shown by the examination of a large number of boys in country and city schools.

The Treatment of Fever.

In an article in the Dublin *Medical Journal*, Dr. Jones reaches the following conclusions:

1. That in the treatment of fever, typhus and other forms, too much reliance has been placed on alcoholic stimulants, and that fashion, rather than reason, has swayed many in their indiscriminate employment.

2. That the percentage of cases requiring such stimulants is a low one; and that while our administration of them, as regards quantity and kind, must depend entirely on the condition of the patient, still the utmost caution (with our present knowledge of their physiological action) is required.

3. That in digitalis we have a powerful cardiac stimulant, which, while it gives force to the heart, does not do so at the expense of the system, but rather is a conservative agent, which controls expenditure and limits waste of vital action; always, of course, remembering that a large number of cases will recover without any specific treatment save that care and guidance which provides for the wants of the system and secures the patient from the risks of complications. The digitalis appears to be indicated in the early periods of many cases of typhus in which we have a rapid pulse and high temperature range, regulating our administration by its effects on both, using it rather with the object of guiding the patient up to a certain point than of curing the disease.

Perspiratory Glands.—The perspiratory glands of the skin, says Dalton, are scattered everywhere throughout the integument, being most abundant on the anterior portions of the body. They consist each of a slender tube, about one-fourhundredths of an inch in diameter, which penetrates nearly through the entire thickness of the skin, and terminates below in a globular coil, very similar in appearance to that of the wax glands of the ear. These glands are very abundant in some parts. On the posterior portion of the trunk, the cheeks, and the skin of the thigh and leg, there are, according to Kranse, about 500 to the square inch; on the anterior part of the trunk, the forehead, the fore arm, and the back of the hand and foot, 1,000 to the square inch; and on the sole of the foot and palm of the hand about 2,700 in the same space. The whole number of perspiratory glands is not less than 2,300,000, and the length of each tubular coil, when unraveled, about one-fifteenth of an inch. The entire length must be not less than 153,000 inches, or about two miles and a half. The fluid derived from this extensive apparatus is the perspiration. It is a clear, colorless, watery liquid, with a distinct acid reaction. Its constitution is as follows: Water 995·00, chloride of sodium 2·23, chloride of potassium, 0·24, sulphate of soda and potassa 0·01, salts of organic acids with soda and potassa 2·02—total, 1,000·00. Any sudden checking of the action of these pores is very hurtful, as their free action is one of the requirements of a healthy body. Closing of the pores of the skin by the use of certain washes or powders to prevent excessive perspiration, as is sometimes done with the feet, where they are most numerous is a dangerous experiment.

Insulation of the Bed in Rheumatism.—Dr. E. Playter, of Toronto, gives a case in the *Canada Lancet*. The patient was ordered to be insulated, which was done by placing the legs of the bedstead in four glass salt-cellars. The next day he was decidedly easier, and continued to improve rapidly, so that he was entirely free from pain in three or four days more, and able to walk about the house. The constitutional symptoms in this case were not of a very marked character. The heart's action was labored and irregular in the beginning, but not quickened, tongue slightly coated, white, with considerable thirst, but perspiration not profuse; though these symptoms, excepting the heart's action, were gradually becoming more aggravated up to the time when insulation was tried. The patient had had two previous attacks, similar, but of much greater duration; from which he had entirely recovered. His father had suffered from two or three very severe attacks of acute rheumatism. Dr. Playter adds, "One such case does not prove much in favor of insulation, but the improvement in the one above referred to, commenced earlier, was more rapid and decided than that of any other case of the like severity which I have treated, in a practice of about fifteen years."

Chinese Treatment of Small-pox.—The Shanghai *Gazette* states, that shortly before the death of the late Emperor of China, a gigantic image, the goddess of small-pox, was paraded round the city of Pekin in solemn procession, and then taken into the very bedroom of the dying youth, where it was worshipped and honored with many propitiatory offerings. As, however, the goddess continued obdurate, she was subjected to a severe thrashing and other insults, and finally burned. The fatal result of the attack was, we suppose, her revenge for the maltreatment.

Hygienic Training.—The good resultants of systematic training in hygiene, under the direction of a regular professor, are shown at Amherst college by the fact that, according to a record kept for the last fourteen years, there is a large and constant decrease in sickness from the beginning to the end of the college course, the freshmen being always the most sickly, and the seniors the most healthy class.

Domestic Economy.

Choice of Meat, Poultry and Fish.

Beef.—The grain of ox beef, when good, is loose, the meat red, and the fat inclining to yellow. Cow beef, on the contrary has a closer grain, a whiter fat, but meat scarcely as red as that of ox beef. Inferior beef, which is meat obtained from ill-fed animals, or from those which had become too old for food, may be known by a hard, skinny fat, a dark red lean, and in old animals, a line of horny texture running through the meat of the ribs. When meat pressed by the finger rises up quickly, it may be considered as that of an animal which was in its prime; when the dent made by pressure returns slowly, or remains visible, the animal had probably passed its prime, and the meat consequently must be of inferior quality.

Veal should be delicately white, though it is often juicy and well flavored when rather dark in color. Butchers, it is said, bleed calves purposely before killing them, with a view to make the flesh white, but this also makes it dry and flavorless. On examining the loin, if the fat enveloping the kidney be white and firm looking, the meat will probably be prime and recently killed. Veal will not keep so long as an older meat, especially in hot or damp weather; when going, the fat becomes soft and moist, the meat flabby and spotted, and somewhat porous like sponge. Large overgrown veal is inferior to small, delicate, yet fat veal. The fillet of a cow-calf is known by the udder attached to it, and by the softness of the skin; it is preferable to the veal of a bull-calf.

Mutton.—The meat should be firm and close in grain, and red in color, the fat white and firm. Mutton is in its prime when the sheep is about five years old, though it is often killed much younger. If too young, the flesh feels tender when pinched; if too old, on being pinched, it wrinkles up, and so remains. In young mutton, the fat readily seperates; in old, it is held together by strings of skin.

Sweet Potato Pudding.—To a large sweet potato weighing two pounds allow half a pound of sugar, half a pound of butter, one gill of sweet cream, one gill of strong wine or brandy, one grated nutmeg and a little lemonpeel, and four eggs. Boil the potato until thoroughly done, mash up fine, and when hot add the sugar and butter. Set aside to cool while you beat the eggs light, and add the seasoning last. Line tin plates with puff paste and pour in the mixture. Bake in a moderate, but regularly heated oven. When the puddings are drawn from the fire, cover the top with thinly sliced bits of preserved citron or quince marmalade. Strew the top thickly with granulated white sugar, and serve with the addition of a glass of rich milk for each person at table. The above quantity is sufficient to fill three plates, and one quart of flour will furnish enough pastry for so many puddings.

Another sweet potato pudding recipe is the following, furnished by the New Orleans *Home Journal*: Take twelve or fifteen nice sweet potatoes (yams always preferred), boil them until well done; then peel, mash with a pestle or rolling-pin, and rub through a sieve to get out all strings or tough fibers; now add sugar to taste, a half-dozen eggs, butter to make it very rich, ground cloves, nutmeg and sweet milk enough to make it the consistency of custard; you can pour the mixture into a buttered pan, and bake. Nice fresh lard can be used instead of butter, but in smaller quantity.

Preserving Eggs.—Dr. Sacc, of Switzerland, has again brought forward the method of preserving eggs by covering the eggs with a layer of paraffine in the proportion of one kilogramme to about three thousand eggs. When this has been done, they neither diminish in weight or freshness for months. Dr. Sacc has shown, by eggs preserved in this way for two years, that they did not present any trace of decomposition. Of course, to preserve eggs, in a profitable manner, they must be perfectly fresh at the outset, for paraffine does not prevent the process of decomposition from continuing if already begun. One of the most common causes which lead to the spoiling of eggs, is the fact that broody hens sit on the nests and keep the eggs warm. Paraffine has several advantages over gum, which has been used; it is cheaper and fewer eggs are spoiled, gum and other substances being an inadequate agent in stopping the pores of the shell. The eggs after being coated should be kept in a cool place. Tallow mixed with rosin or beeswax is the best substitute for paraffine.

To Preserve Bread for Long Periods.—Cut the bread into thick slices, and bake it in an oven, so as to render it perfectly dry. In this condition it will keep good for any length of time required, and without turning mouldy, or sour, like ordinary bread. The bread thus prepared, must, however, be carefully preserved from pressure, otherwise, owing to its brittleness, it will soon fall to pieces. When required for use, it will only be necessary to dip the bread for an instant into warm water, and then hold it before the fire till dry, after which butter it, when it will taste like toast. This is a useful way of preserving bread for sea voyages, and also any bread that may be made too stale to be eaten in the usual way.

MINING AND SCIENTIFIC PRESS

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We wish to thank those subscribers who send in their renewals to the PRESS promptly as regularly as the year comes round. It saves us much expense in commissions for collections and renewals. May we not request more of our good patrons to do so!

SAMPLE COPIES.—Occasionally we send copies of this paper to persons who we believe would be benefited by subscribing for it, or willing to assist us in extending its circulation. We call the attention of such to our prospectus and terms of subscription.

San Francisco:

Saturday Morning, Oct. 9. 1875.

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WHAT WENT OVER THE CENTRAL PACIFIC RAILROAD LAST MONTH.—During the month of September the freight shipped over the Central Pacific railroads was as follows, the amounts being given in pounds: From San Francisco—Wine, 387,391; rags, 7,745; wool, 3,718,203 (7,300 bales); cigars, 5,373; canned goods, 94,347; salmon, 1,162,656 cases; salmon, 358 325 barrels; seal skins, 493,333; fur seal, 8,777; sea otter, 3,566; land otter, 245; beaver, skins, 6,595; mink skins, 614; deer skins, 2,578; marten skins, 705; bear skins, 365; silk goods, 80,743; pickles, 3,833; refined borax, 65,559; pelts, 43,130; tea, 3,109,786; Chinese merchandise, 11 370; wheat, 21,671; barley, 507,821; salt, 19,496; ivory, 16,963; quicksilver, 98,070; leather, 23,759; hops, 57,426; brandy, 13,027; antimony, 19,240; glue, 42,925; syrup, 42,180; dry hides, 233,495; woolen goods, 16,900; honey, 65,319; horses, 20,000; tobacco, 1,043; red oil, 20,400; mustard, 5,392; dried fruit, 5,733; whalebone, 2,985; merchandise, 86,874. Total, 10,885,919.

THE Clay Street railroad company contemplate running their line to the Oakland ferry landing. The design is to start from Dupont street on trestle work and keep that level to the terminus.

IT is expected that the steam hoisting works at the Livermore coal mine was started up this week.

Another Banking Epoch.

This has been another sensational week in our banking history; though this time it has been of the most cheering, hopeful character. On Saturday of last week the Bank of California resumed business, under circumstances almost romantic, but in strict keeping with the character of our people. The syndicate appointed to reorganize the bank had evidently prepared for the worst, and the assurance of this on the part of the public, created a degree of confidence which produced the best results. The great rush was for depositing, and not for the withdrawal of money; no one calling for money, only those who actually needed it. The deposits during the day amounted to $1,130,000; and there were paid over the counter, $254,000; leaving a balance in favor of the bank of $876,000. There was nearly $4,000,000 in the vaults when the bank opened, and it closed with about $4,500,000 ready for use. It opened amid the firing of cannon, the hoisting of flags, and the cheers of thousands of rejoicing citizens. It kept open an hour beyond its usual time of closing, and when it closed there was a general feeling of satisfaction.

If this were to be properly accepted as a mere burst of enthusiasm, and indication of California pride and chivalry, the more prudent portion of the community would have found little cause for rejoicing in the occasion; but its effect in restoring business confidence—our greatest need at the time—was remarkable; and those whose feeling toward the institution were of a suspicious or unfriendly character, are free to acknowledge the advantages conferred on the community.

On the Monday following, the Nevada bank, popularly known as the "Bonanza bank," began its career; and a brilliant career it is to be, according to the faith of the public. This opening was less melodramatic in character, but crowds of spectators were in waiting to witness the opening scene. During the day the inside and workings of this promising institution was the sight that every one, who could, must see. We passed in and out with the curious throng, to admire like the rest, the splendid equipments and nice workings of the grand financial review; and if we should declare that when we passed out we did not "cast one longing, lingering look behind," at the stacks of the root of all evil there displayed, we should simply claim to be better than our neighbors, and this we endeavor to guard against.

About a million dollars was to be seen there, and during the day about half a million was received on deposit. The Nevada bank is supposed to have had in its vaults on Monday night, $5,500,000 in coin, and the Bank of California about $4,500,000. The remaining coin in the city is estimated at between six and seven millions. This is a mighty power in the land; but we are charitable enough to believe that it will, in the main, be used for good rather for evil; and that it will be allowed to go forth, hand in hand, with earnest, hopeful, intelligent labor, to secure the permanent prosperity and happiness of the country!

Close of the Great Industrial Fair.

On the evening of the date of this paper, the great Industrial Exhibition, under the auspices of the Mechanics' Institute, closes its doors, probably for two years. This great undertaking has been a success in every sense of the word. The unqualified praise which it will undoubtedly receive, should be about equally distributed in three quarters. First in order, according to the popular verdict, and we are not disposed to disagree, come the Directors of the Fair, who deserve great credit for the grand scale on which the exhibition was conceived, and the perfectness of the innumerable details. Each one of these officers may well claim that he has "done the State some service;" not in "moving accidents in flood and field," but in the sphere of mechanical skill and artistic taste; where California is at the present time in most need of their service.

Next in order come the host of the exhibitors—about a thousand in number—who have given ocular proof that California is not behindher sister States in the arts and industries. In the various mechanical departments the display included a wonderful variety of articles, from the ordinary requirements of housekeeping to the highest achievements of mechanism and science.

Third in number, but fully equal in honor on the credit roll, comes the public, who have not only furnished, what is familiarly termed "the needful" in sustaining the meritorious enterprise, but have supplied—what is as greatly needed under the circumstances—a thorough appreciation of the completeness of the exhibit. The characteristic liberality of our people would have supplied the requisite money for supporting even this vast undertaking, and the mere love of novelty would have been sufficient to cram the vast Pavilion for a limited number of days and evenings; but something more than these incentives was needed to keep up the almost unvarying flow of interested visitors during the long period of eight weeks.

Utilizing Angora Goat Skins—A New Industry.

On the left hand side isle of the Mechanics' Pavilion, before reaching the stairs, Mr. G. S. Andrews makes a fine exhibit of furs and skins, for robes, mats, rugs, gloves, ladies' cloaks and sacques, dress cap and coat trimmings; also, of skins tanned, in a superior manner, for saddlers' and upholsterers' work. This entire display, in all its variety, is from the Angora robe and glove manufacturing company, of San Jose, for which company Mr. Andrews, the exhibitor, is agent for this city. This is a new company recently formed and put into operation for manufacturing such articles as above enumerated, from Angora goat and deer skins.

This company has the sole right to use, in this State, a new and valuable process for tanning and dyeing, by which a very superior article is produced. By this process a goat skin is tanned so as to be almost as soft and pliable as a buck-skin; while it is not liable to the disadvantages of the latter in the absorption of water, from which peculiarity buck-skin gloves are of but little use in rainy weather. The colored mats and robes exhibited by Mr. Andrews are of a very superior quality, and of fast colors. This branch of manufacture is, we believe, quite new on this coast; or at least it has never before been made a success here.

Some of the samples of the Angora goat skins exhibited are really beautiful. The fine texture and beautiful lustre of these skins render them really elegant and very desirable. The exhibit was received too late for entry in the catalogue and for competition for premiums, otherwise, we presume, this new industry would have received honorable mention from the committee of awards.

We understand that, at the suggestion of several of our bookbinders and others who make use of morocco in their business, this company proposes to undertake also the manufacture of morocco, as it is evident that goat skins tanned by this new process will produce an article of morocco much superior to that which is obtainable from the East. This industry will furnish another incentive to the prosecution of the Angora goat business, as by it the skins and pelts will receive additional value. Cash is paid by the company for both goat and deer skins, when properly prepared. Skins should be thoroughly salted when first taken from the animal, and dried in the shade. Sun-dried skins are worthless.

Committee to Raise Funds for the Centennial.

At a meeting of the State Board of Centennial Managers on Tuesday afternoon last, it was determined that the Finance Committee should approach citizens for funds on two propositions: first, that they should obtain donations, and secondly, that they obtain loans subject to the condition that the money be repaid when the Legislature makes an appropriation in aid of the Centennial. The following committees were appointed to collect funds, to pay expenses, and to aid exhibitors, etc.:

Committee for San Francisco—Messrs. Jacob Deeth, T. J. L Smiley, J. F. Snow, J. P. H. Wentworth, S. G. Gardiner, W. K. Vanderslice, P. A. Campbell, Irving M. Scott, Ira P. Rankin, H. H. Bigelow.

For the counties in which the members reside, to wit: Gov. S. G. Downey, Los Angeles; Dr J. L. Ord, Santa Barbara; Major J. R. Snyder, Sonoma; Hon Drury Melone, W. H. Mills, Sacramento; Hon. Jacob R. Neff, Placer; Hon. J. L. Hebron, Hon. B. W Sergeant, Monterey; Hon. R. K. Porter, San Diego; Hon. Joseph Aram, Santa Clara; Wallace Everson, Alameda; General J. B. Frisbie, Solano; Hon. Austin Sperry, San Joaquin; Hon. Chas. Gordon, Yuba.

J. L. Creigh was chosen President, and Jacob Deeth, Secretary, to whom all applications for space and information must be made.

W. T. Whittier was elected Treasurer.

The Board adjourned to meet at the call of the President.

A MAN named Peter Cleary met with a terrible fate on Battery street a few days since. While engaged in hoisting a large block of marble by hydraulic pressure, he put his head underneath to see that all was working satisfactorily, when the support gave way and the great mass fell upon him, crushing his skull in and killing him instantly.

THE editor of the Placer *Herald* has been visiting the Lincoln pottery. The quality of pipe turned out at their pottery is said to excel that manufactured in the Eastern States or Europe.

THE London and San Francisco bank is to increase its capital from $3,000,000 to $5,000,000.

AN effort is being made to start metallurgical works in Los Angeles.

THE San Pedro street and East Los Angeles horse railway is now being pressed forward.

Garratt's Brass Foundry.

The brass foundry and machine works of Wm. T. Garratt are well represented at the Fair, the display being as ornamental, as well as useful, as any in the machinery department. A very large upright show case filled with every imaginable variety of brass goods; a row of handsomely ornamented steam pumps, all at work; a collection of bells of all sizes; piles of pure copper, Babbitt and Garratt metal; large globe valves, and the shine of brass in all directions, makes up a display which attracts the attention of even the most careless observer.

Church and steamboat bells are shown, weighing from four pounds up to 1,000 pounds, all made at these works, in this city. With these samples of modern workmanship is placed a bell weighing about 100 pounds, and which is nearly 200 years old. It was made in Mexico, and bears the inscription "Jesus Maria, 1690," being evidently a convent bell. There is also a medallion, a crucifix and a coat of arms upon it in high relief. This bell is made of the best bell metal, and the design and workmanship compares very favorably with those of more modern manufacture.

In the large and handsome show case placed against the wall at the rear of the exhibit, are shown many varieties of brass goods, all finely finished and neatly and artistically arranged. Among them are steam whistles, steam gauges, vacuum gauges, hydraulic hose pipes and nozzles, gauge and cylinder cocks, nil cups of all patterns, firemen's torches, Anderson's patent revolving sprinklers, steam cocks, etc. The exhibit also contains finished check and globe valves, hydraulic nozzles proper for mining, large iron shell globe valves, brass and composition globe valves, Coffin's patent globe valves and water gauges, etc.

A unique looking pile of metal bars of different kinds is an attractive feature. In this may be seen both California and Lake Superior refined copper. The California copper is shipped from here to Baltimore in ore, and returned to us refined metal. A number of bars of Babbitt and Garratt metal are also displayed, the Garratt metal being applicable to the same purposes as the well known Babbitt metal.

A prominent feature in this exhibit is the Hooker steam pump, several sizes of which are shown. Four of these pumps, of different capacities, have been mounted on neatly arranged stands, and are kept constantly in operation. The bright parts of these pumps are nickel plated, and, altogether, they make a very handsome appearance. The largest one is a No. 8, with 12-inch steam cylinder, 8-inch water cylinder and 16-inch stroke. Its capacity per hour is 30 000 gallons, 300 feet high. The No. 6 shown has an 8-inch steam cylinder, 5-inch water cylinder and 12-inch stroke, with a capacity of 7,500 gallons per hour, at ordinary speed. No. 4 has a 5-inch steam cylinder, 3-inch water cylinder and 8-inch stroke, with a capacity of 2,500 gallons per hour. No. 1 has a 2¾-inch diameter steam cylinder, 1½-inch diameter water cylinder, 4-inch stroke, with a capacity of 500 gallons per hour at ordinary speed. The No. 6 is the one which is to be used at the competitive trials of pumps at the Fair.

Several styles of this make of pumps are shown—the Hooker steam, Hooker double acting and force and deep well and ship pumps. All of these are made by W. T. Garratt. This direct acting steam pump has an enviable reputation on this coast, where it is in use for mining purposes, feeding boilers, fire purposes, irrigating, etc. It has no tappets or tappet arms, valve rods, eccentrics, or any complex outside gear. Its working parts are covered and protected. Over 5 000 of the Hooker deep well pumps are in use in California alone, some of them working in wells 140 feet deep. They serve as a domestic pump about the farm or garden, being equally well adapted for hand, windmill or steam power. Several important improvements have been lately made in their construction, there having been added brass valve seats and spindles, vulcanized rubber puppet valves and elastic piston packing, to compensate for wear in the cylinders. The body of the pump is made in one casting, without chambers or pointe of any kind.

Mr. Garratt has been in business in this city for many years, and has the largest brass foundry on this coast. He manufactures every conceivable description of brass work for plumbers, gas and steam fitters, engine builders, steamship boilders, railroad and water companies, etc. He is also proprietor and manufacturer of the famous styles of Hooker pumps referred to, and importer of iron pipe and fittings. The line of brass goods manufactured is in endless detail, and would take a good sized pamphlet simply to enumerate.

CLEAN-UP BY THE OMAHA MINE.—The Grass Valley *Union* says that the last clean-up of the Omaha mine was very satisfactory. The result is as follows: 125 car loads of ore crushed; yield of gold 450 ounces, worth here $17½ per ounce, or a total of $7 875, which gives $63 to the load. The sulphurets saved from this crushing have not yet been worked, and their value is not included in the above statement. The sulphurets saved will run the yield up to above $70 a load.

THE Emperor of Brazil is to visit this country.

Metallurgy of the Copper-Silver Ores of Inyo County—No. 6.

[Written for the PRESS by SAMUEL PURNELL.]

Concentration.

There is no branch of metallurgy in which such differences of opinion are held as in concentration. A large number of machines have been invented, almost countless contrivances adopted, and numberless experiments made; but probably in no branch of mechanics have there been so many failures. That which seems easy is in reality very difficult. The concentration of gold sands, or the separation of galena or blende from quartz, by reason of the great difference in specific gravity of the former, and the regular cleavage of the latter, and the crushing of the quartz without cleavage, renders such ores very easy to concentrate. But in case an ore contains various minerals of nearly the same angle of cleavage, the same size of grains, nearly the same specific gravity, carrying also clay and lime and its most valuable constituents in a soft or powdery condition, the difficulties of economically separating such minerals becomes very great, and almost unsurmountable. Such has been found to be the case thus far with the copper-silver and fahl ores of Inyo county. The direction in which success will probably lie is endeavored to be indicated in the following:

Concentration must first of all begin with the miner, by rejecting, as far as he is able, all worthless vein stuff, and only sending up such ore as will probably pay the cost of beneficiation. When the ore is hoisted it may be again overlooked and worthless rock removed. Mud may have to be washed off. The ore is next usually spalled or broken into small pieces with hammers. A further quantity of gangue may be then removed. It is next necessary to resort to machinery to further reduce the size of the pieces of ore.

Crushing in this country, as preparatory to concentration, has been usually performed by stamps, having first passed the ore through a rock breaker. Stamping may be the cheapest mode of pulverizing an ore, but pulverization is just what is to be avoided in concentration. The objections to stamps are that the ore is powdered too much, the natural cleavage of the mineral is neutralized, and the whole mass is reduced to dust. When this is the case, one of the most important prerequisites to economical concentration is rendered impossible of fulfillment—that of sizing the ore. A proper sizing demands the exercise of the greatest experience and much correct judgment. If the particles of ore are reduced below their natural size, a serious loss will be the result; while if they are not fine enough, a portion of the waste will adhere to the valuable matter, and it will be thus impoverished, or the waste will carry into the tailings a large quantity of valuable mineral. Much less importance is attached in this country to sizing than the facts of the case warrant. Most minerals have a particular cleavage and break up into particular shapes. Quartz breaks into pieces of all possible shapes. Sizing can only be omitted with a loss of valuable matter. It is of vital importance that the grains of an ore which are to be concentrated should be as nearly as possible of the same size; as otherwise the smaller surface of ore fragment in proportion to its weight will, in a measure, compensate for the greater density of another, and thus cause it to assume a position in the series to which by its constitution it is not entitled. It is impossible by any mechanical contrivance to regulate the forms of the grains, which depend on the nature of the cleavage, and this circumstance always affects the results obtained. To avoid pulverization by stamps, crushing roller should be used, as then less dust is formed, and the ore particles are mostly in the shape of grains of various sizes. These latter can be run through sizing screens, and thus fitted for separation by fall through a liquid. According to Rittinger the proportion of dust, etc., from rollers is as follows: Grains, 70 per cent.; sand, 20 per cent.; flour and dust, 10 per cent. From stamps, as follows: Sand, 32 per cent.; flour, 32 per cent.; dust, 36 per cent. So although crushing by rollers is slightly more expensive than by stamps, the results are much better. Crushing to coarse sand is required if the silver is finely disseminated in the gangue. The principles of concentration are stated by Regnault as follows:

1st. If bodies differing in form, magnitude and density be allowed to fall from a considerable hight into a tranquil liquid, they will experience different degrees of resistance in finding their way to the bottom, so that they will not all reach it at the same time, but will arrange themselves in a certain order. If these bodies have the same form and dimensions and differ only in density, all these bodies will lose an equal amount of force in passing through the liquid. The loss will be felt most by bodies of less degree of velocity, such as bodies of less specific gravity. They will fall more slowly through the liquid than denser bodies and, arriving last of all at the end of their course, will be found last on the denser bodies in gradnated order, the most dense being at the bottom, and the least dense at the top.

2d. If bodies which fall through the liquid are of similar density and form, but varying in magnitudes, their velocity will be proportioned to their size, and the largest fragments will form the lowest stratum. The bodies being alike in density and form, the resistance varies with the surface.

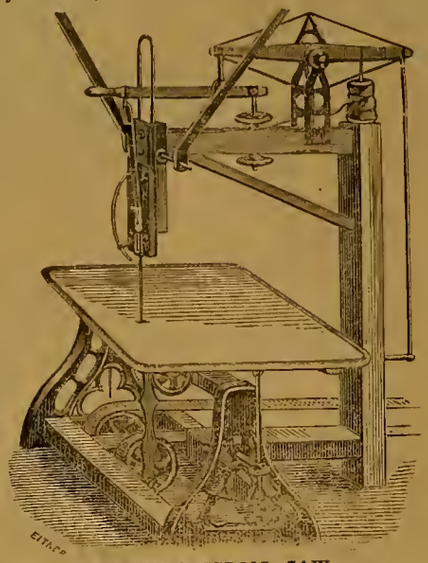
3d. If all bodies have the same volume and density, but vary in form, some being cubical and others flat or in scales, the latter having more surface experience more resistance in passing through a liquid. The cubes will arrive first at the bottom.

As the metalliferous part of a vein is usually much denser than the gangue it is evident, that with proper preparatory treatment, the mineral in its fall will arrive first at the bottom, and will be followed by fragments of mineral and gangue, and the pieces of poor gangue will arrive last. The forms of ore particles will chiefly depend on the molecular constitution of the mineral. Hence it is likely that among ore fragments, all of which have passed through the same riddle, there may be found lamellar pieces of the mineral, and cubical or spherical pieces of gangue. The mineral by its superior density would tend to pass through more quickly than would the gangue; but the latter in consequence of its form, may experience less resistance than the former, and consequently they may arrange themselves according to the inverse order of their densities. Cases of this kind constantly occur in practice.

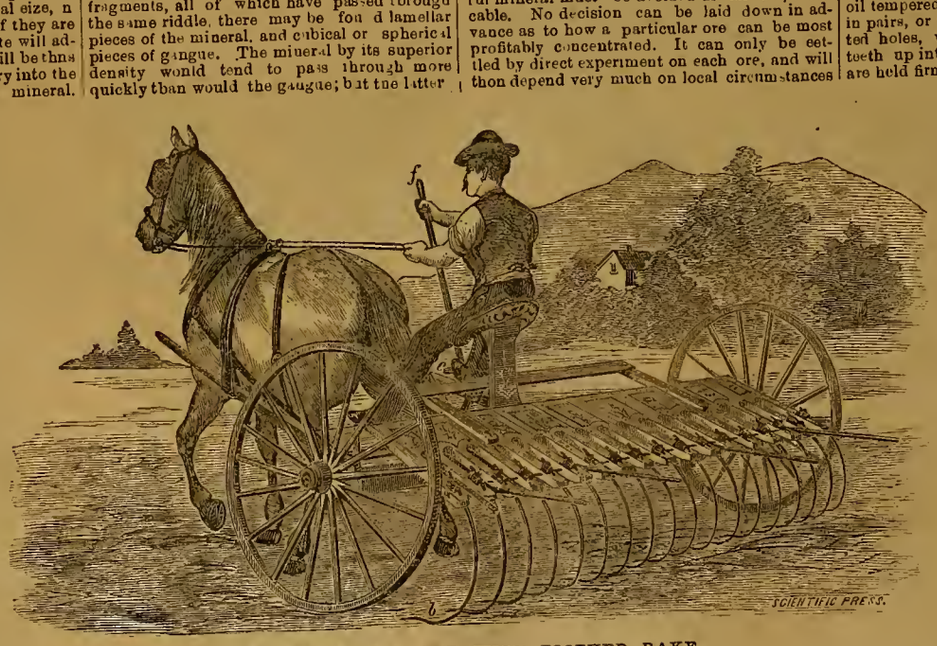
From this some idea may be obtained of the difficulties of concentration; and when it is further considered that in reference to silver ores, especially, a large proportion of the valuable matter when crushed is in the form of dust or slime and liable to float away in the liquid, it will be seen that a proper concentration of these ores is one of the most difficult problems in metallurgy. In such cases separation can only be secured after much labor and care and usually at the expense of a large loss of silver. The concentration of some ores is so delicate that any attempt to concentrate them beyond a given standard will lead to enormous lose. In fahl ores and silver sulphurets generally, the silver is so fine and powdery after crushing that it flows away when subjected to water, and will evade the most delicate contrivances set for its capture. The more finely divided the greater is the loss, and the more imperfect the operation.

All processes of concentration will remove a portion of the unproductive part, and no system will economically remove every part of it. We are compelled to resort to a partial separation only. It would not usually be desirable to separate all the gangue from the ore, even if we could, on account of the absence of economy thereby, and perhaps giving rise to difficulties in the subsequent silver extraction. It may be a question whether there is much profit in concentrating an ore that is to be roasted and treated by a wet process, as the loss in, and cost of concentration, may be more than the cost of passing the inert matter through the furnace and leaching. In every case such questions must be decided by local circumstances.

Kustel, in his work on concentration, lays down its requirements as follows: 1st. Each constituent must be brought to the highest value which can be advantageously given to it 2d. The useful minerals must be concentrated only to the most advantageous degree of purity 3d. All loss of the quantity and value of useful mineral must be avoided as far as practicable. No decision can be laid down in advance as to how a particular ore can be most profitably concentrated. It can only be settled by direct experiment on each ore, and will then depend very much on local circumstances



HANSEN'S SCROLL SAW.



BONNEY'S IMPROVED WIRE TOOTHED RAKE.

proved modern processes, when adapted to specific ores, on a scale of forty tons a day, amounts to about $5 per ton. This does not, of course, include losses.

[To be Continued.]

Hansen's Scroll Saw Machine.

An accompanying illustration shows the improved scroll saw machine, invented by Mr. M. Hansen, of this city. This gentleman is a practical mechanic, and, for a long time before the invention of this improvement, felt the necessity of a saw that could at the same time be run at a rapid speed and keep an equal tension on the saw.

In this machine the inventor has overcome this difficulty. The finest kind of saws, also, can be used, and the most delicate work can be done on it. It can be run at a very high rate of speed, and by a simple arrangement of levers a steady motion is had, so that there is no shaking or jerring to retard the progress of the saw, and, therefore, much more work can be accomplished than with the common spring saw.

This saw is very valuable to the pattern maker, as it has an adjustable table that can be set to any position desired to work the pattern. It is also claimed that all pattern work, except the most intricate, can be done on this without hand drafting. It is built in a substantial manner, and in cost is less than the ordinary spring saw. One of them may be seen in practical operation at 221 Mission street, or at Messrs. Sanborn & Byrnes' stair building rooms, in Mechanics' Mills.

Mr. Hansen is also the inventor of a shaper guard, to protect the hands while operating the shaping machine. There are few mechanics who run these machines but that at sometime lose a finger, or receive a very severe cut, and it is, therefore, very desirable that some guard be constructed that will insure protection. From the construction of those manufactured by Mr. Hansen, we should think they would afford perfect protection, and when they are once before the public, no doubt they will come into general use. Sanborn & Byrnes employ these also in their factory, and express themselves as highly pleased with the result. Mr. Hansen's manufactory is at No. 40 Spear street.

Bonney's Improved Rake.

Mr. O. Bonney exhibits at the Fair a newly invented wire toothed rake, which, as it has some new and ingenious features, is interesting to the agricultural community. From the engraving we have prepared, its peculiarities may be seen by those who have not an opportunity to examine it. The advantages claimed over the ordinary wire rakes are: the teeth are oil tempered, and are connected to wood bars in pairs, or work singly, passing through slotted holes, which prevents side motion of the teeth up into a circular iron head, where they are held firmly by set screws. The teeth have a crooked or circular point, as will be observed at *b*, for the purpose of running sharply upon the ground, gathering everything, or riding over fallen grass.

This is quite an important point. The ordinary teeth scratch the ground all the time. The lower end of these teeth can be made to clear the ground slightly, or rakes close to it as desired. By simply setting the teeth by means of the thumb screws, the points are adjusted to any desired distance from the ground, so in raking over old fields the rubbish is left.

The bars holding the teeth rise and fall independently, thereby allowing the teeth to follow the unevenness of the ground, gathering much closer than rakes with long, rigid beams. The rake is handled with perfect ease, (the draft of the horse being changeable on the hand lever, *f*, on which is a movable foot iron, *c*, for holding the teeth to the ground when raking. A slight draft in the hand lever, *f*, back, easily dumps the load when the rake is in motion. In drawing, the draft of the horse is almost in line, so there is no strain on the hand. By taking the foot from the foot iron, *c*, and drawing the lever toward the driver with the hand, the draft is changed, and the horse dumps the load from the rake in the usual way. This rake is quite simple, its advantages over the primitive rakes being easily recognized. Mr. O. Bonney, No. 221 Mission street, will give any further information desired concerning it.

THE Wilmington *Enterprise* says that soon there will be a sufficient depth of water to admit all the steamers of the coast line. The next step must be either to dredge the upper end of the bay, or extend the railroad to deep water.

ABOUT seven miles of the trackway of the Los Angeles and Independence railway is completed to Los Angeles, and it is advancing at the rate of about three-quarters of a mile a day.

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Our long experience in obtaining patents for Inventors on this Coast has familiarized us with the character of most of the inventions already patented; hence we are frequently able to save our patrons the cost of a fruitless application by pointing them to the same thing already covered by a patent. We are always free to advise applicants of any knowledge we have of previous applicants which will interfere with their obtaining a patent.

We invite the acquaintance of all parties connected with inventions and patent right business, believing that the mutual conference of legitimate business and professional men is mutual gain. Parties in doubt in regard to their rights as assignees of patents, or purchasers of patented articles, can often receive advise of importance to them from a short call at our office.

Remittances of money, made by individual inventors to the Government, sometimes miscarry, and it has repeatedly happened that applicants have not only lost their money but their inventions also, from this cause and consequent delay. We hold ourselves responsible for all fees entrusted to our agency.

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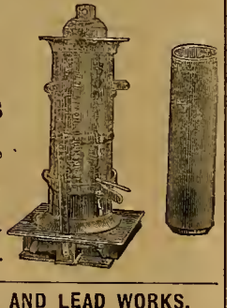

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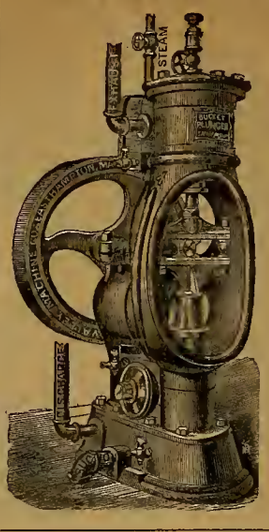

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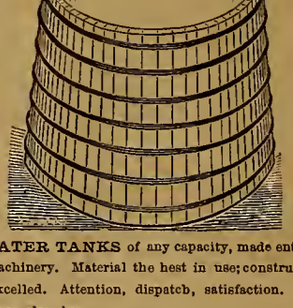

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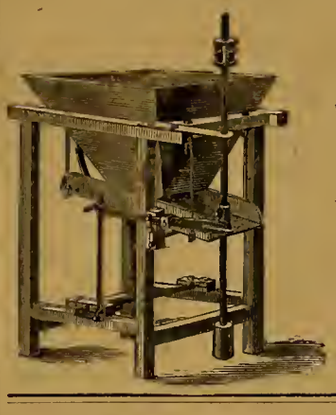

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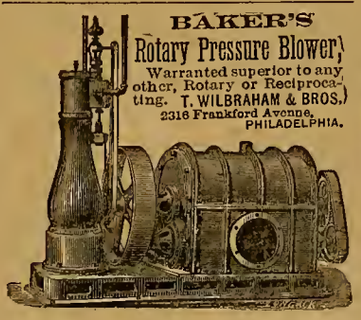

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From two to two hundred Horse Power. Send for illustrated catalogue.

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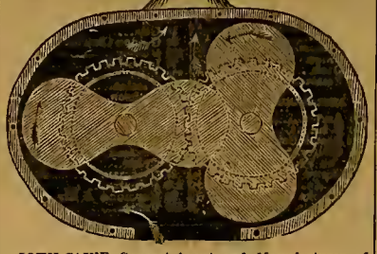

JOHN CAINE, General Agent and Manufacturer of Root's Patent Force Blast Blowers and Portable Forges for the Pacific States and Territories.

Steam Engines, Steamboat, Mining and Agricultural Machinery built to order. Job work of all kinds.

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Iron and Wood-working Machinery, Wood Planers, Lathes, Mitre and Cutting-off Saws, Iron Turning and Screw Cutting Lathes, Planers, Shapers and Drilling Machines, Screw and Scroll Chucks, from the best makers, always on hand and for sale cheap by

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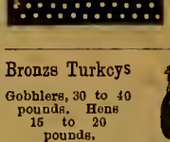

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Gobblers, 30 to 40 pounds. Hens 15 to 20 pounds.

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40 to 50 pounds per pair at maturity.

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THOMSON & PARKER,

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STEAM PUMPS, STEAM ENGINES,

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m6-m2

PATENTS & INVENTIONS.

A Weekly List of U. S. Patsnts Issued to Pacific Coast Invsntors.

FROM OFFICIAL REPORTS FOR THE MINING AND SCIENTIFIC PRESS, DEWEY & CO., PUBLISHERS AND U. S. AND FOREIGN PATENT AGENTS.]

By Special Diepatch, Dated Washington, D. C., Oct. 5th, 1875.

FOR WEEK ENDING SEPTEMBER 21ST, 1875.*

CHURN.—Elias Groat, Napa, Cal.

FEENER FOR THRESHING MACHINES.—Alexander W. Lockhert, Sacramento, Cal.

TIRE UPSETTING MACHINE.—John H. Meriz, Paeo Roblee, Cal.

WASH STAND AND WATER CLOSET COMBINED.—Robert C. Ball, Oakland, Cal.

*The patente are not ready for delivery by the Patent Office until some 14 days after the date of issue.

NOTE.—Copies of U. S. and Foreign Patents furnished by DEWEY & CO., in the shortest time possible (by telegraph or otherwise) at the lowest rates. All patent business for Pacific coast Inventors transacted with perfect security and in the shortest possible time.

General News Items.

ENGLISH HOP CROPE.—A telegram from London, October 5th, states that hop-picking is completed; that is, all that will be picked, many being left on the polee that are not worth picking. It is believed that not less than one-fifth of the crop has failed.

2,694,200 centale of wheat have been received at Sen Francisco for the first qnarter of the currant harveet year. Thie amount ie somewhat lese than that received during the same period in 1873, but more than that received in 1874.

THE Market street car driver who was on dnty 17 hours each dey for 600 consecutive days, hae given out at last and it ie thought he will not recover.

TREASURER NEW states that the western banks have now more circulation than they can nse. Not very consoling to inflationiete.

A CARGO of arms deeigned for the Cuban insurgents has been eeized at Jamaica.

THE etudents dismissed from the State University eome time eince are to he reineteted.

SANGUINE speculatore look for a "booming" time in etocks about the 1st of December.

FIFTY cente on the dollar is what the creditors of Charles Clayton & Co. expect to get.

THE peculative Piuney manaeed to get away with $800,000 belonging to Uncle Sam.

THE Congregationaliets are holding their annual meeting in this city.

TURKO-SERVIAN affairs are getting more and more mixed every day.

EGYPT will send a very complete contrihntion to the Centennial.

THE Turkieh troops heve been defeated by the insurgents.

THERE hae been another outbreak in Misieeippi.

EMPEROR WILLIAM is going to Italy next week.

THE *Jefferson Borden* mntineers will be hanged.

PRESIDENT Grant has gone Eaet.

PECAN.—Several of our cotemporaries are discussing the snbject of planting trees, end with ell of them the nut bearing trees seem to be most in favor. The nut bearieg tree furnishes en article of food always, and the wood of eny nut bearer is valuable ae timber. Not one of the nut bearing trees has wood which is not usefnl. But we have seen no mention mede of the p can tree. The nute are sold in every candy or variety etore in the State, and the nut is populer everywhere. The tree ie one of the finest shade treee that growe. It will grow on any alluvial lend. As timber the pecan is next to the hickory in streugth and far superior to the hickory in lightness. The wood of the pecan tree makes finer pick handlee, axe handlee, whipetocke and all that eort of thing than any other tree. In planting, the pecen nute ehonld be obtained from the western part of Texas. There, the fruit of the tree ie much larger than any grown along the banks of the Missieeippi bottoms. The Texas variety of the nut reproduces itself, alwaye giving a large, eweet nut. Very seldom ie the Texas pecan seen in our markete here. The pecan tree is worth the attention of all who own land in thie State.—*Grass Valley Union.*

SOCIABLE PLANTS.—In a etate of nature, certain plante are always found growing singly, while others are ae invariably found growiug in groups. It ie thence inferred that the former are influenced by eome myeterious antipathy against, and the latter hy an equally strong eympathy for each other. Take the case of the common service tree, *Sorbus domestica*, under cultivation. This cannot be well grown, if planted by itself, as the plants invariably grow rickety, and alwaye become covered with galle and canker; while, if they are planted among apple trees, etc., in the same soil, and under precieely the same conditione, they thrive to perfection. If eeede of the service tree are eown by themselves, the eeedlings are alwaye poor and miecreble; whereae, if the eeed is mixed with pear eeed, the service eeedlings come up vigorouely, and often make stronger plants than the pear seedlings.—*M. Lebas.*

Sales at S. F. Stock Exchange.

TUESDAY, A. M., OCT. 5.

75	Alpha	19	@18¾
140	Andes	4	
932	Best & Belcher	50	@48
265	Belcher	19	@18¾
185	Bal Con	3¾	@3½
90	Chollar	10	@88
460	Crown Point	24	@23
110	Confidence	15	
185	Con Virginia	30	@305
865	California	59½	@60¼
30	Caledonia	17	@16½
20	Dayton	4	
70	Empire Mill	6	
260	Gould & Curry	18½	@18¾
100	....do	b 5	18¾
810	Hale & Nor	42	@43
310	Imperial	10½	@10¾
845	Justice	38½	@39
1240	Julia	8	
475	Lady Bryan	95	c
100	Lady Waeh	9	
100	....do	b 5	3
330	Leviathan	15	
1100	Mexican	21¼	@22
100	....do	b 30	22
100	M Star	3¾	
140	New York	23½	@24
2175	Ophir	63½	@64
130	Overman	46	@49
250	Occidental	4½	
100	Phil Sheridan	7	50
755	S Nevada	14½	@14¾
145	Sierra Nev	83	@84
120	Silver Hill	8½	
680	Union Con	9½	@9¾
250	Utah	14	@13¾
205	Woodville	2	
100	Wells-Fargo	25	c
145	Y Jacket	64	@65

AFTERNOON SESSION.

375	B & Bel	47	@46
100	....do	b 5	46½
160	Belmont	2½	
1100	Cosmopolitan	33	@30c
5	O Cromer	1	
270	California	58	@58½
154	Con Virginia	295	@300
1245	Eureka Con	19½	@14
75	G Chariot	1.10	
370	Gila	3	
100	Hussey	1½	
60	Jackson	1	
150	Jefferson	5	
275	Justice	30	@30½
485	Leopard	3	
165	Mexican	19¾	
560	Mansfield	65c	
200	Meadow Valley	3¼	@3½
376	Ophir	58	@57¾
130	Raymond & Ely	25	@26

WEDNESDAY A. M., OCT. 6.

105	Alpha	15	@16
1015	B & Belcher	44½	@45
65	Bullion	43	@43½
310	Balt Con	3¾	@3½
495	Belcher	17	@16¾
40	Chollar	84	@85
710	Crown Point	21½	@21
190	Con Virginia	290	@28
145	Caledonia	15	@15¾
1725	California	58	@58¾
120	Confidence	16	@15¾
100	Dayton	3¾	
360	Gould & Curry	17½	@17
100	Hale & Nor	38	@39
530	Imperial	9¾	@9¾
240	Justice	28½	@30
630	Julia	8	@8½
100	Knickerbocker	1¾	
125	Kentuck	12	@12½
100	Lady Bryan	90	c
690	Mexican	19	@19¾
295	New York	23½	
1380	Ophir	55½	54
80	Overman	37	
170	Occidental	3	@3½
55	Savage	32	@40
70	Seg Belcher	40	
60	S Hill	8½	
280	S Nevada	14	@14¾
345	Union Con	8½	@8¾
990	Utah	12¾	@12
65	Yellow Jacket	62	@61

AFTERNOON SESSION.

380	Andes	3¾	
170	Belmont	2	@2¼
250	Beet & Bel	43	@43½
105	California	56¼	@56
25	Con Virginia	283	@284
65	Crown Point	21	@21¾
150	....do	b 30	21½
940	Eureka Con	11	@13¾
50	Florida	4	
10	Gila	2¾	
100	Geneva	2½	
20	Chariot	1	
40	Hussey	1¾	
10	Hale & Norcrose	38	
50	Jackson	75c	
200	Jefferson	5	
410	Justice	28½	@28
1110	Kosmith	2	@1½
60	Leopard	14¼	@14½
370	Leviathan	1¾	@1¾
115	Lady Wash	3	
185	Meadow Valley	3	@2¾
250	Mansfield	60c	
50	Mint	50c	
200	Mides	2½	
230	Mexican	19	@18¾
500	N Caseon	20c	
20	O C Hill	1½	
235	Opoir	53	@53½
50	....do	b 5	53½
30	Poorman	2	
150	Pacific	1¾	
150	Prospect	1¾	
110	Raymond & Ely	25½	@23
15	Savage	40	
50	S Nevada	13½	
190	Union Con	8¾	@8½
500	Wells Fargo	20	@25c
185	Y Jacket	60c	

THURSDAY, A. M., OCT. 7.

185	Andes	3½	@3¾
100	An Flat	1	
175	Alpha	15	
195	Belcher	16¼	@16¾
850	Best & Belcher	43¾	@44
200	Bullion	41	@42
410	Baltimore Con	3	@3¼
120	Chollar	6	@6½
20	Confidence	16	
815	California	57	@58½
100	Am Flat	1	
50	Caney	1	
35	Dayton	3	@3¼
30	Exchequer	1.90	
100	Empire Mill	5	
225	Gould & Curry	16½	@16¾
70	Hale & Nor	38	@40
220	Imperial	8¾	@9
100	Julia Little	8	@8½
1020	Justice	28	@30
420	Julia	8	@8¼
30	Kentuck	12	
100	Knickerbocker	1¾	
304	Kossuth	1½	@1¾
200	L dy Bryan	75	@95c
300	Lady Wash	2¾	@3
500	Mexican	19	@19¾
1020	Justice	28	@30
420	Julia	8	@8¼
30	Kentuck	12	
100	Knickerbocker	1¾	
304	Kossuth	1½	@1¾
200	L dy Bryan	75	@95c
300	Lady Wash	2¾	@3
500	Mexican	19	@19¾
100	New York	2	@2¼
375	New York	2	@2¼
425	N Caseon	25c	
1000	Ophir	53½	@54¼
440	Overman	41	@42
180	Occidental	3½	
50	O G Hill	1½	
50	Pacific	1	
210	Rock Island	2¾	@2¾
220	Sierra Nev	7¾	@8
60	Seg Belcher	35	
10	Savage	77½	
500	Succor	1	
100	Santa Ana	1¾	
700	Union Con	8½	@8¾
150	Utah	12	
150	Woodville	1¾	
700	Wells-Fargo	15	@11½c
85	Yellow Jacket	61½	@62

AFTERNOON SESSION.

100	Belmont	1¾	@2
100	Belcher	17	@17½
100	Crown Point	21	@21¼
320	California	57¾	@58
30	Con Virginia	290	@295
1330	E reka Con	14½	@15
100	G & Curry	17	
15	Gila	3	@3¼
90	Golden Chariot	1	
100	Hussey	1½	
70	Imperial	9¾	
300	Justice	32	@32½
500	Jackson	2	
70	Jefferson	4¾	@5
150	Leonard	14¾	@15
130	Meadow Valley	2¾	@3
50	Mansfield	60c	
360	Mexican	19¾	@19¾
170	Ophir	55¼	@55½
100	Overman	42¾	@43
150	Prussian	2	
20	Raymond & Ely	24	
190	Union	8½	@8¾

The Mining Share Market.

With the opening of the Bank of California and the opening of the Nevada bank, it was naturally expected that such an impetus to financial affairs would have an encouraging effect upon the stock market. The opening of the Stock Boards on Tuesday showed that the this expectation was not unfounded. Stocks opened strong and evidences were apparent that a rise along the whole line might be looked for. The following day, however, a reaction set in and now the market is pretty thoroughly demoralized, and at the present writing there is no saying when there will be any improvement.

The difference in the prices of the openiug eession for Tueeday and those of the following day may be seen by reference to our stock table.

The Indian Queeu has declared a dividend of 50 cente per ehare, payable on the 11th.

The following aeeesments have been levied during the week: Kossuth, Cerbat Consolidated, North Consolidated Virginia, Buckeye Water and Hydraulic, and Enterprise Consolidated.

The reporte from the mines both in this State and Nevada continuee of the moet encouraging character—the Comstock is more prosperoue than ever.

THOUGHTLESSNESS.—Persone sometimes return thei paper, marked "stop this paper." Their name being pasted on the sheet they think that is all we need to be able to cross their names off. Now that is thoughtlessness. Your P. O. address is needed as much as your name. We have thousands of names arranged only according to locality. Our mailing clerk does not know where everybody lives.

CONSUMPTION is impossible when coughs, colds and other acute affections of the throat and lungs are promptly met with the required doses of HALE'S HONEY OF HOREHOUND AND TAR. For sale by all druggists.

Pike's Toothache Drops cure in one minute.

WOODWARD'S GARDENS embraces an Aquarum, Museum, Art Gallery, Conservatories, Tropical Houses, Menagerie, Seal Ponds and Skating Rink.

MINING SHAREHOLDERS' DIRECTORY.

Compiled every Thursday from Advertisemente in the Mining and Scientific Preee and other S. F. Journale.]

ASSESSMENTS.—STOCKS ON THE LIST OF THE BOARDS.

Company.	Locetion.	No.	Amt. Levied.	Deling'nt.	Sale.	Secretary.	Place of Business.
Alta S M Co	Washoe	2	50 Aug 23	Oct 15	Nov 5	Wm H Watson	302 Montgomery st
Amazon Cons M Co	Nevada	1	10 Sept 20	Oct 22	Nov 12	W R Townsend	330 Pine st
Andes S M Co	Washoe	5	25 Sept 10	Oct 18	Nov 8	M Landers	507 Montgomery st
Arg nt S M Co	Nevada	2	1 00 Aug 20	Sept 24	Oct 15	Wm Willie	419 California st
Buckeye G & S M Co	Nevada	15	25 Sept 13	Oct 16	Nov 5	C A Sankey	331 Montgomery st
Caledonia S M Co	Washoe	14	1 00 Sept 3	Oct 8	Nov 3	R Wegener	414 California st
Cosmopolitan M Co	Washoe	2	25 Aug 11	Oct 8	Oct 25	T Landers	507 Montgomery st
Crown Point G & S M Co	Washoe	23	50 Sept 4	Oct 8	Oct 28	C ne E Elliott	419 California st
Dayton G & S M Co	Nevada	4	1 00 Sept 15	Oct 19	Nov 8	W B Dean	419 California st
Empire M & M Co	Washoe	20	80 Sept 4	Oct 6	Oct 26	W B Dean	419 California st
Enterprise Cons M Co	Cal	5	25 Sept 29	Nov 4	Nov 20	F J Hermann	419 Kearny st
Gold Mountain G M Co	Cal	8	25 Sept 10	Oct 20	Nov 10	J P Cag ardier	513 California st
Hale & Norcrose S M Co	Washoe	47	5 00 Aug 21	Sept 24	Oct 15	Joel F Lightner	438 Cali ornia st
Imperial S M Co	Washoe	24	1 00 Sept 4	Oct 8	Oct 28	W E Dean	419 California st
Iowa M Co	Washoe	4	5 Sept 16	Oct 18	Nov 12	A D Carpenter	605 Clay st
Justice M Co	($5 on old stock and $1 on new)	16	6 00 Sept 15	Oct 18	Nov 14	Jas S Kennedy	Merchants' Ex
Knickerbocker M Co	Nevada	13	1 00 Sept 7	Oct 16	Nov 5	J H Sayre	Stevenson's Build'g
Lady Washington M Co	Washoe	5	50 Aug 19	Sept 22	Oct 12	H C Kibbe	419 California st
Leo M Co	Washoe	4	80 Sept 6	Oct 8	Nov 5	W R Townsend	335 Pine st
Mammoth S M Co	Nevada	19	25 Aug 18	Sept 29	Oct 18	D A Jennings	401 California st
Mint G & S M Co	Washoe	11	20 Sept 7	Oct 12	Nov 2	D A Jennings	401 California st
Newark S M Co	Nevada	11	50 Sept 14	Oct 19	Nov 9	Wm Willis	419 California st
New York Cons M Co	Washoe	15	83½ Aug 31	Oct 4	Oct 23	H C Kibbe	419 California st
New York M Co	Washoe	6	50 Aug 31	Oct 4	Oct 23	H C Kibbe	419 California st
Original Gold Hill G & S M Co	Nevada	4	50 Aug 26	Sept 30	Oct 18	W B Dean	309 California st
Phoenix G M Co	California	3	3 00 Sept 8	Oct 16	Nov 8	Chas F Elliott	419 California st
Piocha S M Co	Ely District	10	1 00 Aug 13	Sept 21	Oct 12	Chas E Elliott	419 California st
Poorman G & S M Co	Idaho	3	1 00 Aug 25	Sept 30	Oct 21	Wm Willie	419 California st
Senator S M Co	Washoe	12	50 Aug 27	Oct 2	Oct 21	J H Sayre	331 Montgomery st
Sierra Nevada S M Co	Nevada	12	15 Sept 6	Oct 6	Oct 23	Lonis Kaplan	Merchants' Ex
Succor Mill & M Co	Washoe	12	50 Aug 18	Oct 11	Nov 1	Wm H Watson	302 Montgomery st
Sunrise S M Co	Cal		50 Sept 14	Oct 16	Nov 8	T H Winyard	318 California st
Surprise Valley M & M Co	Inyo Co Cal	1	20 00 Aug 30	Oct 4	Oct 23	W B Townsend	330 Pine st
Victor G M Co	California	1	25 Sept 2	Oct 5	Oct 26	John R Wilde	Merchants' Ex
Washington & Creole G & S M Co	Nev	15	50 Sept 27	Oct 30	Nov 20	F D Carey	401 California st
Wells Fargo M Co	Washoe	3	20 Sept 14	Oct 16	Nov 8	O H Bozart	402 Montgomery st
Woodville Cons S M Co	Washoe	3	1 00 Aug 21	Sept 23	Oct 11	W M Helman	309 California st
Woodville G & S M Co	Washoe	11	1 00 Aug 21	Sept 23	Oct 11	W M Helman	309 California st
Yellow Jacket S M Co	Washoe	21	5 00 Sept 20	Oct 23	Nov 24	G W Hopkins	Gold Hill Nevada

OTHER COMPANIES—NOT ON THE LISTS OF THE BOARDS.

Blue Jacket M Co		2	1 00	July 30	Oct 5	Oct 25	C J Eaton	724½ Market stt
Buckeye Water & H M Co	Cal	1	50	Oct 1	Nov 5	Nov 21	W H Lowden	240 Montgomery a
Carrie Hall H M & W Co	Cal	2	10	Sept 18	Nov 1	Nov 20	F W Van Reynogom	53? California st
Cerbat Cons G & S M Co	Arizona	2	20	Oct 5	Nov 8	Nov 27	F E Lewell	507 Montgomery st
Cole S M Co	Washoe	27	5 00	Aug 21	Sept 27	Oct 19	Joel F Lizbtner	438 California st
Conetitution M Co	Nevada	1	15	Aug 31	Oct 4	Oct 22	Frank Swift	419 California st
Coquille Black Sand G M Co	Oregon	1	10	June 8	Oct 13	Nov 18	F P Reynolde	111½ Leidesdorff st
Eagle Silver M & M Co	Nevada	2	50	Sept 11	Oct 20	Nov 10	H L Byrne	533 Kearny st
Eagle S M Co	Cal	5	25	Sept 14	Oct 20	Nov 20	Wm Stuart	113 Leidesdorff st
El Dorado State Co	Cal	1	40	Aug 19	Sept 21	Oct 9	Hugh Elias	416 Montgomery st
El Dorado W & D G M Co	Cal	11	20 00	Sept 21	Oct 22	Nov 8	Hugh Elias	416 Montgomery st
Florence M Co	Cal	3	15	Sept 17	Oct 25	Nov 17	Scot Sutton	220 Montgomery st
Georgia S M Co	Washoe	1	10	July 29	Oct 22	Nov 12	R Wegener	414 California st
Hartow G & S M Co	Nevada	1	10	Sept 20	Oct 22	Nov 12	W R Townsend	330 Pine st
Golden Chariot M Co	Idaho	14	75	Sept 2	Oct 7	Oct 26	Louis Kaplan	Merchants' Ex
Gold Run M Co	Cal	13	25	Sept 27	Oct 30	Nov 26	C C Palmer	41 Market st
Hayes G & S M Co	Nevada	7	20	Aug 18	Sept 28	Oct 25	Geo R Spinney	320 California st
Howard Hill G M Co	Cal	25	50	Sept 27	Nov 2	Nov 19	F J Hermann	419 Kearny st
Independent G M Co	Cal	9	50	Sept 11	Oct 12	Oct 30	Geo Tegmeyer	240 Montgomery st
Juniata Cons M Co	Nevada	3	25	Sept 20	Nov 1	Nov 24	Chas S Neal	419 California st
Kelsey G & S M Co	Cal	14	5	Sept 6	Nov 6	Nov 24	J H Sayre	331 Montgomery st
Kossuth M Co	Nevada	5	75	Oct 4	Nov 9	Nov 30	E F Stone	419 California st
Little Pinche O M Co	California	2	10	Sept 3	Oct 7	Oct 29	Geo R Spinney	320 California st
Morse & Evans G M Co	California	2	10	Sept 6	Oct 15	Nov 12	Daniel Buck	331 Montgomery st
North Bloomfield G M Co	Cal		1 00	Aug 14	Sept 22	Oct 12	Thos Derby	320 California st
North Carson S M Co	Nevada	2	10	Sept 7	Oct 14	Nov 5	W A Van Bokkelen	419 California st
Oakland G & S M Co	Nevada	2	50	Sept 2	Oct 1	Oct 29	Wm H Watson	302 Montgomery st
Santha Ana M Co	Nevada	2	20	Aug 31	Oct 1	Oct 19	Frank Swift	419 California st
Picacho M & M Co	Cal	1	10	Aug 2	Sept 13	Oct 18	Ford H Rogers	330 Pine st
Plumas Cons M Co	Nevada	4	10	Sept 14	Oct 19	Nov 9	Wendell Easton	419 California st
Prussian G & S M Co	Nevada	5	50	Aug 19	Sept 27	Oct 20	R H Brown	402 Montgom ry st
Rattlesnake Q M Co	Cal	3	25	Aug 24	Sept 28	Oct 18	Andrew Baird	314 California st
San Francisco Copper M Co	Nevada	2	15	Sept 3	Sept 30	Nov 8	R Dan Clairmont	Front & Jackson st
St John G M Co	Kern Co Cal	3	5 00	Aug 30	Oct 4	Oct 23	W R Townsend	330 Pine st
Tiger M Co	Nevada	1	15	Aug 31	Oct 2	Oct 20	Frank Swift	419 California st
Virginia Cons M Co	Cal		6	Sept 9	Oct 11	Oct 30	T B Winyard	318 California st
Weaverville D & H M Co	Cal	7	2 25	Aug 19	Sept 20	Oct 18	Ford H Rogers	330 Pine st
West Point G & S M Co	California	1	25	Sept 6	Oct 8	Oct 28	Louis Kaplan	Merchants' Ex
Wm. Penn Cons G & S M Co	Washoe		6	Aug 7	Sept 11	Sept 30	John F Pope	424 Montgomery st

MEETINGS TO BE HELD.

Name of Co.	Location.	Secretary.	Office in S. F.	Meeting.	Date.
Cosmopolitan M Co	Washoe	M Landers	507 Montgomery st	Annual	Oct 11
Eureka Cons M Co		W W Taylor	408 California st	Annual	Oct 11
Eureka G M Co	Cal	R Wegener	414 California st	Annual	Oct 21
Excelsior M Co		Jas S Kennedy	Merchants' Ex	Annual	Oct 19
New Cose M Co	Cal	D F Verdenal	409 California st	Annual	Oct 13
Seg Belcher M Co	Nevada	Geo D Edwards	414 California st	Annual	Oct 14
South Overman Cons M Co	Nevada	David Wilder	Merchants' Ex	Annual	Oct 11

LATEST DIVIDENDS (within three months)—MINING INCORPORATIONS.

Name of Co.	Location.	Secretary.	Office in S. F.	Amount.	Payable.
Black Bear Quarlz	Cal	W L Oliver		25	Sept 13
Caeo Virginia M Co	Washoe	Chas H Fish	401 California st	10 00	Sept 7
Empire G M Co	Sierra Co Cal	O Collechon		5 00	Aug 17
Empire M Co	Novada Co Cal	D A Jennings	401 California st	50	Sept 15
Eureka Consolidated M Co	Nev	W W Taylor	419 California st	1 00	Aug 5
Excelsior M & M Co		Frank Swift	419 California st	1 00	April 10
Gila S M Co	Novada	W Aug Knapp	115 Leidesdorff st	25	Aug 16
Indian Queen M & M Co		A K Durhrow		50	Oct 11
Jefferson S M Co		C A Sankey	331 Montgomery st	50	May 15
Leopard M Co		R H Brown		50	July 15
Lyon Mill & Mining Co	Washoe	E F Stone	Hayward's Bldg	50	Aug 18
Manhattan S MCo	Nevada	Chas S Neal	419 California st	1 00	June 15
Northern Belle M & M Co		W Willie	419 California st	1 00	Sept 15
Oneida M Co		L Kaplan	Merchants' Ex	50	Aug 24

METALS.

[WHOLESALE.]

WEDNESDAY M., OCTOBER 6, 1875.

American Pig Iron, ₱ ton	38 00	@	39 00
Scotch Pig Iron, ₱ ton	40 00	@	41 00
White Pig, ₱ ton	— —	@	38 00
Oregon Pig, ₱ ton	— —	@	28 00
Refined Bar, bad assortment, ₱ lb	— —	@	— 3½
Refined Bar, good assortment, ₱ lb	— —	@	— 4
Boiler, No. 1 to 4	— —	@	— 5½
Plate, No. 5 to 9	— —	@	— 5½
Sheet, No. 10 to 14	— —	@	— 5¾
Sheet, No. 16 to 20	— —	@	— —
Sheet, No. 22 to 24	— —	@	— 6
Sheet, No. 26 to 28	— —	@	— 6½
Horse Shoes, per keg	7 50	@	8 00
Nail Rod	— —	@	— —
Norway Iron	— —	@	— —
Rolled Iron	— —	@	— —
Other Irons for Blacksmithe, Miners, etc.	— —	@	— 4½
COPPER.—			
Braziers	— 35	@	— —
Copper Tin'd	— 37½	@	— —
O'Nie'le Pat	— 37½	@	— 40
Sheathing, ₱ lb	— 24	@	— 40
Sheathing, Yellow	— —	@	— 25
Sheathing, Old Yellow	— —	@	— 12½
Composition Nails	— 24	@	— —
Composition Bolts	— 24	@	— —
STEEL.—English Cast, ₱ lb	— 20	@	— 25
Anderson & Woode' American Cast	— —	@	— 18½
Drill	— —	@	— 16
Flat Bar	— 18	@	— 22
Plow Steel	— 9	@	— 10
TIN PLATES.—			
10x14 I C Charcoal	11 50	@	12 00
10x14 I X Charcoal	12 50	@	14 00
Roofing Plate I C Charcoal	10 50	@	11 00
Banca Tin	— 25	@	— 30
Australian	— 25	@	— 30
ZINC.—By the Cask	— —	@	— 11
Zinc, Sheet 7x3 ft, No 7 to 10 ₱ lb	— —	@	— 11½
do do 7x3 ft, No 11 to 14	— —	@	— 11½
do do 8x4 ft, No 8 to 10	— —	@	— 11½
do do 8x4 f, No 11 to 10	— —	@	— 12
NAILS Assorted sizes	— —	@	4 10
QUICKSILVER, per ₱	— 67	@	— 70

Gold, Legal Tenders, Exchange, Etc.

[Corrected Weekly by CHARLES SUTRO & CO.]

SAN FRANCISCO, October 6, 3 P. M.

LEGAL TENDERS in S. F., 11 A. M., 85¾ to 86¼.

GOLD in N. Y. 116¾.

GOLD BARS, 890. SILVER BARS, 6½ and 7⅛ per cent. discount.

EXCHANGE on N.Y., 60-100 per cent. premium for gold; on London bankers, 49; Commercial, 49¼; Paris, five francs per dollar; Mexican dollars, three to five per cent. discount.

LONDON — Consols, 93 to 93⅛; Bonds, 102¼

QUICKSILVER in S. F., by the flask, per ₱, 67c@70c.

LEATHER.

[WHOLESALE.]

WEDNESDAY M., October 6, 1875.

City Tanned Leather, ₱ lb			24@29
Santa Cruz Leather, ₱ lb			28@28
Country Leather, ₱ lb			24@29
Stockton Leather, ₱ lb			25@29
Jodot, 8 Kil., per doz			$50 00@ 54 00
Jodot, 11 to 13 Kil., per doz			68 00@ 72 00
Jodot 14 to 19 Kil., per doz			87 00@ 90 00
Jodot, second choice, 11 to 16 Kil. ₱ doz			57 00@ 74 00
Cornellian, 12 to 16 Ko			57 00@ 67 00
Cornellian Females, 12 to 13			63 00@ 67 00
Cornellian Females, 14 to 16 Kil			71 00@ 76 50
Simon Ullmo Females, 12 to 13, Kil			63 00@ 67 00
Simon Ullmo Females, 14 to 15, Kil			70 00@ 72 00
Simon Ullmo Females, 16 to 17, Kil			73 00@75 00
Simon, 18 Kil., ₱ doz			61 00@ 63 00
Simon, 20 Kil. ₱ doz			65 00@ 67 00
Simon, 24 Kil. ₱ doz			72 00@ 74 00
Robert Calf, 7 and 9 Kil			35 00@ 40 00
French Kips, ₱ lb			1 00@ 1 15
California Kip, ₱ doz			40 00@ 57 50
French Sheep, all colors, ₱ doz			8 00@ 15 00
Eastern Calf for Backs, ₱ lb			1 00@ 1 25
Sheep Roane for Topping, all colors, ₱ doz			9 00@ 13 00
Sheep Roane for Linings, ₱ doz			5 50@ 10 50
California Rueeett Sheep Linings			1 75@ 4 50
Best Jodot Calf Boot Legs, ₱ pair			4 50@ 5 25
Good French Calf Boot Legs, ₱ pair			4 00@ 4 75
French Calf Boot Legs, ₱ pair			4 00@ —
Harneee Leather, ₱ lb			30@ 37
Fair Bridle Leather, ₱ doz			48 00@ 72 —
Skirting Leather, ₱ lb			33@ 37½
Welt Leather, ₱ doz			30 00@ 50 00
Buff Leather, ₱ foot			17@ ⅝
Wax Side Leather, ₱ foot			17@ —

LUMBER.

CARGO PRICES OF REDWOOD.		PUGET SOUND PINE —Retail Price.	
Rough, ₱ M	$18 00	Rough, ₱ M	22 50
Rough reduce, ₱ M	14 00	Fencing, ₱ M	22 50
Rough clear, ₱ M	30 00	Flooring and Step, ₱ M	32 50
Rough clear refuee, M	20 00	Flooring, narrow, ₱ M	35 00
Rustic, ₱ M	32 50	Flooring, 2d quality, M	25 00
Rustic, reduce, ₱ M	24 00	Laths, ₱ M	3 50
Surfaced, ₱ M	30 00	Furring, ₱ lineal ft	—
Surfaced refuee, ₱ M	20 00	**REDWOOD—Retail.**	
Flooring, ₱ M	28 00	Rough, ₱ M	22 50
Flooring, refuse, ₱ M	20 00

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OFFICE, 224 SANSOME STREET, S. F.

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Remittances of money, made by individual inventors to the Government, sometimes miscarry, and it has repeatedly happened that applicants have not only lost their money but their inventions also, from this cause and consequent delay. We hold ourselves responsible for all fees entrnsted to our agency

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Started in 1860, is one of the oldest weekly journals now published in San Francisco. It has been conducted by its present proprietors for ten years, during which period it has been repeatedly enlarged and constantly improved. The active and steadfast efforts of its publishers have gained for its conduct an amount of practical experience greater than any other pnblishers have accumulated on this coast, of a weekly journal.

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San Francisco, January, 1875.

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UNITED STATES

Mineral Land Laws, Revised Statutes,

And Instructions and Forms Under the Same.

We have just issned a pamphlet containing the general mineral land laws of the United States, with instructions of the Commissioner of the Land Office The contents of this pamphlet comprise all of the Government laws with relation to mineral lands of interest to the mining community, as follows: Mining Statute of May 10th, 1872, with Instructions by the Commissioner of the Land Office; Mining Statute of July 26th, 1866; Mining Statute of July 9th, 1870 Forms required under Mining Act of May 10th, 1872, as follows: Notice of Location; Request for Survey; Application for Patent; Proof of Posting Notice and Diagram of the Claim; Proof that Plat and Notice remained Posted on Claim during Time of Publication; Registers' Certificate of Posting Notice for Sixty Days; Agreement of Publisher; Proof of Publication; Affidavit of $500 Improvements; Statement and Charge of Fees; Proof of Ownership and Possession in Case of Loss or absence of Mining Records; Affidavit of Citizenship; Certificate that no Suit is Pending; Power of Attorney; Protest and Adverse Claim; Non-Mineral Affidavit; Proof that no Known Veins Exist in a Placer Claim, etc. There is also given the U. S. Coal Land Law and Regulations thereunder. The work comprises thirty pages, and will be sold, post-free, for 50 cents. It should be in the hands of every one having any mining interests. DEWEY & CO.,

Publishers of MINING AND SCIENTIFIC PRESS, S. F.

Population of Some Foreign Countries, in Which Dewey & Co. Obtain Patents and Protection for Inventors.

Canada	3,537,887	Baden	1,434,970
Great Britain	31,187,108	Bavaria	4,824,421
France	36,583,559	Portugal	3,996,558
Belgium	4,839,094	Saxony	2,423,686
Prussia	24,043,902	Hanover	385,957
Austria & Hung'y	35,943,592	Wurtemburg	1,778,470
Russia	77,268,838	Brazil	11,780,050
Spain	16,031,267	Chili	2,000,070
Italy	25,906,957	Peru	2,500,000
Sweeden	4,195,681	N. Grenada	2,794,000
Norway	1,701,478	Indis	191,000,000
Poland	5,317,362	Australia	1,500,000
Denmark	1,726,724	N. Zealand	326,618

CAMPO, SAN DIEGO CO., CAL., July 3d, 1874.

MESSRS. DEWEY & CO.—*Gentlemen:* To-day I received the patent and other papers of my animal trap, that you so successfully worked through the patent office for me, for which please accept my best wishes. The chances are that I will have another application for you to make for me before long. I am well satisfied with your manner of doing business, and I think inventors of this coast stand in their own light when they do not put their business into your hands.

I remain yours truly, A. M. GASS.

A GOOD PAPER.—The MINING AND SCIENTIFIC PRESS has entered its 30th volume. It grows better as the years roll, and is, without exception, the best paper published for Californla miners and artisans. If such papers were more generally circulated to the exclusion of the sensation trash of the cities, the State would be the gainer in wealth, morals and general intelligence —*Tuolumne Independent.*

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To Country Printers.

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Mining and Other Companies.

Gover Mining and Milling Company—

Principal place of business, San Francisco, Cal. Location of works, Drytown, Amador county, Cal.

Notice is hereby given, that at a meeting of the Board of Directors, held on the 3d day of September, 1875, an assessment of ten cents per share was levied upon the capital stock of the corporation, payable immediately, in United States gold and silver coin, to the Secretary, at the office of the company, No. 402 Front street, room 8, San Francisco, Cal.

Any stock upon which this assessment shall remain unpaid on the 11th day of October, 1875, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Saturday, the 30th day of October, 1875, to pay the delinquent assessment, together with costs of advertising and expenses of sale.

W. O. WILSON, Secretary.

Office, No. 402 Front street, room 8, San Francisco, Cal.

Keystone Quartz Mining Company—Prin-

cipal place of business, San Francisco, California. Location of works, Butte Township, Sierra county, California.

Notice is hereby given, that at a meeting of the Board of Directors, held on he 22d day of September, 1875, an assessment (No. 5) of fifty (50) cents per share was levied upon the capital stock of the corporation, payable immediately, in United States gold and silver coin, to the Secretary, at the office of the company, northwest corner Pine and Sansome streets, San Francisco, Cal.

Any stock upon which this assessment shall remain unpaid on the8th day of November, 1875, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Monday, the 29th day of November, 1875, to pay the delinquent assessment, together with costs of advertising and expenses of sale.

LOUIS VESARIA, Secretary.

Office, northwest corner Pine and Sansome streets, San Francisco, California.

Hope Quicksilver Mining Company—Lo-

cation of principal place of business, San Francisco, California. Location of works, Cinnabar Mining District, Sonoma County, State of California.

Notice is hereby given, that at a regular meeting of the Board of Directors, held on the 2d day of August, 1875, an assessment (No. 2) of Five cents per share was levied upon the capital stock of the corporation, payable immediately, in United States gold coin, to the Secretary, at the office of the company, Room 2, No. 408 California street, San Francisco, Cal.

Any stock upon which this assessment shall remain unpaid on the 9th day of September, 1875, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Thursday, the 30th day of September, 1875, to pay the delinquent assessment, together with costs of advertising and expenses of sale.

JACOB HARDY, Secretary.

Office, Room 2, No. 408 California street, San Francisco California.

POSTPONEMENT.—The date of the delinquency of the above assessment is postponed to the 9th day of October, and the date of delinquent sales to November 1st, 1875. By order of the Trustees. J. HARDY, Secretary.

September 8, 1875.

Mount Auburn Gold Quartz Mining Com-

pany. Location of principal place of business, San Francisco, Cal.

NOTICE.—There are delinquent upon the following described stock, on account of assessment, levied on the 25th day of August, 1875, the several amounts set opposite the names of the respective shareholders, as follows:

Names.	No. Certificate.	No. Shares.	Amount.
Frank McCeppin	35	10	$ 2 50
Isabella G Prince	5	100	25 00
Isabella G Prince	1	100	25 00
Isabella G Prince	10	50	12 50
Isabella G Prince	11	50	12 50
Isabella G Prince	12	50	12 50
Isabella G Prince	13	50	12 50
M Klinkstrom		100	25 00
J Trigg	17	5	1 25
Henry Eitel	18	10	2 50
Henry Eitel	41	10	2 50
M A Cary	19	25	6 25
M A Cary	28	10	2 50
E J Hutchinson	20	25	6 25
E J Hutchinson	21	25	6 25
Nicholas Larbig	55	100	25 00
Nicholas Larbig	22	10	2 50
Nicholas Larbig	23	10	2 50
Nicholas Larbig	25	10	2 50
Nicholas Larbig	26	10	2 50
Robert Kirk	30	75	18 75
Robert Kirk	31	100	25 00
Robert Kirk	32	100	25 00
Robert Kirk	33	100	25 00
Charles Baum	29	300	75 00
James Curley	30	20	5 00
James Curley	31	20	5 00
James Curley	32	20	5 00
James Curley	33	20	5 00
James Onrley	34	20	5 00
John Rouke	35	20	5 00
John Rouke	36	20	5 00
John Ronke	37	20	5 00
John Rouke	38	20	5 00
John Rouke	39	20	5 00
S D Melville	42	100	25 00
S D Melville	48	100	25 00
S D Melville	29	125	31 25
P N Carroll	43	50	12 50
P N Carroll	44	50	12 50
E H Coe	59	100	25 00
P H Canavan	45	1000	250 00
Jacob Bacon	49	50	12 50
P Kedrollvansky	46	50	12 50
N Kavigin	47	50	12 50
Chas J Hobler	50	200	50 00
Mrs Dr Howard	8	100	25 00
Mrs Dr Howard	9	100	25 00
Mrs Dr Howard	10	100	25 00
Mrs Dr Howard	11	100	25 00
Mrs E B Rider	12	100	25 00
Mrs E B Rider	13	100	25 00
Catharine Carney	14	100	25 00
Mrs Mary Relay	60	25	6 25
Heywood & Hendley	54	100	25 00
Elbridge Durhrow, Trustee	53	15	3 75
Elbridge Durbrow, Trustee	54	35	8 75
Mrs Oosgrove	18	25	6 25
Joseph Jourden	57	50	12 50
John Nugeut	58	10	2 50
Geo T Knox	61	25	6 25
M M Harkness	35	990	247 50
M M Harkness	62	50	12 50
Solomon Johnson	15	100	25 00
Solomon Johnson	15	100	25 00
Solomon Johnson	23	500	125 00
Solomon Johnson	24	100	25 00
Solomon Johnson	25	100	25 00
John C Jamison	53	5	1 25
M M Hill, Trustee	37	500	125 00

And in accordance with law, and an order of the Board of Directors, made on the 25th day of August, 1875, so many shares of each parcel of said stock as may be necessary, will be sold at public auction, at the auction house of John Middleton & Son, 310 Montgomery street, on the 28th day of October, 1875, at the hour of 10 o'clock A. M., of said day, to pay said delinquent assessments thereon, together with costs of advertising and expenses of sale.

C. A. JAMES, Secretary.

Office, No. 402 Montgomery street, Room 9, San Francisco, California.

Pacific Wool Growing Company—Loca-

tion of principal place of business, San Francisco, Cal. Location of works, Santa Barbara county, Cal.

Notice is hereby given, that at a meetiog of the Board of Directors, held on the 25th day of September, 1875, an assessment (No. 2) of four dollars per share was levied upon the capital stock of the corporation, payable immediately, in United States gold coin, to the Secretary, at the office of the company, room 28 Stevenson Building, No. 331 Montgomery street, San Francisco, Cal.

Any stock upon which this assessment shall remain unpaid on the 27th day of October, 1875, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Saturday, the 20th day of November, 1875, to pay the delinquent assessment, together with costs of advertising and expenses of sale. By order of the Board of Directors.

O. D. SQUIRE, Secretary.

Office, room 28 Stevenson Building, 331 Montgomery street San Francisco, California.

Yosemite Mining Company—Location of

works, Humboldt County, Nevada.

NOTICE.—There are delinquent upon the following described stock, on account of assessment (No. ——) levied on the 29th day of July, 1875, the several amounts set opposite the names of the respective shareholders, as follows:

Names.	No. Certificate.	No. Shares.	Amount.
A H Atwater	Not Issued	5	$ 1 25
D H Crowe	Not Issued	100	25 00
W H Hedges	49	5	1 25
W H Hedges	60	15	3 75
N M Hedges	51	35	8 75
E H Levy	Not Issued	10	2 50
Jas Manning	119	20	5 00
S Rosenthal	137	10	2 50
S Rosenthal	118	10	2 50

And in accordance with law, and an order of the Board of Directors, made on the 29th day of July, 1875, so many shares of each parcel of such stock as may be necessary, will be sold at public auction, by R. D. W. Davis & Co., No. 219 Sansome street, San Francisco, on Saturday, the 23d day of October, 1875, at the hour of two o'clock P. M., of said day, to pay said delinquent assessment thereon, together with costs of advertising and expenses of the sale.

S. C. PUTNAM, Secretary pro tem.

Office, 210 Battery street, S. F.

Iron and Machine Works.

RISDON & TOWER,

MANAGERS OF

Pacific Boiler, Sheet Iron, and WATER PIPE WORKS.

All Kinds of Boiler and Sheet Iron Pipe.

High and Low Pressure Boilere Built and Repairsd.

We refer to twenty years' experience in the above business as a guarantee that all orders for work will he faithfnlly executed.

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CHAS. TOWER, formerly Foreman of Coffee & Risdon and Risdon Boiler Works.

THE RISDON

Iron and Locomotive Works,

INCORPORATED.....APRIL 30, 1868.
CAPITAL.....$1,000,000.

LOCATION OF WORKS:

Corner of Beale and Howard Streets,

SAN FRANCISCO.

Manufacturers of Steam Engines, Quartz and Flour Mill Machinery, Steam Boilers (Marine, Locomotive and Stationary), Marine Engines (High and Low Pressure). All kinds of light and heavy Castings at lowest prices. Cams and Tappets, with chilled faces, guaranteed 40 per cent. more durable than ordinary iron.

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Joseph Moore, Wm. Norris, Jesse Holladay, Wm. H. Taylor, James D. Walker, C. E. McLane, J. B. Haggin,

WM. H. TAYLOR.....President
JOSEPH MOORE...Vice-President and Superintendent
LEWIS R. MEAD.....Secretary

24v17-qy

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24v22-3m JOSEPH MOORE. Superintendent.

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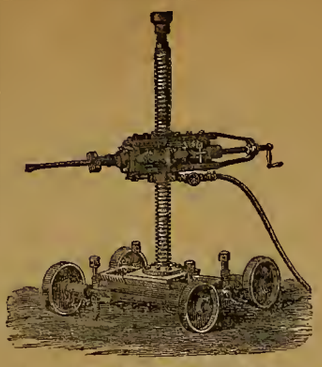
of every description, manufactured. 2v16q



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THE ONLY SAFE BLASTING POWDER IN USE.

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For hard and wet Rock, Iron, Copper, etc., and Submarine Blasting.

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For medium and seamy Rock, Lime, Marble, Sulphur, Coal, Pipe Clay and Gravel Bank Blasting, Wood, etc.

Its EXCLUSIVE use saves from 30 to 60 per cent. in expenses, besides doing the work in half the time required for black powder.

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Geo. W. Fogg, Supt.

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MACHINE WORKS,

210 & 212 Beale St.,

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Steam Engines and all kinds of Mill and Mining Machinery.

Also manufacture and keep constantly on hand a supply of our

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From Ten (10) to Forty (40) Horse Power.

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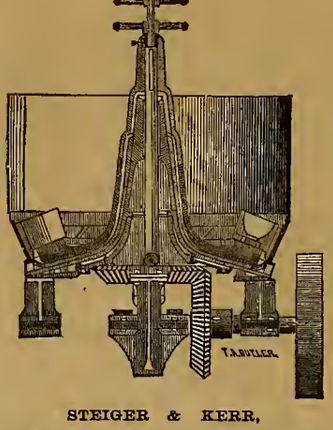

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☞ PRICES MODERATE. ☜

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Every Variety of Shafting,

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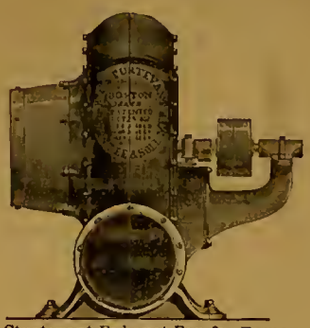

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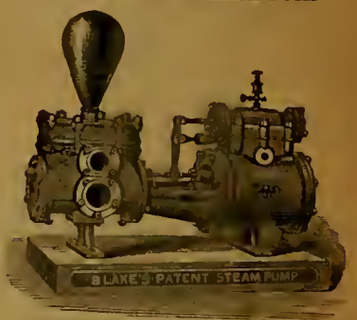

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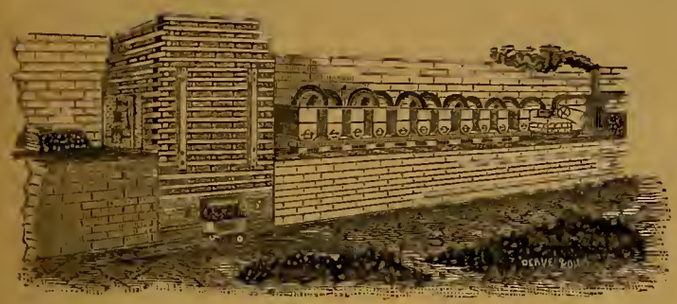

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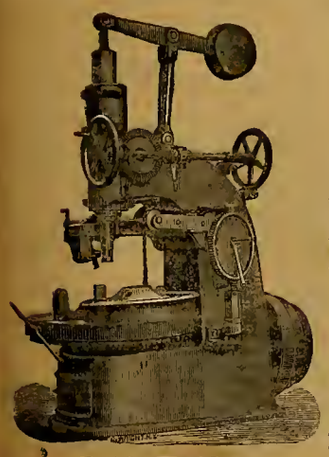

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54 BUSHELS OF CORN AN HOUR.
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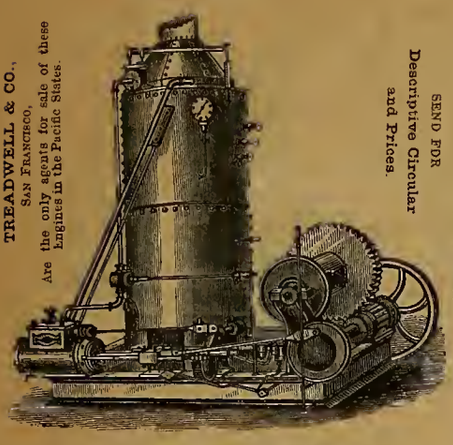
TREADWELL & CO., San Francisco, Are the only agents for sale of these Engines in the Pacific States.



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Always on hand, with or without reverse motion, either horizo ta or upright cylinders, and with or without trucks.

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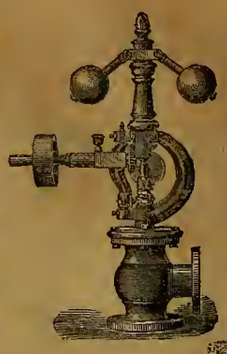

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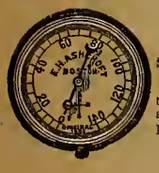

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TRADE PERIN MARK. Perin's BAND SAW Blades. TRADE PERIN MARK.

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Our Upright Safety Engines Are the Best. All sizes.

For Sale only at TREADWELL & CO.'S MACHINERY DEPOT, San Francisco, Cal.

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They have proved to be the most durable and economical Saws in the World.

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SAN FRANCISCO, SATURDAY, OCTOBER 16, 1875.

VOLUME XXX I Number 16.

The Concentrating Works at Falun in Sweden—Continued.

[Written for the PRESS by CHAS. C. RUEGER.]

III.—The Cleansing and Classing of the "Rubbish Work"—(Germ., Grubenklein).

The rubbish work (sylta) is domped from the railroad cars directly into a hopper of abont 150 cubic feet capacity. Ont of the mouth of this hopper it discharges on to a feed trongh or shoe—a hox 5¼ ft. long and 2 ft. wide, open at top, with sides 8 inchee high. This trough or ehoa is euspended heneath the hopper and to it, by means of foor iron rods. The inclination of the shoe is 20°. Below the head end a compounnd India rubber buffer is attached. An angle of wrought iron is also fastened to the bottom, which, being pushed ont by a cam, compresses the buffer. At tha end of the stroke, on being releaeed by the cam, the shoe is propelled forward against a bntt-bar, which can be adjnsted so as to regulate the length of effective stroke ot the cam. The elasticity or hardness of the blow is regulated by means of a hand wheel, with which the buffer can be compressed more or less. Frrthermore, the quantity of feed can be regulated by means of a gate of sheet iron, attached on the front side of the hopper. Immediately in front of the gate is a water pipe witb spray nozzle, which throws upon the whole width of the shoe so mnch water as to nearly rid the piccea of ore of their coeting of slnm and sand, before they are discharged through a slit in the bottom of the shoe, 20x6 inches, into the cleansing drnm placed beneath. The shoe mekes eighty strokes per miunte, of one-half to three-fourths inch each, according to the quantity to be fed.

The cleansing drnm, *a*, ie conical in form, in common with all other sieve drums, its length being seven feet six inches. Of this, five feet ten inches are allotted to the screen mantle of pnnched sheet iron, having holes of twenty-two mm. diameter. This mantle has the diameters three feet eight inches and three feet two inches. A cast iron coilar at the small or head end, one foot eight inchee in length, is contracted to an entranca of one foot two and a half inches diameter. The steel shaft, three seven-eigbths inches diameter, lies horizontal. The mean peripheral velocity of the drum is 2.6 feet, so that it makes fifteen revolutions per minnte. The screeo clearing or sqnirt pipe, is laid along the ontside of the drnm, for its whole length.

The materia] retained by the drum—the "pick stnff"—is discharged ont of the front end on to a rotatiog, sorting or picking table *a* 1. This has a cast iron ring twenty inches wide, and of ten feet outside diameter, carried by a spider affixed to an npright shaft. The table revolves with a peripheral velocity of six inches per second. This table is snrrounded by a hopper, made of two inch plank, lined inside with inch boerds, and is held together by strong iron hoops. Betwcen the ontside edge of this hopper and the periphery of the sorting table six inches opening is given, so that the workmen surrounding the table can conveniently drop the picked stuff down before them. The hopper has five compartments; the firet, nearest tbe wash drum, receives the "piece ore" (specimens), firstquality, with fifteen to twenty per cent. copper; the second compartment, *piece ore*, second quality, with five to ten per cent. copper, both ready for the smelter; the third, *crush-stuff*, for the rock breaker; and the fonrth, *stamp stuff*, for fine pnlverization in the battery. The barren rock (rubble, deads), which forms the greatest bnlk of the picked stuff, is shoved ioto the fifth compartment by a stationsry scraper.

The assorted stuff is discherged out of the bottom of the hopper, six feet ten inches above the lower floor of the building, into railroed ears; these are lifted by meens of the elevator, *a* 3, to tbe npper floor of the boilding, and their contents discharged into their respective receptacles or hoppers.

With the assistance of twelve hoys, working in twelve-hour shifts, respectively ten and one-half working houre, forty to fifty tons rnbbish-work ore can be washed and picked per day.

The sortiog or picking is best done in contract, in snch way that the picked etnff ie paid for by weight, and in proportion to the percentage of copper—for the rich eorte more, for the peor less.

To effect a nearly eq ial distribution of tha pay, tbe workmen have to change places every dey aronnd the sorting table; this also makes each one expert in the whole work and a jodge of the work of his companions.

As the short days of the winter months have a dnration of only five to six honrs, the sorting for the rest of the time mnst be done by gaslight, which makes the work difficnlt. The rubbish washing works are therefore put to rest for several months of the year, which is also enforced by the extreme cold.

For the classing of the screenings of the wash drnm, sieve drnm apparatus are provided, *a* 4 and *a* 5, which consist of five *classing drums* each. These are of conical form, like the washing drom, but only five feet long; of this, fonr feet fonr inches are allotted to the screen mantle, whose diameters are two feet six inches and two feet. The cast iroa head end collar, eight inches long, is contracted to an entraace opening of one foot six and a half inches diameter. The two and three-eighthinch steel shafta of the classing drums lie horizontal and carry each, on one end, a spnr-wheel of tarea feet diameter; the middle one, moreover, on its longer axis a belt pnlley of four and a half feet diameter, the rotation of which, and the engaging of the gears, canses all tha drnms to revolve simultaneonsly. The mean peripheral velocity of the drnms is 2.1 feet, eqnal to eighteen revolntions per minnte.

To obtain suitable fall, for the transportation of the screenings of one drum to the next following, those of apparatus *a* 4 lie higher above each other, than those of apparatus *a* 5, because the screenings of the first drums are coarser, and therefore requ ire more fall for their transportation sluices.

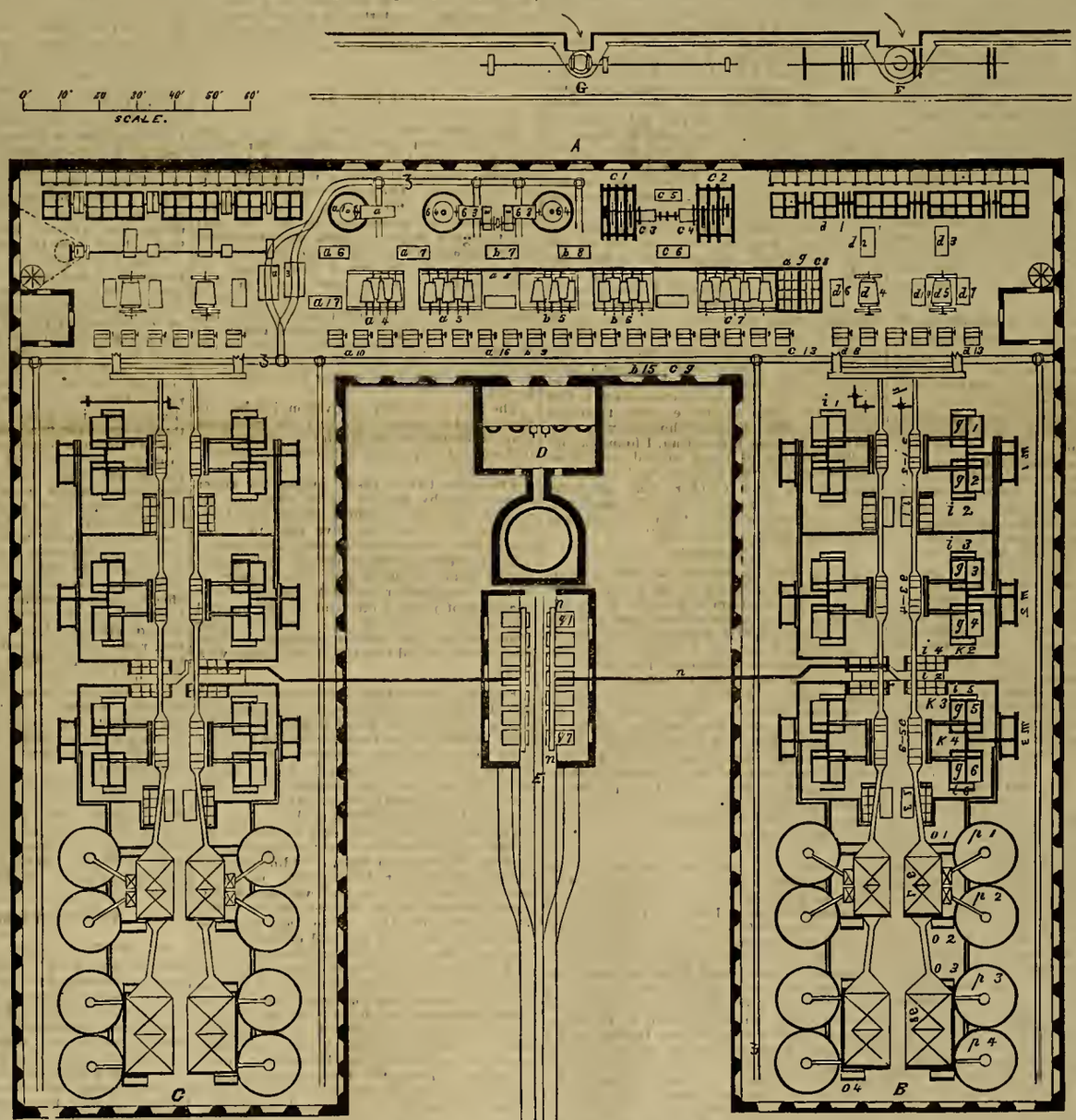
A line drawn from the center of the topmost drum shaft to thet of the third, has an inclination of 60° to the level; a line drawn from the third to the fifth, has an inclination of 40°. The sieve drums of the following apparatns lie in a line of 30° inclination above one another.

The perforations of these sieves correspond exactly with Rittinger'a scale, the coarsest openings being sixteen mm. (millimeter), the finest 0.75 mm.

An external sqnirt pipe, discharging water under high pressure against tbe screens, keeps them open.

The screenings of the wash drnm are raised by a cnp elevator, *a* 6, into the top classing drum of apparatns *a* 4; each drnm retains one

(Continued on Page 252.)



PLAN OF THE CONCENTRATING WORKS AT FALUN.

In the cut *b* 3 and *b* 4 should be *b* 3 and *b* 4; *b* 1 and *b* 2 are omitted; *i* 3, the letter *h* and markings to the letter *e* are engraved back-handed; the characters *i* 1 and *o* 4 should be on the right hand side; the position of the characters *i* 4 and *k* 2 should be reversed.

Plants and Animals Found in the Human Mouth.

According to Dr. C. N. Peirce, in an essay in *Dental Cosmos*, the following variety of organisms is found in the oral cavity, as shown by the microscope: 1. Oidium albicans. 2. Cryptococcus cerevisiæ. 3. Leptothrix buccalis. 4. Leptomitus. 5. Bacteria, vibrios, and monads. 6. Paramecia. 7. Heterogeneous mass.

Oidium Albicans, or While Plant.

As revealed to the obeerver, it seems to consist of thickened epithelial cells, mingled with nnmerous minuto sporules or seeds, from the midst of which long, thread like, jointed and branching plants arise, mycelium, intertwining with each other. The question as to whether this vegetable growth is the origin or soquence of disease hsa not yet been settled. So far as I can learn of its prevalence or predisposition, it occnrs most frequently in the mouths of persons living in situations where tbe air is impnro and diet unwholesome, or where previous gastric or intestinal disorder bas interfered with the health and vigor of tho infant. It is found alone or simultaneously on the inner edge of the lips, where the mucons membrane begins, on the inner side of the cheek, on the gums and palate, on the upper and lowor surface of the tongue, in the throat, and in tbe œsophagus, down as far as the cardia, or upper opening of the stomach.

Cryplococcus Cerevisiæ—Cell or Capsule.

This plant is composed of round or oval cells, which present in their interior oue or two little corpuscles resembling somewhat an oil globule. They are propagated with great rapidiiy when in contact with decomposiug substances at a favorable temperature. This cryptococcus is so similar to that fonud in yeast, beer, ale, and sour milk that it may bc considered practically identical, the principal difference noticed being a variation in the aize; while in sbape, manner of propagation, and apparent globule within, the modifications are but slight. It is developed in the morbid secretions of the mouth, the œsophsgns, and stomach; it is also introduced into these situations by the drinking of beer.

In the black fur of the tongue of persons laboring nnder typhus, or in the oral secretions where persons have been long snfferers from organic disease, it is also found. Vogel thinks it of great importance to regard this plaut only as an accompaniment and not as the cause of diseaee.

Leptothrix Buccalis—Slender Hairs in Ihe Mouth.

This consists of slender structureless fibers, of various lengths, and straight or cnrved as the fiber is long or short. One end is free, the other is planted in or projecting from a granular mass, though a limited number are always noticed floating in the secretions, detached from any snbstance. They are fonnd singly or in bundles, and multiply with great rapidity. Scarcely any portion of the mouth is free from them. They appear on the snrface of the tongue, in dopressions of the teeth, and cavities of decay, on the neck and surfaces of the teeth; indeed, everywhere within the oral cavity tbat lodgment can be found for a particle of food.

They are fonnd also growing from the surface of accnmulations of tartar, whether such accretions be upon the necks of the teeth, in the cavities of decay, or on artificial dentures. There is probably no situation where they grow with greater rapidity than on the surfaces of tbe palate, either upper or nnder. The soft cheese-like substance that so quickly accumulates there is most prolific in their production, thongh from this situatiou they are neither so long nor attenuated as those taken from an inflamed mucous membrane. While great care in cleanliness limits their number, it is impossiblo to entirely eradicate them or prevent their development.

Leplomitus—Slender Threads.

This growth, as the name indicates, is neither so long nor so slender as the leptothrix. It also has occasional branches, and marked transverse striæ, which complete ite morphological difference from the plant just described. It is found npon tho tongue and in the pharynx of persons suffering from pneumonia, pleuresia, phthisis, apoplexia, and cbronic gastritis.

Bacteria and Vibrios.

These organisms form some of tbe most minute objects which the microscopist bas the opportnnity of examining, and it is with the greatest difficulty their strnctnre can be accnrately determined. They are found in the fluids of the mouth, but the profusion in which they exist is modified by the care exercised in keeping the fluids of the oral cavity free from decomposing substances. In the lungs of teeth where the pulps are devitalized, they are found to rapidly develop. Nor is their presence in this locality confined to such teeth as have defective crowns giving communication with the fluids of the mouth; but in a number that were examinod where there was a devitalizatiou of the pnlp, without any loss of the hard tissues from caries or otherwise, their presence was readily detected. Upon opening into such cavities, they were, as nsnal, very offensive from the degeuerated pulp, aud ou examining this putrid material those living organisms were observed in abundance.

Monads.

With those two low forms of life we must associate what are kuown as monads, or, as Bastian calls them, plastide particles. These are invariably found in the same solutions with the former, and are supposed by some observers to result either by direct growth and development, or by aggregation and coalescence into bacteria and vibrios.

"Naturalists have beeu in donbt as to whether they should be regarded as independent living things of the lowest grade, having an individuality of their own, or whether, rather, they should be looked upon as developmental forms of some higher organisms, either aniinal or vegetable.

The discovery of these low forms of life in the month is not of modern origin, as we shall see from the following by Lenwenhoek. In 1682, at the age of fifty years, he wrote respecting his teeth: "It is my custom every morning to rub my teeth with salt, and afterwards to wash my mouth, and, after eating, I always olean my large teeth with a toothpiok, and sometimes rub them very hard with a cloth. By these means my teeth are so clean and white that few persons of my age can show so good a set; nor do my gums ever bleed, although I rub them very hard with salt, and yet I cannot keep my teeth so clean but that, upon examining them with a magnifying glass, I have observed a kind of white substance collected between them, in consistence like a mixture of flour and water. In reflecting on this substance, I thought it probable (although I could not observe any motion in it) that it might contain some living croatnres. Having therefore mixed it with rain water, which I knew was perfectly pure, I found, to my great surprise, that it contained many very small animalcules, the motions of which were very pleasing to behold. The largest sort of them had the greatest and qnickeat motion, leaping about in the fluid like the fish called a jack; the number of these was very small. The second sort had a kind of whirling motion, and sometimes moved in the direction of a spiral, and undulated; these were more in number. Of the third sort I could not well ascertain the figure, for sometimes they seemed roundish but oblong, and sometimes perfectly round. These were so small that they did not appear larger than a speck. The motion of these little creatures, one among another, may be imagined like that of a great number of guats or flies sporting in the air. From the appearance of these to me, I judged that I saw some thousands of them in a portiou of liquid no larger than a grain of saud, and this liquid consisted of eight parts water and one part only of the before mentioned substance taken from the teeth.

"With tho point of a needle I took some of the same kind of substance from the teeth of two ladies who I knew were very punctual in oleaning them every day, and therein I observed as many of these animalcules as I have just mentioned. I also saw the same in a white substance taken from the teeth of a boy about eight years old; and npon examining in like manner the same snbstance taken from the teeth of an old gentleman, who was very careless about keeping them clean, I found an incredible number of living animalcules, swimming about more rapidly thau any I had before seen, and in such unmbers that the water which contained them (though bnt a small portion of the material taken from the teeth was mixed in it) seemed to be alive."

Paramecia.

Having uow considered all tha growths deemed vegetable fonnd in the moutb, I have still one other organism to describe, as to the true place of which in nature there is no division of sentiment, it belonging undoubtedly to the animal kingdom. I allnde to the paramecia, a genus of infusoria. They are only fonnd in the oral cavity in casee of extreme uncleanliness; and thongh increasing rapidly in infusions adapted to their growth, they are somewhat limited in this sitnation, owing to the constant changes of the secretions. Abont fifteen varieties have beeu described. They have a soft, flexible body, variable in form, though nsually oblong or oval, and more or less depressed. In most of them, numerous rows of vibrutile cilia are noticeable, projecting from their integument.

New Safety Lamp.—At a meeting of the North Staffordshire mining institute, held recently at Stoke-on-Trent, a paper was read on "Landan New Safety Lamp, for Use in Mines." The peculiarity of the lamp is that the admission of gas extinguishes the flame, and it cannot under any circumstances be exploded by the lamp. The whole of the air for feeding the flame has to paes through an air chamber in a limited space at the bottom of the lamp, and as soon as the impure air, such as hydrogen, fills np that limited space, then the passage for the oxygen which is requisite to support combustion is stopped, and consequently the light gets suffocated for want of air. Successful experiments were made to demonstrate this. It was claimed for the lamp that it could not be affected by the strongest current of pure air; but the experiments in this respect were not so successful. But while these latter experiments did not show that the Landau lamp was inferior to others, the former were regarded as the evidence of superiority of construction.

A New Substitute for a Barometer.—One who has tried says a cnp of coffee is a sure barometer, if you allow the sugar to drop to the bottom of the cup and watch the bubbles arise without disturbing the coffee. If the bubbles collect in the middle, the day will be fine; if they adbere to the cup, forming a ring, it will be rainy; and if the bubbles separate without assuming any fixed position, changeable weather may be expected.

Engineering Experiment.

About twenty gentlemeu, including Major J. Tunstall Haverfield, Mr. Cruger Miles, Mr. Mnir, C. E., Mr. Yockley, C. E., and others, paid a visit to the docks at Avonmouth, Bristol, on the 2d inst., for the pnrpose of inspecting an engine, adapted by Mr. Haudyside for ascending steep gradients ou railroads. The patent had been viewed on Monday week by Sir John Hawkshaw and other members of the British Association, but on that occasion, owing to some disarrangement, the winding gear could not be worked. On this occasion, however, the whole of the capabilities of the engine were shown. The principal idea of the invention is the conversion of a locomotive into a stationary engine by the action of two gripping struts placed on either side at the end of the engine. In the framework of the latter is fixed a hauling drum about one foot in diameter, round which is wound a wire rope. At the foot of a steep incline this wire rope is paid out, and the engine ascends by itself. When a sufficient distance has been traversed the engine is stopped, and the gripping struts, holding firmly to the rails, allow the train to be drawn up by the rope as if by an ordinary stationary engine. The powerful gripping action of these struts was shown by their not yielding when the full force of steam was worked directly against them. When descending an incline they act as brakes, and are capable of stopping a train travelling forty miles an hour, in 370 feet. It is said that the Secretary for War has informed Mr. Haudyside that if the engine is a success at Avonmouth for a fortnight, a royal commission will be sent to inquire into its merits with a view to its application to field service.—*Engineering Times.*

The Jujube Tree.

The jujube tree, (*Rhamnus Ziziphus*) has been introduced into Louisiana over thirty years, and though it thrives as well here as in Syria, its original country, it is known only by few persons. The jnjnbe is an elegant tree, of medium size, fifteen feet, accommodating itself to any soil, provided it be not too wet; and though a native of Syria, does not snffer from any amount of cold we are ever liable to experience in the latitude of New Orleans.

The fruit of the jujnbe tree ripens in July and Angnet, and is of the size and shape of a large olive, covered by a red smooth, thin, but hard skin; the pulp is soft yellowish and sweet; in the centre of the fruit is a hard stone, which contains two cells or cavities, one of which is generally obliterated; the other contains an oily kernel.

The jujube, through cultivation, has become naturalized in Spaiu, Italy and the Southern part of Fraunce, where its fruits are used in making that preparation so familiar to children, "jnjube paste."

The jujnbe tree is easily propagated either by seeds, or by auckers which rise from its roots at distances of eight to fifteen feet from the tree. The seedlings give fruit in aix or seven years, the suckers in one or two years.

The inventive genius of the age uow makes jujube puste of gum arabic, sugar, water, a little coloring matter, and not a particle of the decoctiou of jujnbe fruit—and yet our medical dispensatories, though acknowledging the fraud, tell us the modern jujube paste is as good as that of old times; I cannot agree with them.

Restoration of Life After Freezing.—A friend residing in Baltimore had in his possession a small alligator, which had been sent him from Florida; its habitation was a tub partially filled with water, kept ontdoors. During one of the cold anaps of the past wiuter, in the night the water became oompletely frozen, imprisoning the reptile in the ice, with but a small portion of his body protrnding therefrom. To all appearances the animal was as dead as one of the stuffed specimens seen in a mnseum collection. The want of time preoluding an effort for its extrication in the morniug, it was allowed to remsin frozen, and was soon forgotten in the maze of the cares of the day. For forty-eight houra the reptile thus remained frozen and lifeless, at the end of which time, on being thawed ont, vitality became visible, and in a short time it was as animated as ever, with no evidence of having in the least snffered by the prolonged frigorific confinement. Here is an inatance in which the vital spark seems not to have been extinguished by the freezing, nor the animal's organism to have been mutilated, but that vitality merely remained torpid or dormant dnring the freezing, and ready to respond to its functions whenever the animal's organism returned to its normal condition.—*Ex.*

The Foreign Debt of the United States has been estimated by bankers in New York, who have the anbject constantly before them, to be as high as $2,000,000,000. Thia debt is an immense drain npon our resources. It draws from us a vast portion of the profits of labor and capital at home; it takes away the entire product of our gold and silver mines, and it keeps us constantly exporting enormous domestic products without any adequate remuneration. This large foreign debt we oan only get rid of by maintaiuing a favorable balance of trade, for which a protective tariff ia indispenaable, and we must, at the same time, exhibit inoreased enterpriae in the export trade and a discouragement of the growth of luxury.

Carbonic Acid for Extinguishing Fires.

The several portable fire extiuguishers, which are now in such common nse, and which have done snoh admirable service, are founded on the use of carbonic acid gas as the extinguisher, and have fully demonstrated its practical value. We, some time ago, called attention to the advantages that would result from the nse of this same agent in extingniahing fires on shipboard, and in the firey mines of the anthracite region. The portable extingnishers have done good service in several of our coal mines, bnt the chief difficulty in using them in a confined space is, that they quickly make tbe air irrespirable, and may cause suffocation of the operator, even before the gas has filled the whole space snfficient to extingnish the fire. And, also, it is impossible to approach a large fire close enough to obtain the full effect of the gas on it. Messrs. Connelly & Naylor, of Pittsburg, have applied the gas in a manner which produces the most satisfactory results, and which may be extended to use in the coal mines. Some of our mines now have water pipes laid into every gangway, and branches of portable hose into each breast, in order to combat the fires that are ignited, almost daily, from the blasts. Experience in the managing of the water has made this agent a reliable and moderately efficient one, but we think it highly probable that greater certainty and efficiency would be secured in the use of carbonic acid. In order to give some idea of its prompt and effective action, we take from the Pittsburg *Commercial* the following description of some interesting experiments with it at Pittsburg:

"The patentees recently fitted up an apparatus, near the grounds of the gas works, in Pittsburg, where they coudnoted experimental tests in the presence of a number of citizens. In general terms, the machinery consists of a generator, where the gas is evolved; three receiving tanks, thirty inches in diameter by ten feet in length, and the counecting pipes. Fifty feet distant waa an excavation, twenty by thirty feet, filled partially with water, upon the snrface of which was a 'skim' of crude oil, to test the efficacy of the gas in extinguishing an 'oil fire.' A pipe about an inch and a half in dismeter, and supplied with small jets every few inches, was extended along each side of this tank, a little above the surface of the water.

"Tbe first experiment consisted in lighting the crude oil, and letting it burn until the flame covered the entire surface. Immense volumes of black smoke rolled upward, the flames shot np ten or twelve feet into the air, and the heat was so intense as to drive the spectators back some fifty or sixty feet. At a signal from Dr. Connolly, when the fire was at its hotteat, the engineer turned a valve, tbe carbonic acid rushed from the receivers, with a hissing noise, throngh the jets in the pipes, and in two or three aeconds the flame was cnt off as effectually as thongh a coating of ice had instantly formed on the snrface of the oil. As aoon as the gas struck the flame, it was changed to a white steam, which made a striking contrast with the dense black smoke above it, as these two dissimilar vapors floated away and were gradually dissipated in the upper atmosphere. The second experiment was but a repetition of the first, and in both cases the extinguishment of the great volume of flame was as sudden and effectual as the snuffing ont of a candle. A third experimeut conaisted in aetting fire to a pile of ehavings, kindling wood, oil barrels, etc., rendered highly inflammable by the addition of crnde oil. When the fire had taken a firm hold, and was rapidly consuming the woody fibre, the gas was trned on, and the fire was out. The wood continued to smoke for a few moments, but there waa uo fire. The experiments were highly snccessful, and Dr. Connolly was warmly congratulated on his achievement.

"The pressure on the receiving tanks, at the first test, was: No. 1, 210 lbs.; No. 2, 115 lbs.; No. 3, 213 lbs. No. 2 was really not in use. On the second test, the pressure was 180 lbs. on Nos. 1 and 3. Theee tanks, or boile.s, were made by Messrs. Carroll & Co., and are the best steel, put together as tight as joints can be made."

Utilizing Furnace Slag.

Mr. W. Harold Smith, of Philadelphia, has been experimenting for some time with furnace slag, endeavoring to make from it a cheap and serviceable substitnte for bricka and atone in paving and buildiug. He haa taken slag from the furnace, granulated as it came from the stack, then mixed it with two-thirds its weight of cement, subjected it to heavy pressure, and baa succeeded in making firm, smooth, solid blocks, whioh have sustained the following tests: (1) They have been very highly compressed without orushing; (2) were laid for pavement last year and endured the winter's frost without damage; (3) have been heated to a white heat and then thrown into water without disintegration; (4) a thirty-five-foot column of water was forced against one of the blocks without penetrating it; and (5) they were found to endnre heat which would melt an ordinary red brick. Mr. Smith proposes to make use of his invention first in the manufactnre of stones for flagging pavements, from fifteen to twenty-four inches square and three inches thick, and afterwards, when the valne of the material beoomes manifest, to utilize it in other forms. He claims that his stone, which he has named "Phœnix stone," can be made so oheaply that a furnace owner can make aa much ont of alag as he can out of his iron.

MECHANICAL PROGRESS.

The Nature and Utilization of Slag.

Frederick A. Luckenbach recently addressed the New York Society of Practical Engineering, on "The Industrial Uses of Blast Furnace Slag." The main points of his paper were as follows: Slag is a chemical compound, the combination of an acid with various bases, and is as much a salt as the sulphate of alumina or potassa. Its formation is strictly governed by the laws of chemistry. The silica is the acid, and the lime, alumina, magnesia and the alkalies are the bases. Iron ores are generally silicious. If when an ore is placed in a blast furnace and smelted, no base is added, in seeking a base the ore will seize on the oxide of iron combine with it and carry it off as a slag. To prevent this, limestone, which is a base, is added. A certain quantity of silica requires a certain amount of lime to saturate, another quantity of magnesia, and another of aluminum; all of which quantities will vary with their chemical equivalents. Having, then, analyses of all the material of the charge, the proportions of each may be so calculated as to produce a certain slag. But with slag, as with other chemical compounds, there may be two atoms of base to one of acid, two of acid to one of base, or one of base to one of acid: and, according as this is the case, they are called basic, acid or neutral slags. The acid slags are the most fusible, the neutral next, and the basic the least so. Slag is sometimes, according to the proportions of its component parts, a material easily fusible, and possessed of other definite qualities, and at other times a comparatively infusible material. Such being the character of the product, it has been a problem of great difficulty to determine what general system can be built upon which for any given purpose will utilize all the different varieties of slag.

The first recorded plan for the utilization of slag was that of John Payne, in England, in 1728. He proposed melding the dross by fueing or melting with such mixtures as will prevent its being brittle, and also give it different colors, so as to make it more ornamental and useful. After this came Mushet's plan of 1815, for reworking slag to obtain the iron left in it. Then Crawshay and Mushet invented a process for recovering the iron believed to exist in the refuse of copper smelting, which process appears to be the first use of water for pulverizing molten slag. In 1852, Alexander Cunningham claimed that sulphate of alumina and alum could be obtained from slag. In 1853, William and John Longmaid thought that blast-furnace slag could be formed into shapes suitable for pavements of streets. In the same year George Robinson proposed a new plan. The slag was to be run in a molten state upon a heated iron table and formed into sheets by rolling. The plates were then to be annealed and applied for roofing and other purposes. In the following year, Smith, Bessemer & Longsdon secured a patent on a process in which slag was turned into table tops, chimney pieces, statues, etc. Joseph Woodward, of Yorkshire, patented a process for making bricks of slag for building purposes. A company of capitalists have lately begun to make bricks by this process. Their prospectus asserts that the brick will withstand a crushing force of over four tons per cubic inch, being five times more than ordinary brick will bear. All these projects have proved failures. The secret of securing homogeneity in structure, irrespective of chemical action, was not discovered, although the process of annealing gave a faint and shadowy hint of the direction in which it might be found. Mr. Luckenbach read the details of an invention of his own, which he claimed to be an improvement in the means of unhealing castings made of blast-furnace slag, and which is designed to provide for the manufacture of paving and building blocks, fire-brick and other articles from the slag.

THE EXPLOSION COMMISSION.—At the recent meeting of the Government steam boiler explosion commission at Sandy Hook, the boiler experimented upon was a plain cylinder boiler, set in brickwork in the usual manner. In each experiment the boiler was filled with water, and when the fire was in good order and the steam at the right point, all water was blown out; the boiler was allowed to become heated to the desired temperature, as indicated by a pyrometer inserted within it, and, at the proper moment, the feed water was introduced by a force pump. It was only on the second day that this severe usage produced the destruction of the boiler. At each occasion, on the introduction of the water, the steam pressure jumped up suddenly, the safety valve opened, and, the water still continuing to enter, the boiler pressure dropped almost as rapidly as it had risen, and the boiler cooled down on each occasion (except the last) without any apparent injury, and without having even started a seam, although the metal had been red hot. The last experiment resulted in the explosion of the boiler and the destruction of its setting, and interrupted the work. The succession of phenomena was precisely as already described; but the temperature of the boiler was higher, probably a bright red on the bottom, and the pressure of steam was about sixty pounds when the explosion occurred. It had fallen somewhat from the maximum attained the moment before. From these, and similar experiments yet to follow, those having the management of steam boilers will draw their own conclusions. One thing is made apparent, that no boiler—no matter how good the material, nor how perfect the workmanship—can long withstand the pressure resulting from the sudden introduction of water upon overheated plates; hence, low water is a source of danger which engineers should always avoid.

Depression in the Iron Interest Due to the Increasing Introduction of Steel.

The Cincinnati *Times* has the following: The continued depression of the iron interest, not only in this country but in Europe, is a subject for thoughtful consideration. The wonderful growth of the iron production of the world from 1835 to 1865 marked it emphatically as the iron age, and during that period was built almost our entire present system of railroads, covering over 73,000 miles of track, and requiring fully 7,300,000 tons of railroad iron in its construction. The annual wear and tear, estimated at about ten per cent., would require 730,000 tons per annum of railroad iron.

Since 1865 Bessemer steel rails have been growing in favor and decreasing in cost, and to-day the Bessemer plants of this country are capable of producing 350,000 tons of steel rails per annum. When it is remembered that each steel rail possesses fully seven times the life of an iron rail, is it to be wondered at that so many of our iron rail mills are changing their production to merchant bars? Every ton of Bessemer steel rails that has been put into the railroads of the country for the past ten years has possessed a wearing life, as compared to iron rails, as seventy to ten. It requires very little calculation to estimate the required production of steel rails, not only to cover the entire wear and tear of all our iron roads, but in a few years to replace our iron roads with steel rails.

When this is accomplished there will only be required 73,000 tons per annum to supply the wear and tear that in 1865 required 730,000 tons of iron. This will account in part for the decreased production of pig iron in the country for three years past. In 1872 there were produced 2,854,558 tons of pig iron; in 1873 2,869,278 ton; and in 1874, 2,689,413 tons, a falling off of about sixteen per cent. in the production of pig iron in two years. This was fully equalized by the low wear and tear of steel rails that had gone into the railroads since 1865.

We are now entering on the steel age, and the iron men of the country must meet the question firmly, understanding not only that the market for railroad iron is almost at an end, but that whenever Bessemer steel supplants the use of wrought iron, it not only requires less weight for a given result, but that, the life of steel being so much longer than iron, the wear and tear will be proportionately less. England, France and Belgium have already recognized the sovereignty of the "new metal, "Bessemer," and are now changing their works to meet the emergency. Shall our iron and steel men, with their justly won laurels for the great production with the Bessemer plants, allow others to step in and rob them of their glory?

AMERICAN TOOLS IN ENGLAND.—English edge tool makers in particular are aware of the success with which certain of their business rivals in America have has led them in many of our home and foreign markets. So large, however, is the demand at present for good edge tools of almost every description that there few edge tool firms in the United Kingdom who have not got plenty of orders upon their books. The English article is not, therefore, out of use, but there is a perceptible increase in the favor in which handy and thoroughly excellent tools are held both at home and abroad. And this is being encouraged by the growing facilities for manufacturing steel, both shear and cast. Sensible of this, certain American firms are pushing their opportunity. Hence it comes about that American forks, shovels, and axes are to be had wherever edge tools are offered in this country. But it would seem that the Americans believe that they can compete with us much more successfully by having branch establishments to manufacture their specialties in this country rather than by shipping their product from the other side. A firm of cast-steel shovel makers at Pittsburg (Messrs. Hussey, Binns & Co.) who have recently brought out a shovel in which the straps, though of iron, are compacted with the steel during the process of casting, and who are making at a very low figure, and with very little manual labor, shovels that are getting very rapidly into use throughout the States, are now, through a representative who has recently come over from Pittsburg to England, making enquiries which will regulate their action, and determine them whether they will themselves begin to make in this country, or whether they will offer their process to English firms, or an English company. If American edge tool makers should begin to produce here goods that are already running English makers hard, then it is to be inferred that their example will be followed by other Trans-Atlantic hardware manufacturers. If, in such an event, the English firms will keep as well employed as they now are, is another matter.—*London Mining Journal.*

SCIENTIFIC PROGRESS.

Molecules.

The term atom has been exclusively appropriated by the chemist, while the mathematician and physicist have preferred to adopt, or share with him, the word molecule to signify those ultimate constituents of matter upon whose motions and relations depend the various states of all bodies, solid, liquid, and gaseous; their temperature, and other properties.

The word particle is also freely made use of as involving no hypothesis, and meaning simply a small part of any body. Molecule has been defined by Maxwell as "the smallest possible portion of a particular substance;" and again, as "that small portion of the substance which moves as one lump in the motion of agitation."

Every substance is now supposed to be composed of an immense number of molecules, which, even in the solid state, are never entirely at rest, and, in the gaseous, are in a state of perpetual violent commotion, rushing about in straight lines in all directions with inconceivable rapidity; and it is this perpetual bombardment, as it has been called, by these little particles, that explains the known pressure of gas on the walls of any containing vessels, the incessant impact of the molecules producing the effect of one continual pressure, just as upon the eye a succession of rapid flashes of light have the effect of one continuous flame. Of course the molecules, although they are supposed to be separated for a very considerable distance from one another, are perpetually meeting and rebounding, and thus their velocity is interfered with, but there is a certain residuum of speed left, resulting in a mean velocity for the whole. This mean velocity indicates also temperature, and, for the same substance at one pressure, the same mean velocity is always accompanied by the same temperature.

But every different substance has a mean velocity of its own for a given temperature, and these have all been calculated, such is the extreme nicety with which the hypothesis is being worked out. Taking, for instance, one of the constituents of water—hydrogen—in the form of gas its mean velocity has been calculated by Joule at over a mile in one second—a speed far greater than anything we have any practical knowledge of—far above that obtained in artillery practice. The exact velocity is 6,097 feet per second, at a temperature of 32° F., and at the ordinary pressure of the atmosphere.

A daring attack has been made upon the actual size of the molecules with a result that has every element of probability in its favor. Thompson has calculated that a cubic inch of gas contains a hundred thousand million million million molecules. To convey some idea of their magnitude, he says: "If we conceive a sphere of water as large as a pea magnified to the size of the earth, each molecule being magnified to the same extent, the magnified structure would be coarser grained than a heap of small lead shot, but less coarse grained than a heap of cricket balls."

A SHOWER OF HAY.—Dr. Hawtrey Benson, of Dublin, writing in the Dublin *Daily Express* under date of July 27th, describes a remarkable shower of small pieces of hay which he witnessed at Monkstown that morning. It appeared in the form of "a number of dark flocculent bodies floating slowly down through the air from a great height, appearing as if falling from a very heavy dark cloud, which hung over the house." The pieces of hay picked up were wet, "as if a very heavy dew had been deposited on it. The average weight of the larger flocks was probably not more than one or two ounces, and from that all sizes were perceptible down to a simple blade. The air was very calm, with a gentle undercurrent from S. E.; the clouds were moving in an upper current from S. S. W." The air was tolerably warm and dry, and the phenomenon is thus account for by Dr. J. W. Moore: "The coincidence of a hot sun and two air currents probably caused the development of a whirlwind some distance to the south of Monkstown. By it the hay was raised into the air, to fall, as already described, over Monkstown and the adjoining districts." A similar shower of hay fell near Wrexham, England, July 25th.—*Scientific American.*

COLLODION.—Few bodies are more easily electrified than collodion. With the least friction by the hand, the membrane adheres to the fingers. If a collodion sheet be fixed, like a flag, to a glass tube, and waved in dry and hot air, it is electrified. Other uses of collodion sheets, here mentioned, are in experiments on polarization of light, on colors of thin films, on diathermancy, on vibrations in acoustics. M. Gripon prepares these sheets by dissolving 1.5 to 1.7 grains gun cotton in a mixture of fifty grains alcohol and fifty grains ether. The collodion is poured on a glass plate after the latter has been breathed upon so as to receive a coating of moisture. When—after some hours—the collodion is dry, the plate is put in water, and a sheet of paper having been applied and attached to the collodion by the edges, the film is drawn off with the paper.—*Scientific American.*

A Water Shell.

The *Scientific American* calls attention to some interesting experiments which have recently been made at Okehampton, England, which have been very successful in proving the great value of the new water shell, which will at once be adopted as a service weapon. The effects of this novel instrument of warfare surpass in destructive power the renowned shrapnel shell; and in one experiment when a battery of the Royal Horse Artillery was in action, as many as fifty-one hits were recorded with the new shell, against twenty-eight made by the shrapnel, fitted with time fuses. The wooden dummies, which represented the enemy drawn up in loose order, one pace apart, in the manner of an advancing army, were struck again and again by the minute fragments of the water shells, which, according to our correspondent, inflicted wounds of a far more dangerous nature than those made by the shrapnel or common shell.

The nature of the water shell may be explained in a few words. It is not a projectile of special construction, but simply a common shell or cast iron cylinder filled with water, into which is fitted a small cylinder containing a quarter or, at the most, half an ounce of gun cotton; it is then hermetically sealed; a few grains of fulminate of mercury is placed between the gun cotton and the fuse, and, as soon as the latter is fitted, the shell is ready for firing.

The charge of gunpowder used in the same sized shell is sixteen ounces, the explosion of which breaks the shell up into three or four pieces, whereas the one charged with half an ounce of gunpowder flies into a hundred or more fragments. The reason is this: The gunpowder explodes comparatively slowly, and breaks up the shell at its weak points, while the gun cotton detonates with a sudden and terrible force, which, being communicated to a non-compressible body (water), bursts the shell instantly into minute fragments, the energy being exerted equally on all sides. So rapid and terrible is the force generated by the gun cotton that the iron shell is sometimes pulverized, the fragments of metal being so minute as scarcely to be visible.

The idea of this terrible shell is due to Professor Abel, who is the patentee of a process to manufacture gun cotton. The English, German and French governments have adopted this new form of gun cotton for torpedoes and shells, as well as for military engineering and submarine mining.

THE POWER OF ORDINARY WIND EDDIES.—The Faribault (Minn.) *Democrat*, in a late issue, relates the following: "A farmer who lives about five miles northwest of Faribault, by the name of Samuel Johnson, was going along the road Saturday last, when suddenly a little whirlwind, which described a circle apparently not more than three feet in diameter, appeared in the road in front of him. It took up the dust pretty lively and buzzed like a swarm of bees, but Mr. Johnson kept on his way directly towards it, thinking it had no great amount of power. In fact, he did not think it worth his while to step one side and let it whirl past, but kept straight on and met it square in the road. When they came together the whirlwind seemed to drop everything else and took hold of Mr. Johnson, and in less time than it takes to tell it, Mr. Johnson had lost his hat and his shirt, and was pitched about twenty feet into the gutter, feeling as though he had been shocked by a battery. It was a rough experience, and Mr. Johnson will never fool with a whirlwind again."

AN EXPERIMENTAL AURORA.—M. Lynström, of the University of Helsingfors, has sent to the Geographical exhibition, Paris, an interesting instrument invented by him to demonstrate that aurorae are produced by electrical currents passing through the atmosphere in the polar regions. The instrument is very simple and effective in its demonstrations. The phenomena produced are quite consistent with the theory advocated by Swedish observers, that electrical currents emanating from the earth and penetrating the upper regions produce aurorae in both hemispheres. The experiment, says *Nature*, differs from the apparatus of M. De la Rive, who placed his current *in vacuo*, and did not show the property of ordinary atmospheric air of allowing to pass unobserved, at the pressure of two feet six and one-half inches, a stream of electricity which illuminates a rarified atmosphere. The experiment was most attractive, and hundreds of persons witnessed it every day.

BALLOONING AT NIGHT—OBSERVING METEORS.—M. Wilfrid de Fonvielle made a successful night ascent on August 1st, for the purpose of observing meteorites. From 10 P. M. to 4 A. M., forty-two meteorites were observed between Rheims and Fontainebleau. Some of these emanated from *Cassiopeia* others from *Perseus*, and as many as nine took a vertical direction, descending from the part of the heavens which was concealed by the balloon. None of these were very noteworthy, and it is probable that none would have been observed at the surface of the earth. Eight persons were in the car.

"EOSIN" is the name given to a new coloring matter recently introduced into commerce. It was first produced by Caro at the Baden aniline works, and named by him on account of its beautiful color, eos, the red of the morning dawn.

Sales at S. F. Stock Exchange.

FRIDAY, A. M., OCT. 8.

115 Alpha.....17@16½
620 Andes.....3¼@3⅜
110 Baltimore Con.....3
785 Best & Belcher.....47@45
250 Belcher.....18@18½
40 Bullion.....43@41½
100 Chollar.....68@67
120 Confidence.....17@16½
337 Con Virginia.....300@288
185 Caledonia.....29¼@28
590 California.....29¾@28
140 C Point.....23@22½
65 Dayton.....3¾@4
90 Empire Mill.....5@5½
620 Gould & Curry.....16⅞@17
150 ...do.....b 10..17
150 Gold Hill Q.....3
75 Hals & Norcross.....44@43
285 Imperial.....9¾@9½
390 Justice.....33¼@32½
330 Julia.....8@7⅞
50 Kossuth.....50c
30 Knickerbocker.....2¼@2¾
740 Lady Bryan.....8⅞@9c
375 Lady Bryan.....2⅝@2⅞
715 Mexican.....24@23
100 Mides.....2½
100 Mint.....37½@
275 N Carson.....
100 New York.....2¼
50 Nevada.....50c
1065 Ophir.....57@59
290 Overman.....43½@43
10 ...do.....b 5..
310 Occidental.....3⅛
50 O G Hill.....1¾
350 Pacific.....
10 Savage.....60
230 Sierra Nevada.....13¾@13⅝
150 S Hill.....7@7¼
50 Succor.....1
85 Seg Belcher.....55@60
220 Union.....30@31
200 Wells-Fargo.....17½@20c
145 Woodville.....13¼@17⅝
100 ...do.....h 5..2
190 Yellow Jacket.....61@62

AFTERNOON SESSION.

90 Alpha.....16
100 Belmont.....15½
30 Belcher.....18¾
340 Best & Bel.....46
600 California.....57½@57
20 C Point.....22
15 Con Virginia.....296
1835 Eureka Con.....9@10
50 ...do.....b 5..15
250 Florida.....3
400 Gila.....2¾@2½
160 Geneva.....2¾
50 Golden Chariot.....2¾
125 Imperial.....9¼@9
150 Jackson.....1
120 Jefferson.....5@4¾
645 Justice.....31½@31
100 K Con.....70
170 Leopard.....15¾@16
75 Meadow Valley.....3
610 Mansfield.....55@60c
615 Mexican.....20½@20¾
565 Ophir.....55½@56
120 Overman.....42
50 Prussian.....2
50 Panther.....1
50 Pocahontas.....1
150 Raymond & Ely.....25½@25
135 S Nevada.....13½@13

SATURDAY, A. M., OCT. 9.

85 Alpha.....17
75 Am Flat.....11¾
420 Andes.....3½@3¾
335 Baltimore Con.....2½@2
20 Bacon.....3¾
70 Belcher.....16½@17
40 ...do.....b 5..18
20¼ Best & Bel.....43@46
100 Bullion.....42
120 Chollar.....66@63
145 C Point.....23@24
270 Confidence.....16½
235 Con Virginia.....299@300
100 ...do.....s 5..297½@300
235 California.....27½
40 Dayton.....3¾
150 Empire.....5¼
340 Eureka Con.....15@16
350 Florida.....4
60 Gould & Curry.....16
100 Globe.....90c
75 Hale & Nor.....38@40
100 Hussey.....1⅝
10 Imperial.....9
1,290 Justice.....31@33
270 Julia.....8@7¾
100 Knickerbocker.....2¼
410 Lady Bryan.....50@40c
630 Leviathan.....1¾@1
615 Mexican.....20½@20¾
650 Mint.....25@20c
200 Maryland.....20c
300 M Star.....4
30 Meadow Valley.....3
340 New York.....2¼@2
300 N Carson.....20c
25 N Belle.....30
365 Ophir.....56½@56¾
315 Occidental.....3⅞@3¾
75 Overman.....43@43½
100 Pacific.....1
30 Phil Sher.....1
100 Prospect.....9
50 Rock Island.....2¼
20 Ray & Ely.....28
50 Savage.....75
250 Sierra Nevada.....13½@13⅝
50 Seg Belcher.....60
50 Succor.....1
285 Union Con.....8½
285 Woodville.....13¾@2
200 Wells-Fargo.....15c
35 Yellow Jacket.....61@61½
10 ...do.....b 5..61

MONDAY, A. M., OCT. 11.

30 Alpha.....16
100 Amazon.....1
230 Andes.....3⅝@4
60 Bullion.....42@42½
290 Best & Bel.....46@45¾
160 Belcher.....17¾@17½
330 Bal Con.....3
60 Crown Point.....21¾@21½
60 Chollar.....64@63
15 Caledonia.....16
120 Chollar.....64@63
60 Confidence.....16@16½
50 Con Virginia.....293@295
245 California.....28@28½
30 Dayton.....4
450 Florida.....4
320 Gould & C.....16¾
100 ....do.....b 10..17
70 Hale & Nor.....40
20 Imperial.....9¾
165 Justice.....31@32
100 ...do.....b 30..32½
10 ...do.....b 15..31¾
300 Julia.....7¾
50 ...do.....b 30..7
130 Kentuck.....11@11½
200 Knickerbocker.....2¼@2⅝
490 Lady Wash.....2¾@2⅝
300 Lady Bryan.....1⅝@1¾
40 Leviathan.....1⅝
835 Mexican.....21¼@21¾
400 M Star.....2¾@2
150 Maryland.....20@20c
50 New York.....2¼
50 Occidental.....3⅞
1190 Ophir.....58@59½
70 Overman.....43@42½
100 O G Hill.....1¾
100 Phil Sheridan.....1¾
50 Rook Island.....2¾
60 Savage.....17@16
50 Seg. Be cher.....58@55
45 Sil Hill.....7½@7¾
70 Utah.....7¼
165 Union Con.....8½@8¾
200 Woodville.....13¾@13¾
750 Wells-Fargo.....16@17½
25 Y Jacket.....61@62

AFTERNOON SESSION.

35 Balt Con.....2¼@2⅝
70 B & Bel.....45
100 Belcher.....17¾
80 Con Vir.....295
50 California.....28½@28
100 Empire.....3¾
100 Gila.....2⅝
20 Golden Chariot.....1
95 G & Curry.....17⅛@16⅝
220 Hussey.....1½
1000 Illinois Cen.....
10 Jackson.....8⅞@9
170 Jefferson.....4⅞@5
30 Justice.....31¾
440 Leopard.....15@14¾
100 ...do.....s 10..14½
35 Meadow Val.....2⅝@3
330 Mansfield.....29c
100 Mexican.....21½@21¾
225 Gould & C.....16½@16⅝
70 Hale & Nor.....38@40
200 Prussian.....2
1020 Justice.....29@30
420 Julia.....8@8¼
30 Kentuck.....12
85 Knickerbocker.....1¾
300 Lady Bryan.....1½@1¾
200 Lady Bryan.....75@95c
300 Lady Wash.....2¾@3
500 Mexican.....18@19½
50 Mides.....2¾
200 N Star.....1
375 New York.....2@2¼
425 N Carson.....25c
1000 Ophir.....53½@54¼
400 Overman.....41@42
180 Occidental.....3½@3⅝
50 O G Hill.....1½
50 Pacific.....1
50 Rock Island.....2¾@2⅞
25 S Hill.....7¼@2
60 Seg Belcher.....55
10 Savage.....77½
500 Succor.....1
30 Sierra Nevada.....13¾
700 Union Con.....8½@8¾
150 Utah.....12
150 Woodville.....13¾
700 Wells-Fargo .15@17½c
85 Yellow Jackat.....61½@62

AFTERNOON SESSION.

100 Belmont.....13¾@2
160 Belcher.....17@17¾
60 Crown Point.....22
320 California .....57¾@58
30 Con Virginia.....290@295
1330 Eureka Con.....14½@15
70 G & Curry.....17
15 Gila.....3@3¼
500 Golden Chariot.....1
100 Hussey.....1½
70 Imperial.....9¾
330 Julia.....8
330 Mustang.....22@22½
500 Jackson.....2
70 Jefferson.....4¾@5
150 Leopard.....14¾@15
120 Meadow Valley.....2½@3
100 Utah.....60
360 Mexican.....19¾@19¾
170 Ophir.....55½@55¾
30 Ovarman.....42¾@43
150 Prussian.....2
20 Raymond & Ely.....24
190 Union.....8½@8¾

660 Meadow Valley.....2⅞@3
20 ...do.....b 5..3.80
800 Mansfield.....22@25c
360 Mexican.....22¼@22½
25 N Belle.....29
120 Overman.....43@45½

SALES OF LAST WEEK AND THIS COMPARED.

THURSDAY, A. M., OCT. 7.

185 Andes.....3¼@3¾
100 Am Flat.....15
175 Alpha.....15
195 Belcher.....16½@16¾
850 Best & Belcher..43¾@44
250 Bullion.....41@42
110 Baltimore Con.....3@3½
225 Gould & C.....16½@16¾
70 Hale & Nor.....38@40
230 Imperial.....8⅞@9¼
1000 Justice.....29@30
420 Julia.....8@8¼
30 Kentuck.....12
85 Knickerbocker.....1¾
300 Lady Bryan.....1½@1¾
200 Lady Bryan.....75@95c
300 Lady Wash.....2¾@3
500 Mexican.....18@19½
30 Mides.....2¾
200 N Star.....1
375 New York.....2@2¼
425 N Carson.....25c
1000 Ophir.....53½@54¼
400 Overman.....41@42
180 Occidental.....3½@3⅝
50 O G Hill.....1½
50 Pacific.....1
50 Rock Island.....2¾@2⅞
25 S Hill.....7¼@2
60 Seg Belcher.....55
10 Savage.....77½
500 Succor.....1
30 Sierra Nevada.....13¾
700 Union Con.....8½@8¾
150 Utah.....12
150 Woodville.....13¾
700 Wells-Fargo .15@17½c
85 Yellow Jackat.....61½@62

AFTERNOON SESSION.

100 Belmont.....13¾@2
160 Belcher.....17@17¾
60 Crown Point.....22
320 California .....57¾@58
30 Con Virginia.....290@295
1330 Eureka Con.....14½@15
70 G & Curry.....17
15 Gila.....3@3¼
500 Golden Chariot.....1
100 Hussey.....1½
70 Imperial.....9¾
330 Julia.....8
330 Mustang.....22@22½
500 Jackson.....2
70 Jefferson.....4¾@5
150 Leopard.....14¾@15
120 Meadow Valley.....2½@3
100 Utah.....60
360 Mexican.....19¾@19¾
170 Ophir.....55½@55¾
30 Ovarman.....42¾@43
150 Prussian.....2
20 Raymond & Ely.....24
190 Union.....8½@8¾

THURSDAY A. M., OCT. 14.

65 Alpha.....18
495 Best & Belcher.....50@50½
180 Belcher.....17¾@17½
55 Bullion.....46½@47
355 Baltimore Con.....2½
35 Crown Point.....22¾@22½
135 Chollar.....69@73
50 Challenge.....5
10 C ndence.....18
320 Caledonia.....17¾@18
1080 California.....61¾@62
135 Con Virginia.....305@311
300 Dayton.....4
60 Empire Mill.....6
25 Eclipse.....15
435 Gould & Curry.19½@20¾
140 Hale & Norcross..44@45½
260 Imperial.....10@10½
495 Justice.....32@32½
200 Kentuck.....11@11¾
165 Knickerbocker.....2@2¾
375 Lady Bryan.....2¾
775 Mexican.....22¾@22¾
255 New York.....2¾@2¾
90 Ophir.....64½@65
370 Overman.....50@52
240 Savage.....85@90
455 Sierra Nevada.....13@13½
325 S Hill.....7½@7¾
20 Seg Belcher.....60@68
30 Succor.....1
640 Utah.....7@7¼
1190 Union Con.....9½@9¾
155 Yellow Jacket.....61@62

AFTERNOON SESSION.

30 Andes.....4@
160 Am Flag.....2
200 Ba tic.....1
400 Best & Belcher..51½@52¾
190 California.....62@62½
40 Con Virginia.....307@31
370 Eureka Con 17
410 Empire I.....7c
100 Florida.....4@4½
300 Gila.....2½@2⅝
270 Gould & Curry...21@21¾
100 H & Nor.....45
100 Hussey.....3½
100 Illinois C.....50
200 Iowa.....2¾
500 Justice.....30½@31
70 Jefferson.....4½
220 Lady Wash.....2¾@2¾
150 Kossuth.....1½@1¾
250 Leopard.....12½
90 Meadow Valley.....2⅞@3
225 Mint.....70c
400 Mides.....2¾
440 Mexican.....22½@22¾
100 Mansfield.....20c
15 Northern Belle.....25
250 N Carson.....2@25c
10 O G Hill.....1¾
445 Ophir.....67½@68
130 Overman.....48@50
100 Prospect.....4
100 Plutic.....1
80 Raymond & Ely.....30@33
80 Savage.....85@86
160 Union Con.....9¼@9½
80 Wells Fargo .....12½@16c
800 Woodville.....2¼@2½
70 Yellow Jacket.....62

The Mining Share Market.

The mining share market has generally been marked by an improvement during the week, and the last few days has shown considerable strength. There was an advance in the leading stocks yesterday, which looks as though it might be permanent. Prices on the street this (Thursday) morning were about as follows in the leading stocks: Ophir, $65 bid, $65¼ asked; Mexican, $22⅜ bid, $22½ asked; Best & Belcher, $49¾ bid; Gonld & Cnrry, $19¼ bid, $20 asked; Overman, $45 bid; Jnstice, $31 bid; Con. Virginia, $300, sales.

We note assessments in this week's issne as follows: Mansfield, Savage, Union Consolidated, Baltic Consolidated, Baltimore Consolidated, Overman, Rock Island, Excelsior, and El Dorado.

The news from the mines is of an encouraging character, and fully justifies a steady and advancing market.

A NEW OLEAGINOUS SEED.—The commission of the permanent Exposition of the French Colonies has lately called the attention of Marseilles soap makers to a new source of oil, found in the seed of the csraps, which is a tree abounding in immense forests in French Guisna. Twice a year the tree produces an abundant harvest of seed, which at certsin times cover the esrth to a depth of four or five inches. These, immediately snbjected to pressure, give thirty-five per cent. of their weight in an excellent soap-making or illuminating oil.

THE long cnt, which is to snpply the Central California colony, at Fresno, and the Wheatville farmers with water is now finished, and the wster is running through it.

PATENTS & INVENTIONS.

A Weekly List of U. S. Patents Issued to Pacific Coast Inventors.

FROM OFFICIAL REPORTS FOR THE MINING AND SCIENTIFIC PRESS, DEWEY & CO., PUBLISHERS AND U. S. AND FOREIGN PATENT AGENTS.]

By Special Dispatch, Dated Washington D. C., Oct. 12th, 1875.

FOR WEEK ENDING SEPTEMBER 28TH, 1875.*

BEER FAUCET.—Adolph L. Bobet, S. F., Cal.

BLEACHING SOAP.—Peter Burns, S. F., Cal.

VEHICLE SPRING.—Robert Walker, Oakland, Cal.

BED BUG TRAP.—Edmnnd G. Watkins, Georgetown, Cal.

*The patents are not ready for delivery by the Patent Office until some 14 days after the date of issue.

NOTE.—Copies of U. S. and Foreign Patents furnished by DEWEY & Co., in the shortest time possible (by telegraph or otherwise) at the lowest rates. All patent business for Pacific coast inventors transacted with perfect security and in the shortest possible time.

MINING SHAREHOLDERS' DIRECTORY.

Compiled every Thursday from Advertisements in the Mining and Scientific Press and other S. F. Journals.]

ASSESSMENTS.—STOCKS ON THE LIST OF THE BOARDS.

Company.	Location.	No.	Amt. Levied.	Deling'nt.	Sale.	Secretary. Place of Business.
Alta S M Co	Washae	2	50 Aug 23	Oct 15	Nov 5	Wm H Watson 302 Montgomary st
Amazon Cons M Co	Nevada	1	10 Sapt 20	Oct 22	Nov 12	R P Hosmer 330 Pina st
Andes S M Co	Washae	5	25 Sept 10	Oct 18	Nov 8	M Landers 507 Montgomery st
Baltic Cons M Co	Washae	2	10 Oct 9	Nov 13	Nov 30	Theo C Kibbe 419 California st
Baltimore Cons M Co	Washoe	10	1 00 Oct 7	Nov 10	Nov 30	O A Sankey 381 Montgomary st
Buckeye G & S M Co	Nevada	15	25 Sept 13	Oct 16	Nov 5	O A Sankey 331 Montgomary st
Caledonia S M Co	Washoe	14	3 00 Sept 3	Oct 8	Oct 28	R Wegener 414 California st
Cosmopolitan M Co	Washoe	2	25 Aug 11	Oct 8	Oct 25	M Landers 507 Montgomery st
Crown Point G & S M Co	Washoe	23	50 Sept 4	Oct 8	Oct 28	Jas E Elliott 419 California st
Dayton G & S M Co	Nevada	4	1 00 Sept 15	Oct 19	Nov 8	W B Dean 419 California st
El Dorado S Cons M Co	Nevada	7	1 00 Oct 13	Nov 16	Dec 7	Wm Willis 419 California st
Empire M & M Co	Washoe	20	50 Sept 4	Oct 6	Oct 26	W F Dean 419 California st
Enterprise Cons M Co	Cal	5	25 Sept 29	Nov 4	Nov 24	F J Hermann 418 Kearny st
Gold Mountain O M Co	Cal	6	25 Sept 10	Oct 20	Nov 10	J P Cavallier 513 California st
Imperial S M Co	Washoe	24	1 00 Sept 4	Oct 8	Oct 28	W E Dean 419 California st
Iowa M Co	Washoe	4	5 Sept 16	Oct 18	Nov 12	A D Carpenter 605 Clay st
Justice M Co	{$5 on old stock and $1 on new}	16	6 00 Sept 15	Oct 18	Nov 14	Jas S Kennedy Merchants' Ex
Knickerbocker M Co	Nevada	13	1 00 Sapt 7	Oct 16	Nov 5	J H Sayre Stevanson's Build'g
Leo M Co	Washoe	4	50 Sept 6	Oct 8	Nov 5	W R Townsend 335 Pina st
Mammoth S M Co	Nevada	19	15 Aug 18	Sept 29	Oct 26	D A Jennings 401 California st
Mint G & S M Co	Washoe	11	20 Sept 1	Nov 2	Nov 24	D A Jennings 401 California st
Nawark S M Co	Nevada	11	50 Sept 9	Oct 19	Nov 9	Wm Willis 419 California st
New York Cons M Co	Washoe	15	83⅓ Aug 31	Oct 4	Oct 23	H O Kibbe 419 California st
New York M Co	Washoe	6	50 Aug 31	Oct 4	Oct 23	H O Kibbe 419 California st
North Ouns Virginia M Co	Washoe	1	5 Oct 6	Nov 16	Dec 1	Joseph Magnira 419 California st
Original Gold Hill G & S M Co	Washoe	4	50 Aug 26	Sept 30	Oct 18	W M Helman 309 California st
Overman S M Co	Washoe	33	3 00 Oct 12	Nov 20	Dec 7	Geo Edwards 414 California st
Phoenix G M Co	California	3	3 00 Sept 8	Oct 16	Nov 8	Chas E Elliott 419 California st
Poorman G & S M Co	Idaho	3	1 00 Aug 25	Sept 30	Oct 21	Wm Willis 419 California st
Rock Island G & S M Co	Washoe	9	50 Oct 7	Nov 10	Dec 2	J W Clark 418 California st
Savage M Co	Washoe	20	5 00 Oct 8	Nov 10	Nov 29	E B Holmes 419 California st
Senator S M Co	Washoe	12	50 Sept 27	Oct 29	Nov 12	J H Sayre 331 Montgomery st
Silver Hill M Co	Washoe	7	1 00 Oct 1	Nov 4	Nov 23	W E Dean 419 California st
Starr King S M Co	Nevada	12	15 Sept 6	Oct 6	Oct 23	Louis Kaplan Merchants' Ex
Succor Mill & M Co	Washoe	12	50 Aug 18	Oct 11	Nov 1	Wm H Watson 302 Montgomary st
Sunrise S M Co	Cal	50	Sept 14	Oct 16	Nov 8	T H Wingard 318 California st
Surprise Valley M & M Co	Inyo Co Cal	1	20 00 Oct 4	Nov 30	Oct 23	W R Townsend 335 Pina st
Union Cons S M Co	Washoe	8	50 Oct 11	Nov 15	Dec 6	J M Buffington 311 California st
Victor Q M Co	California	1	25 Sept 2	Oct 5	Oct 26	John R Wilde Merchants' Ex
Washington & Oreole G & S M Co	Nev	15	75 Sept 27	Oct 30	Nov 20	F D Cleary 401 California st
Wells Fargo M Co	Washoe	3	20 Sept 14	Oct 16	Nov 8	O H Bogart 402 Montgomery st
Yellow Jacket S M Co	Washoe	21	5 00 Sept 20	Oct 23	Nov 24	O W Hopkins Gold Hill Nevada

OTHER COMPANIES—NOT ON THE LISTS OF THE BOARDS.

Belmont M Co	Nevada	6	50 Oct 6	Nov 9	Deo 6	Frank Swift 419 California st
Blue Jacket M Co		2	1 00 July 30	Oct 5	Oct 25	O J Eaton 224½ Market st
Buckeye Water & H M Co	Osl	1	50 Oct 1	Nov 5	Nov 21	W H Lowden 240 Montgomary st
Carrie Hale H M & W Co	Cal	2	10 Sept 18	Nov 1	Nov 20	W W Van Reynagom 331 California st
Cerbat Cons G & S M Co	Arizona	2	10 Oct 5	Nov 8	Nov 27	T E Jewall 507 Montgomary st
Cole S M Co	Washoe	27	5 00 Aug 21	Sept 27	Oct 19	Joel F Lightner 438 California st
Constitution M Co	Nevada	1	15 Aug 31	Oct 4	Oct 22	Frank Swift 419 California st
Coquille Black Sand G M Co	Oregon	1	10 June 8	Aug 18	Sept 18	F P Reynolds 111½ Leidesdorff st
Eagle Silver M & M Co	Nevada	2	50 Sept 11	Oct 20	Nov 10	H L Byrne 331 Kearny st
East Branch M Co	Cal	2	20 Oct 4	Nov 5	Nov 23	A Martin 520 Washington st
Edith Q M Co	Cal	5	20 Sept 14	Oct 30	Nov 20	Wm Stnart 113 Leidesdorff st
El Dorado W & D G M Co	Osl	11	20 00 Sept 21	Oct 22	Nov 6	Hugh Elsas 416 Montgomery st
Excelsior Q M Co	Cal	5	5 Oct 8	Nov 12	Dec 2	R Von Pfister Merchants' Ex
Ferguson M Co	Cal	3	15 Sept 17	Oct 25	Nov 17	Scott Sattoon 220 Montgomery st
Georgia S M Co	Washoa	1	10 July 29	Oct 2	Oct 22	B Wegenar 414 California st
Glascow G & S M Co	Nevada	1	10 Sept 20	Oct 22	Nov 12	R P Hosmer 330 Pine st
Goldan Chariot M Co	Idaho	14	75 Sept 2	Oct 7	Oct 26	Louis Kaplan Merchants' Ex
Gold Hill M Co	Cal	12	25 Sept 27	Oct 30	Nov 20	C O Parker 41 Market st
Hayes G & S M Co	Nevada	7	20 Aug 18	Sept 28	Oct 25	Geo R Spinney 320 California st
Howard Hill G M Co	Cal	4	35 Sept 27	Nov 3	Nov 24	F J Hermann 418 Kearny st
Independent G M Co	Cal	9	50 Sapt 11	Oct 12	Oct 30	Geo T Grimes 240 Montgomery st
Juniata Cons M Co	Nevada	3	25 Sept 20	Nov 1	Nov 24	Chas S Neal 419 California st
Kalsina G & M Co	Cal	14	5 Sept 27	Nov 6	Nov 24	J H Sayre 331 Montgomery st
Kossuth M Co	Nevada	5	75 Oct 4	Nov 9	Nov 30	E F Stone 419 California st
Little Panoche Q M Co	California	2	10 Sept 3	Oct 7	Oct 29	Geo R Spinney 320 California st
Mansfield G M Co	Cal	4	1 00 Oct 9	Nov 17	Dec 4	J M Buffington 311 California st
Morse & Evans G M Co	California	2	10 Sept 6	Oct 15	Nov 12	Daniel Buck 351 Montgomary st
North Carson S M Co	Nevada	2	10 Sept 1	Nov 5	Nov 14	W A Van Bokkelen 419 California st
Oakland G & S M Co	Nevada	2	50 Sept 2	Oct 7	Oct 29	Wm H Watson 302 Montgomery st
Panther M Co	Nevada	1	20 Aug 31	Oct 1	Oct 19	Frank Swift 419 California st
Picacho M & M Co	Cal	1	10 Aug 2	Sept 13	Oct 18	Ford H Rogers 330 Pine st
Pioneer Cons M Co	Nevada	4	10 Sept 14	Oct 19	Nov 9	Wendell Easton 419 California st
Pernsular G & S M Co	Nevada	5	50 Aug 19	Sept 27	Oct 20	R H Brown 402 Montgomery st
Rattlesnake Q M Co	Cal	3	25 Aug 24	Sept 23	Oct 18	Andrew Baird 310 California st
San Francisco Copper M Co	Nevada	2	10 Aug 4	Sept 6	Sept 30	R De Clairmont Front & Jackson st
St John G M Co	Karn Co Cal	3	50 Aug 30	Oct 4	Oct 23	W R Townsend 330 Pine st
Tiger M Co	Nevada	1	15 Aug 31	Oct 2	Oct 20	Frank Swift 419 California st
Virginia Cons M Co	Cal		6 Sept 9	Oct 11	Oct 30	T B Wingard 318 California st
Weaverville D & H M Co	Cal	7	2 25 Aug 19	Sept 20	Oct 18	Ford H Rogers 330 Pina st
West Point G & S M Co	California	1	25 Sept 6	Oct 8	Oct 25	Louis Kaplan Merchants' Ex
Wm. Penn Cons G & S M Co	Washoe		6 Aug 7	Sept 11	Sept 30	John F Pope 424 Montgomery st

MEETINGS TO BE HELD.

Name of Co.	Location.	Secretary.	Office in S. F.	Meeting.	Date.
Combination G & S M Co	Cal	David Wilder	Merchants' Ex	Annual	Oct 18
Eureka G M Co	Cal	R Wegener	414 California st	Annual	Oct 21
Exchequer M Co		Jas S Kennedy	Merchants' Ex	Annual	Oct 19
Silver West Cons M Co		F R Bunker	606 Montgomery st	Annual	Oct 19
Sntro Mining Co	Nevada	W H Raynolds	434 California st	Special	Nov 11

LATEST DIVIDENDS (within three months)—MINING INCORPORATIONS.

Name of Co.	Location.	Secretary.	Office in S. F.	Amount.	Payable.
Black Bear Quartz	Cal	W L Oliver		25	Sept 13
Cons Virginia M Co	Washoe	Ohas H Fish	401 California st	10 00	Oct 7
Empire G M Co	Sierra Co Cal	O Collischon		5 00	Aug 17
Empire M Co	Nevada Co Cal	D A Jennings	401 California st	50	Sapt 15
Eureka Consolidated M Co	Nev	W W Traylor	419 California st	1 00	Aug 5
Excelsior M & M Co		Frank Swift	419 California st	1 00	April 10
Gila S M Co	Nevada	W Aug Knapp	116 Laidasdorff st	25	Aug 16
Indian Queen M & M Co		A K Durhrow		50	Oct 11
Jefferson S M Co		O A Sankey	331 Montgomary st	50	May 15
Leopard M Co		R H Brown		50	July 15
Lyon Mill & Mining Co		F Soule	Bayward's Bldg	50	Aug 18
Manhattan S MCo	Nevada	Chas S Neal	419 California st	1 00	June 15
Northern Belle M & M Co		W Willis	419 California st	1 00	Oct 15
Oneida M Co		L Kaplan	Merchants' Ex	50	Aug 21

MINING SUMMARY.

THE following is mostly condensed from journals published in the interior, in proximity to the mines mentioned

California.

ALAMEDA.

A GOLD AND SILVER LEDGE NEAR HOME.—Alameda County *Independent*, Oct. 9: Our readers will be surprised to learn that a real quartz ledge, containing silver and gold, has been just discovered in the low range of hills east of Dunbarton point and north of Newark, in Alameda county. Experts familiar with the famous Comstock lode have examined this ledge, and pronounce it a genuine vein, and much wider than the rich leads in Nevada. The croppings have been assayed in San Francisco, and yield enough to warrant the expectation of a paying mine. Some of the owners of land where the ledge runs, with whom we have talked, are quite sangnine of having a "good thing." They will go to work and develop their mine forthwith, so that the results, favorable or otherwise, will soon be made public.

AMADOR.

MILLS CLOSED.—*Foothills Ensign*, Oct. 8: On Thursday of last week the Lincoln company discharged all their hands at the mine and mill, with the exception of two or three who are required for the purpose of raising water from the shaft. The mill will not resume operations before the rainy season sets in. Some twenty men will be put to work in a few days to retimber and otherwise repair the shaft, and everything will be placed in thorough order before the resumption of actual mining operations.

The original Amador mine, at Amsdor City, has shut down their mill entirely, owing to scarcity of water. All the miners have been discharged with the exception of six.

KEYSTONE MINE.—The new hoisting works at this mine are nearly completed, and the machinery is now being fitted in. The new shaft is down upward of 200 ft. It is the intention to sink it to 700 ft, and connect it with the lowest levels of the mine. The mill is working to its full capacity by steam power, and everything relating to the mine looks as prosperous as ever.

BUTTE.

A CHEAP CLEAN-UP.—Oroville *Mercury*, Oct. 9: On Friday night of last week, Henry White, who lives on the bluff, had his pile of auriferous dirt nicely washed, free of charge. It seems that he has been about three weeks at work, wheeling out a pile of dirt that he had every reason to think would pay well for washing, and so did a lot of Celestials, who had fastened their gaze upon it. No sooner had darkness come on than the Chinamen went to work and before morning had run every spadeful of earth through the sluice and taken the gold and gone to seek other and better paying claims, without thanking either Mr. White or Mr. Hewitt. Look out for your sluices.

CALAVERAS.

DITCH IMPROVEMENTS.—Calaveras *Chronicle*, Oct. 9: The canal company have been making extensive improvements on the line of the ditch in anticipation of the coming rains. A section of iron pipe, 42½ inches in diameter, has been put in place of the old aqnednot at Buckeye. The pipe is in the neighborhood of 500 ft in length. There is now scarcely any flume—certainly none that can blow down—from one end of the canal to the other. The ditch has lately been thoroughly cleaned, from its head to the Palomo school house, and the Central Hill

brench has been enlarged. Eighty mon were employed in the work. The ditch has never before been in eo good a condition aa now and its carrying oapacity is somewhat increased. It cannot be long before water will be abnndant, and miners should have their claims in readiness to use it as soon as a enpply can be obtained.

EL DORADO.

A Bright Futuar.—El Dorado Cnnnty *Republican*, Oct. 7; The mining intereat in this conuty looks bright for the fnture. Never, we believe, were nur minee in ae good condition for being thoronghly and economically worked, and will add no emall amonnt to the millions to be added to the world's wealth dnring the next year.

New Mines.—Folsom *Telegraph*, Oct. 9: We nnderstand thet a new qnartz ledge has been disenvered near Pilot hill, in El Dorado cnnnty; the qnartz prospecte abnnt $100 per ton. Parties have offered a good prica for the mine, but tho owners, one of which is a resident of this town, prefer putting np a mill and working the mine themselves.

FRESNO.

The Confidence.—Fresno *Expositor*, Oct. 13: The Confidence mine, nn the Fresnn rlver, located by Dodds and nthers, has passed into the hande nf Mark Howell and J. B. Coonanonr. The shaft on the mine haa been snnk to a depth nf 75 ft. At that point the ledge ehows a width nf more than 7 ft, and haa well defined slate walls. The nre looks as rich na avar, and all appearances indicate the mine to be a permanent one.

MARIPOSA.

Canal and Tunnel Work.—Mariposa *Gazette*, Oct. 9: We have not been advised this week of the progress made in the great undertaktng known ae the river tnnnel; bnt learn that the hardness of the rock is undiminished, and the dietance gained abont the same as the week previons. Thls is certainly a great nndertaking, and when oompleted will certainly pay the Mariposa land and mining company handsome dividends, for the richness of the Pine Tree and Josephine veins which the tunnel will strike, has been tested and proven for many years. Thie fact is what encourages the company to prosecnte the work with so much energy. Several other veins, amongst them tha celebrated "specimeo ledge," will undoubtedly be opened before long. The company has now a large force of men at work constructing a road along the line of their proposed canal. It haa for many years been a wnnder to ordinary minors why the *scientific* engineers whn in years past controlled the working nf the grant, did not construct this canal, as, by that means, they wonld have a natnral bulkhead, and nne there would be no daoger of a flood waehing away. Work will ba in full blast on the canal in a few days.

NEVADA.

Prospect Company.—*Foothill Tidings*, Oct. 9: The Prospect company recently began work on the old Perseverance mine, situated between Allison ranch and Forest springs, and have thia week reached the ledge in the old tnnnel, where the rock is believed to be of milling qnality and will be taken out for that purpose. The Perseverance was at one time a mine of worth and etanding among mining men here, and shares therein commanded good rennd aume. Lack of even an elementary knowladge nf mining on the part of those in charge at the time, cansed a smash-up and collepse, firet of the underground timbers and works, and as a conseqnence, of the company. The Prospect oompany recently obtained title to the mine and are going to work the right way to develop it. The Prospect boys are certeinly deeerving of a good mine, if grit and backbone ever merit reward, and from all we can learn of their present venture they are hound to have one soon.

The Blne Banka mine, nne nf the deepest gravel deposits at Moore's flat, has a channel 300 ft long and about 70 ft deep in the center. The ownera, Meesrs. Wm. Rankin, Wm. Pryde, E. Mills and Jamee Reid, have recently completed a new tnnnel, 1,000 ft in length, throngh which they will be able to work their olaim to the bottom, and the claims adjoining if need be.

A tunnel ie being run in at Moore'a Flat to open np aome old gravel mines which have been idla for eome time for want of grade to waeh up their bottom dirt. The Ohio, a once paying and still rich and extensive olaim, owned by Atwater & Knotwell, will thus be enabled to send out the remainder of its great wealth.

PLACER.

The Julian Mine.—Placer *Herald*, October 9: Owing to the break in the Bear river ditch, which ont off the water enpply in this section for the time being, the Julian mill hae been compelled to lie idle more or less, lately, up to the early part of this week. In the meantime, eome 450 toos of ore have accumulated on the dump, which, in addition to the regular daily yield, will keep the mill running at its best licke for a long time. This mine, down to the 230-ft level, aa deep as developed until very recently, shows the largest ledge and the most uniform in size and yield of any in this part of the country. The vein, posseseing neither rich nor barren streaks, can alwaya ba relied on for from $7 to $10 per ton. This, considing the size of the ledge, whioh ia never less than two, and in most places three feet, ie a profitable yield. Mr. Schnable, the owner, hae recently commenced to sink the sheft 110 feet deeper, and, notwithstanding the fine character of the mine above the 230-ft level, the prnspects brighten ae they go down. At the bottom of tha shaft, at present, the ledge is nver three feet thick, and the rock prnspecte fnlly as rich as the best yet taken frnm the mine.

In Full Blast.—The Anburn gravel mining company commenced washing on Tunnel hill last Tuesday, and may now be said to be running in full blaet. What they did on Grizzly hill can be conoidered no more than preliminery to the great work before them. That hill was small and shallow, bnt it answered the purpose of teating the natnra and richness nf the gravel beds they propose to develop. Tnnnel hill, on which they are now nperating, contains, we shonld judge, nearly 100 acres of gravel, averaging nearly 100 feet in depth. Being satisfied of tha richneee of the depoeit, the company have apared neither pains nor expense in fitting np, and have, though not quite the largeet, without donbt, the best hydraulic works in the Stato of California to-day. On turning on the water, lest Monday, everything worked like a charm. Tha gravel in this hill is small, a bnulder larger than a man's head being a rarity, and "cuts," ae miners call it, rather easily. With the two giants they will move dirt very fast.

TRINITY.

Rich Cinnabau Deposit.—Trinity *Journal*, Oct. 9: The Trinity quicksilver company have strnck a rich and probably extensive deposit of oinnabar in their mine. Experts say it equals anything yet found in the Altooca mine. One thnusand dollars has been offered and refoeed for one-tenth of the Trinity mine. We are pleased to chronicle the snccess of thie company, as the stnck is all owned at home.

Nevada.

WASHOE DISTRICT.

California.—Gold Hill *News*, Oct. 7: The main north drift on the 1550-ft level is again advaocing toward the Ophir line, the face in rich ore. Tha botinm of the winze below oroscent No. 3, nn the 1550-ft level, ie down 90 ft, the bottom still in rich ore. There is considerable flow nf water at the bottom of this winze, which makes the sinking quite slow and trnnblesome. Prospecting the 1500-ft level is almost completed, if we except the timbering and enlarging nf snme of the drifts. The main north drift on the 1400-ft level is steadily advancing, and is oow within 110 ft nf the Ophir line, the face in low grade ore and qnartz. Raiees are being made on the nre body above the 1300-ft level for the nnrpose of nscerteining the character and lay ledge in that portion of the mine. Sinking the C. & C. shaft is making good progress. The new pump worke to the utmost perfeotion, and ie an immense and nndoubted improvement over the old style of pump. The battery mill is fast approaching completion, the boilers all being in place and the smoke stacks now being raised. The amalgamating mill ie also nearly ready to start up.

Con. Virginia.—Daily yield 600 tons of ore. The ore breasts are looking splendid, and there seems no let-up in either the richness or the immenee quantity of the yield. The yield for the past month will foot up about $1,812,000—a pretty good showing for one mine, which ie mede eo much better by the well known fact that the yi ld oonld have been easily increased to $2,000,000 if the management so desired. There is no proepecling done in the mine at present but there have already been winzes sufficient eunk below the 1550-ft level to prove the continuance of tha bonanza, 100 ft below the 1550-ft level, and how much farther none oan yet determine. Two new mills, the Morgan and the Brnnswick, have been nurchaeed and added to the orneliing capacity of the Pacific mill company, which, as soon ae tha weather cools and the water rises in the river, will add greatly to the yield of the mine, or if the company do not wish to increase the already magnificent yield of their mine, can then be used to reduce the rich ores of the California.

Sullivan.—The sbaft ie now a little nver 50 ft deep. Last Sonday it very unexpectedly ran ont of the conntry rock into a heavy body of quartz, clay and other vein matter the width of which is not yet ascertained. It contaioe very promising feeders of qnartz from 2 to 6 inches wide, which assay well in gold with a proportion of silver. The whole bottom of the shaft is in it. Superintendent Keleey did not expect to strike this Sullivan ledge under 200 ft from the snrface, therefore jnetly conoiders this promising strike of vein metter as a very encouraging and aignificant circumetanoe. The grading at the surface for the hoisting works buildinge, ato., progresses well aod an excellent road bae been made to the mine from the railroad, for hauling timbers, lumber, etc.

Overman.—The new spur wheel to supply the place of that broken a week or two since was recoived at the mine yesterday, and will be in its place and everything in complete ronning order by to-morrow. The water haa been rising slowly in the shaft, so that it will take but a very short time to free the shaft from water when once the pumps are again in full operation. The south drift on the 900-ft level has been steadily advanoing, the face in hard blasting ground. The south drift from the bottom of the winze on the 1100-ft level hae been advanced 27 ft during the week. No developments of interest to report.

Amazon and Glasgow.—The main shaft has reached a depth of 100 ft below the first station level, and preparations are being made to open another statioo and start a drift to cross-cut and prospect the ore vein at that point. This will give a depth of 309 ft from the surface and will open the mine 100 ft deeper then it hae yet been prospected. Taking intn consideratioo the excellent ore prospects found on the first statinn level, it ie confidently expected that when the new station is npened good paying ore will be devaloped. The machinery is all in good order and everything in and about the mine working well.

Julia.—Sinking the shaft ie making splendid progress, a considerable portion nf the bottom being in a very favorabla character of qnartz and ledge matter. The indications are strong that the shaft will soon cnt the main ore vein. The main sonthweet drift on the 1400-ft level ie steadily advancing, with better prnspects of a good ore development than at any time in the past. The main sonth drift on the 1000-ft level is also making good progress, the face in a mixture of qnartz, cley and porphyry of a very encouraging natnre.

Utah.—The work io thie mins is principally confined to sinking the shaft at present. The rock in the bottom etill blasts out well and good progress is being made with the sinking notwithetanding a strong flow nf water. The pump continnes to handle the water with eaee, and the sinking is being prosecnted with all the vigor possible to reach a point at which to start a new level nt the earliest moment that it can be accomplished.

Ophir.—Daily yield, 350 tons of ore. This ore is being mostly extracted from above the 1465-ft level, and is of a fine character. The ore breasts are looking splendidly, and promise a good yield for a long time to come. An upraise has been made on the nre body above the 1300-ft level. This raiee is now np 90 ft, io splendid ore, with no apparent indication whalever of its giving nut. The raise is on the west sida of the ore, and the inclination proves the ore to lie at least 200 ft frnrther to the eastward than any prospecting that has ever been done on the 1100-ft level, and donble that dietence eeet of all the old proepecting work done on the 700-ft level. This bit of prospecting is bidding fair to open up a new era in Ophir affairs, ae the determinstion of the ore vein eo far tn the eaetward is giving 700 ft perpendicnlar of virgin untouched ground for prospecting, with every apparent indication of catching a portion of the top of the great California and Consolidated Virginia bonanza. The old 1100-ft station has been reopened and a new drift started sonth with six-hour shifts of men, to strike this new ore body. Should the body of ore prove to hold its width and richnees at that point, the old 700-ft station will probably be opened up and new works commenced to the eaetward there. On the 1700-ft level only one drift is being rno to the eastward at the present, but in a few days more it is the intention to commence work agaiu on all the levels in good earneet, and drive the prospecting of the mine to completion at all points with all the energy possible. The new and powerful pnmping and incline machinery are nearly completed, eo that in a few days more the dead work expensea on the surface will be greatly lessened, which will give a better chance to work more men in the mine without an additional increase of expenses. The mills are all steadily running and are crushing abont 310 tons of ore per day. The returns of bullion will double this month that of any previous month's work for the paet two years, and the prospects of Ophir are once more brightly in the ascendent.

Justice.—Face nf drift at 800-ft level is in low grade ore, which improves with advancement, and bids fair to fornish ore for milling very shortly, assays averaging from $25 to $30 to the ton. Water does not interfere. In all probability this drift will soon run intn the ore body developed above in the old mine. At the 600-ft level, this ore bndy is estimated to be at least 50 ft wide, bnt its real dimensions are not yet ascertained. At the 400 ft level it is 40 ft wida, and at the 200-ft level, 10 ft wide. At the 400-ft level it is 130 ft long, whioh is ite greateet defined length as yet, with the face of the drift still in rich ore.

New York Consolidated.—The powerful new machinery is now about all in position, ready for working, and will start up for the first time next Satnrday. It will take about two weeks to free the shaft of water, when sinking will be resnmed. The extensive ore developments found at the 600-ft level of the Justice mine, as well as in the two levels above, is considered of great importance to the New York, as the indications are that it extends into this mine, and that a portion of it had already been struck in the shaft befora einking was snspended.

Sierra Nevada.—The Ingereoll drille are now being used in both the west drift on the 1000-ft level and the bottom of the new shaft, and are giving the most perfect satisfaction. Good progrese is being made both in running the drift on that level and in sinking. The north and south drifts on the 700-ft level of the old shaft are both steedily advanoing, without change of value to record. Everything in and about the mine looking proeperous.

Chollar-Potosi.—Daily yield, 50 tone of ore the aesay valne of whioh ia $30 per ton. This ore is mostly extracted from the old upper workinge. The three sonth drifts on the 1150, 1250 and 1350-ft levels are steadily advanoing without change of interest to report. Sinking the combination shaft is making rapid progrees, the rock in the bottom workiog qnite soft. The hoisting works building and other surface worke are fast approaching completion.

Savage.—Sinking the main incline has been stopped during the greater part of the week by the tapping of a etrong pocket of water at the bottom, the flow from whioh keeps the pump steadily at work. The indioations are, however, that the pocket will soon be drained and the sinking resumed. The two north drifts on the 2100 and 2200 ft levels are steadily advancing without any material change of value to speak nf.

Caledonia.—Sinking the main shaft is making good progress, it has been sunk dering the past week 31 ft. The rock io the bottom is qnite tongh and herd. Good headway is being made in cntting out for the pump and water tank at the 500 ft station. It will not now be but a very ehort time before the new pumping machinery will all be in complete rnnning order. The new hoieting engine ie working with the ntmost perfection.

Belcher.—Work was resumed at all points in the mine day before yeeterday, everything working with as great a perfectiou ae it was possible. Only about 140 tone of ore per day is being extracted, as only that amount is required to keep the mille running. Prospecting the 1600-ft level hae been again commenced in good earnest. The machinery is now all in excellent order, and everything else in fine working condition.

Florida.—The main west drift is being pushed directly ahead into the regular ledge matter. It shows great improvement with every foot of advancement, and high aesays are obtained from the feeders nf quartz passed through. The main nra vein is ovidently close at hand, and Superintendent Nagle is very confident of finding a bonanza before long. He certainly has good reesone for soch expectations.

Gould & Curry.—The repairs which it was believed were almost completed a week ago still hang on, meny of the timbers having been steamed and rotted by the vapor and heat of the mine to such an extent that they will have to be removed end new onee substituted, all of which takes time. But little prospecting or cross-cutting can be done nntil the repairing, which is extremely slow work, is completed.

Bullion.—Sinking the main inoine goes steadily forward at the same favorable rate of progress as heretofore. The face ol the main north drift is steadily advancing along the west wall of the ledge, in qnartz and ore of a very favoreble character. The Alpha combioation drift on the 2000-ft level of the Imperial is again steadily advancing.

Imperial-Empire.—Daily yield, 40 tons of ore, the aseay valne of which is from $60 to 85 per ton. The ore breasts are all looking well. A raise has been completed from the 1900-ft level to connect with the ore etopes, which greatly assists the ventilation of that portion of the mine, and aids the extraction of ore. Nothing new to report of any of the other proepecting operations.

Dayton.—The pumping machinery started into full operation and sinking the shaft was resumed last Satnrday, since which time everything hae been running with all the smoothness and precision of clockwork. The sinking is going forword at the rate of 2½ ft per day, and no more tronble from an overflow of water is now apprehended.

Silver Central Cons.—Drifting west at the 175-ft level ie actively commenced and progressing finely, with flatteriog prospects, stringers of fine looking quartz already making their appearance. The indications are favorable for striking the ledge at an early day. Work is vigorously pnshed ahead, and the machinery operates smoothly and eatisfactorily.

Hale & Norcaoss.—Prospecting and crosscutting the 2100 and 2200 ft levels is still progressing as rapidly as it is possible to accomplish such work. The ledge nn the 2200-ft level is wide, and of a good character of quartz, affording low assaye of both gold and silver, bnt as yet developing no ore that will pay for extraction and milling.

Buckeye.—Sinking the sbaft is making good progrese, meny seams of qoartz rich in gold being enconntered in the bottom while sinking. The chancee for finding large bodies of pay ore at a greater depth are evidently on the increaee. The flow of water is steedy and strong, but it is drained by the pump with great eaee.

Crown Point.—The usual amonut of ore is being extracted and milled. Little or no change to report of any of the ore breasts or old upper workings. Prospecting the 1600 and 1700-ft levels affords no new or valueble developments to report for the week. The work is being energetically advanced at all points.

Yellow Jacket.—Sinking the north and south winzes on the 1740-ft level is progressing as usual, without any material change of value to report. Neither is there any new developments in report of any of the croee-cute on that level. The water in the incline remaine about the eame.

Sutro Tunnel.—Total length to-day, 11,091 ft. The face of the header continues in the same soft and treacherous ground, slipping and caving very easily. Very little blasting has to be done, and great care is exercieed to keep it well secured and prevent accidents. No increese of water.

Peat has been successfully used in a locomotive of the Southern Pacific railroad company between Oakland and San Jose. Three hundred pounds of peat sufficed to make the trip, keeping up a hot fire all the way, and running at the rate of forty miles per hour.

The surveyors began last week, at Guerneville, the work of locating the narrow gange railway for the extension of the Tomales line, from Austin creek.

The Southern Pacific railroad company are sinking an artesian well at Colton, San Bernardino county.

The Cryptograph.

The srt of secret writing, or, in other words, of corresponding in ciphsr, has long been practiced, and considerable perfection has been attained in it. There are various methods of conducting it, each being more or less meritorious, and, to a certain extent, impenetrable; bnt the best among them carries with it the objection of being more or less complex, and thereby lisble to error either in composition or translation. Moreover, tbere are very few systems upnn which perfect reliance can he placed for secrecy, inasmuch as the modes of their construction and the nature of the principles upon which they are based render their solution possible by others than those by whom they are being used. Again, in cases where assistance is reqnired in conducting secret correspondence, shonld an official be dischsrged and be disposed to act dishonorably, he might render himself invaluable to others than his late employers by so doing. In a word, we have not down to the present time succeeded in producing a system of secret correspondence which cannot in time be nnravelled by others than these in possession of the key.

Such a system, however, it would seem is now being introduced by its inventor, Mr. A. L. Flamm, at whose rooms at 123, Pall-mall, was recently shown its working. The principles of this system may be best described as a simple mechanical manipnlation, and the variation and extension of which it is capable are comparatively unlimited.

The mecbanical portion of the system consists of a rectangular tablet divided by lines into a certain nnmber of squares. Around its edges is a raised rim, on which are marked figures corresponding horizontally and vertically with the squares. A metallic plate of the same size as the tablet, and capable of exactly fitting within the raised rim, is divided up into squares corresponding with those on the tablet. In some of these squares holes are pnnched in the most irregular and inconsecutive manner, their arrangement being purely arbitrary. Tbese holes are round and are of sufficient size to enable a good sized letter or figure to be clearly formed through each opening. The plate has the figures 1, 2, 3, 4, placed, one at each corner, which have reference to its manipulation. This apparatus is of various sizes, from that of twelve centimetres square, which is hinged and fitted as a small pocket book, to that of thirty centimetres square, or of any larger size that may he desired, arranged in the form of a portfolio. In uso a sheet of paper of any size is placed upon the tablet, and the metallic plate is laid upon it—in the first position, or with tbe figure 1 in the left hand corner. A message or communication is then written letter by letter on the paper, each letter being traced in each successive hole. As soon as tbe last hole has been nsed the plate is tnrned aronnd, so that the figure 2 comes in the left hand top corner. The paper now shows a number of letters at irregular intervals whicb form consecutive words. After the holes have been again filled the plate ie shifted round to the third position; the paper will now show double the nnmber of letters, which will appear a little less irregular; bnt consecutive words cannot now be made ont, other letters having been interspersed with them. The plate is now shifted successively to the third and fourth positions, and after the fourtb operation of the pen or pencil the paper will be fonnd to be covered with a heterogeneous assemblage of letters and figures, but all placed in true horizontal and vertical line. If tbe message is not completed, any additional number of sheets of paper can be nsed. These can then be dispatched in the usnal way, and when tbey arrive at their destination, the recipient, being in possession of an apparatus identical with that in which they were written, places them one by one on the tablet, uses the perforated plate in exactly the same way as the writer did, and quickly spells out the communication.

In transmitting a telegraphic dispatch by this system, the sender first writes tbe message, letter by letter, on a small piece of paper divided into sqnares of the same size as those on the tablet. The perforated plate is then laid over it in position No 1, and such letters as appear through the perforations are written down by groups of five on a telegram form; five letters counting as one word in cipher telegraphic dispatcbes. The plate is then placed in successive positions until the message nas been written down in this way. Upon the message reaching its destination, its recipient takes a piece of equared paper of the same size as that upon which the message was originally written—the size having been previously agreed upon between the parties. Upon this he places his perforated plate, and through the perforations he successively writes down the letters as they appear in the telegram before him until the four changes have been made, when, assuming the telegram not to require a second piece of paper, the message in perfectly consecutive order is revealed on the paper before him as originally written. There are various other ways of using the system; modifications, in fact, of what we have already described—such as using a special shape of paper or having an arbitrary design upon the paper within which the message shall fall. Of these, however, it is not necessary here to say more than that they are very ingenious, and serve as an additional means of baffling the onrious and unauthorized investigator.

The figures round the tablet refer to a modification of the use of the apparatus. For instance, if two correspondents wish to go a step further in secrecy, they could arrange the work within the range of a limited nnmber of squares, say from three to ten, and they could previously give them the arbitrary designations of B to P, or define them in any other way. The holes in the plate are, we have said, purely arbitrary; they are, however, referable to and governed by what Mr. Flamm terms the graphic table. This table is really the basis and starting point of the whole system, it ie the fundamental principle of it, and the sole key to it, and its possessor can construct any nnmber of varieties of plates each having a different arrangement and being of a different size from the o hers. This graphic table is a sheet of cardboard of the same size as the plate which is to be perforated from it, and is divided up into a number of squares variously colored and numbered. From this simple looking table—into tbe mysteries of which we have not, of course, been permitted to dive—Mr. Flamm assures us that any one is capable, after initiation, of constructing any number of perforated plates giving an infinity of changes. He states that the small apparatus twelve centimetres square is snsceptible of no less than 4,722 trillions of changes, while the large one, thirty centimetres sqnare, will give a number of permutations expressed by 4 raised to the 225th power. Mr. Flamm thus has the apparatus for those who only have a comparatively limited use for cipher communication, while for governments and banking houses or other large establishments he has the secrets of the graphic table to communicate.—*English Paper.*

Kid Skins for Tanning.

In certain parts of Europe tbe rearing of kids for the sale of their skins is an important business, those which command the highest prices, and are regarded as snperior to all other, being the French, called in the market *peaux nationales*. By some the fine quality of these skins is attributed to a peculiar virtue in the wild vines npon which the young ones feed in the pasturage which they frequent; this, however, being a popnlar error, as their value is simply the result of the care with which the little animals are reared during their life of four or five weeks. They are not allowed to roam at large, as such a license would imperil the evenness of their skins, which would become scratched by rnbbing against stones, or passing tbrough hedges. They are, besides, deprived of all food except milk, as eating grass would tend to render their skins coarse. Consequently they are kept under a wicker coop, from which, at regnlar hours, they are led to snckle the mother, and this continues until they are killed, at the end of four or five weeks. The younger they are killed the thinner the skin, but, of course, the smaller tbey are the less valuable, too especially when they are only large enough to allow of single-buttoned gloves. By rearing the kids in the manner just described, larger skins are obtained, which are as fine and delicate as those of younger ones, of other countries where they roam at liberty. As France produces the best skins, so Paris excels all places in France where gloves are manufactured, and an adept in the trade can select a Paris made glove from among hundreds made elsewhere.

Potency of Sunshine.—From an acorn we gbing a few grains, a tree will grow for 100 years or more, not only throwing off many pounds of leaves every year, but itself weighing several tons. If an orange twig is put in a large box of earth, and that earth is weighed when the twig becomes a tree, bearing luscious fruit, there will be very nearly the same amount of earth. From careful experiments made by different scientific men, it is an ascertained fact that a very large part of the growth of a tree is derived from the snn, from the air, and from water, and very little from the earth; and notably, all vegetation becomes sickly, nnless it is freely exposed to sunshine. Wood and coal are but condensed sunshine, which contains three important elements, equally essential to both vegetable and animal life—magnesia, lime, and iron. It is the iron in the blood which gives it its sparkling red color and its strength; it is the lime in the bones which gives them the durability necessary to bodily vigor, while the magnesia is as important to many of the tissues. Thus it is, that the more persons are ont of doors, the more healthy, the more vigorous they are, and the longer will they live. Every bnman being ought to have an hour or two of sunshine in winter, and in early forenoon in summer.

The Absorption of Water by Woody Fiber. In alluding to the force which raises the sap from the roots to the foliage of trees a noted writer says:

"One of the most surprising facts to be noticed in examining the wood of any tree with well-developed foliage, is the absence of anything like free, or fluid water. A freshly cut surface of sap wood is not even moist to the touch, and if a tube be inserted into the trunk of such a tree it will frequently absorb water with great avidity. On the sixth of June last a half-inch tube, six feet in length, was attached to a stop cock inserted into the trunk of an elm and the tube filled with water. The absorption was so rapid that the fluid disappeared in thirty minutes, and this was repeated several times the same day.

"Now, this absorption was not osmotic, but apparently the result of imbibition or the affinity of the cellulose of the woody fibre. Is not this, then, the proper name for the force which carries up the crude sap?"

Government and the Phylloxera.

No slur upon the Government is intended in thus naming it in connection with the phylloxera, the second party in the heading of this article. The occasion which brings them together here, is the suggestion put forth by certain journals that the National Government appoint a commission to investigate their habits and discover, if possible, some method for preventing their propagation in this country.

Now, are not people justified in characterizing these demands on Government as merely clap trap, designed to catch the ears of the agriculturists? And is the National Government the proper source to look to for relief from these insect scourges? The propriety of France offering a reward of 300,000 francs for a successful remedy against the phylloxera is unquestioned; for the grape is to France what it is to California; and though it may be advisable for this or any other State largely interested in grape culture to make this prominent among the demands on their own Legislatures, they will probably receive little efficient aid from the general Government, if they do not have the "cold shoulder" turned to them. If our State agricultural colleges cannot meet these almost local wants, to what public source can we look for relief? For our part we should expect more aid in this emergency from private entomologists and vine growers, than from any public source whatever. Besides, we do not consider the emergency as critical as it is represented to be. There is certainly a mistaken notion prevailing in regard to the record of the phylloxera. A paper, which is particularly anxious to secure the appointment of a national commission, snch as we have alluded to, refers to "the government of France, where the same insect has done still greater damage, and from whence it has been introduced to this country with the imported vines." Twenty-one years ago the State Entomologist of New York, Dr. Asa Fitch, described the phylloxera as then found in various parts of this country on our wild grape vines; and it is now generally admitted that phylloxera in both forms—the one attacking and producing galls upon the minute fibrous roots, the other confining themselves to the leaves—existed in America prior to their career in France. Two very plausible reasons have been offered why this pest has increased more rapidly in France and has been more destructive there than in this country. First, is the mode of culture. The excessive pruning to which the vineyards of France have been subjected for generations, are believed to have weakened the constitutional vigor of the vine, and lessened its ability to withstand the encroachments of disease and insect enemies. Canes that are allowed to approximate their natural growth will not, of course, produce fruit that will compare with that of vines pruned after the French and California style, bnt they will tend to promote good, long roots and healthy rootlets; and this, as we all know, is a condition which effectually resists such attacks.

The other reason assigned for the more destructive career of this pest in France, is founded on the recognized principle that diseases and parasites on their first entering a country are more destructive than in those countries where both animal and vegetable life are accustomed to their presence.

In regard to the importation of the phylloxera, M. Signoret, an eminent French entomologist, makes the following sensible remarks:

"If, instead of ascribing the phylloxera epidemic to a few solitary insects, possibly imported from Ohio or California, viniculturists had dropped that part of science which consists in raising artificial boundaries, where nature has created none, and simply considered phylloxera in the light of vermin attacking a very diseased or weakened plant, they might probably have had recourse to the most rational way of ridding their vineyards of such pests by letting them alone—without pruning at all for a few years."

A recent monthly report from the Department of Agriculture calls for answers to the following questions, copied from the London *Wine Trade Review*:

"1. Is the phylloxera the cause of the new disease of the vine, or is it the result? 2. How is it to be accounted for that hitherto none of the insecticides applied, nor other means recommended, have been able to destroy it? 3. If the phylloxera is but the consequence of the disease, would it not be advisable to treat the affected vines prophylactically by means of powerful manure easily applied. 4. How is the destruction of the insect by snbmersion of the vines explained? 5. In what manner does the phylloxera carry the infection from a plant infected to a healthy plant? 6. Is the phylloxera that attacks the roots of the vines (the species best known in Europe) identical with the phylloxera that preys on the leaves (the species most prevalent in America)? 7. Are there one or more parasites of the phylloxera in existence and known to science? 8. Are there any species or varieties of the vine plant that successfully resist its attacks and defy contagion? 9. Would it be possible and practicable to multiply such varieties in France by grafting them on to the descriptions commonly planted in France? 10. Is it possible to calculate the money value of the losses occasioned by the phylloxera in the south of France? 11. What is the economic influence of the insect on the price and consumption of wine, on the traffic of the railways, and the revenue derived by the State from the tax on wine?"

Some of these questions do not particularly concern us; and in sending them forth the Department displays its morbid appetite for statistics. If the phylloxera were supposed to be readers of the Departmental Reports we might reasonably hope that they would be killed with figures; but from what is known of their habits we shall expect to have them suffer but little from this nor any other governmental source.—*Rural Press.*

Centennial Co-Operation.

The Kansas Pacific and Central Pacific railroad companies have joined together, and arranged for the erection of a building on the grounds at Philadelphia, separate from the regular halls of the exhibition, for the special purpose of displaying the products of Colorado, Wyoming, Kansas and Nebraska. The railway building will be two stories in hight, the first floor to be devoted to display, while the second will be devoted to sleeping apartments for the convenience of interested exhibitors. These companies will exhibit a vast array of minerals, cereals, agricultural and other specimens.

A delegation of progressive and wealthy Californians and Nevadians have been endeavoring, by vigorous representations, to indnce the Central Pacific to join the corporations first named and provide space by enlarging the building for a full display of Western products, but that company prefers to exhibit on its own hook. For the last eighteen months the land department of that road has been industriously seeking out and gathering together the finest mineral, cereal, ornithological and zoological collection ever secured on the coast. Besides this the exhibit will embrace—in fact already embraces—some of the largest collections of marine, land and fresh water shells ever shown. Moreover, specimens of the coals of the Pacific region have been secured. They represent fully one hundred different grades, from the finest Shasta to the commonest alate mixed stone. The timber of the coast is represented by specimens, green, polished and petrified. There are also cuts from old monarchs of the forest, whereon approximate estimates of the rainfall for two centuries past are made in the rings which indicate the yearly growth. To convince the incredulous ones of the accuracy of estimating the moisture of past decades and centuries by this method, a bnt cut is shown which was taken from a tree planted seventeen years ago, and the records of rainfall thereon engraved, compared with the annual registers preserved on paper by official meteorological societies. It is an easy task to satisfy the observer that the variation in the estimates is hardly perceptible, and on this basis the amount of moisture in the past is approximated.

It would require the space of an ordinary volume to mention the full list of specimens embraced in this collection, for they represent birds of every plumage, animals of every species, together with curious alkaline formations, pebbles, marble, polished and rough, sands one pumice, honey-combed lava light enough to float, fossilized fish, borings from artesian wells, curious relics of armor, breastplates, fossil reptiles, entomological specimens, etc. In the line of cereals, the tallest cornstalks and the heaviest sheaves of barley and wheat, together with threshed grain in properly-labeled bottles, are fitly represented. The mineral resources of the coast will be indexed by samples of copper and silver ore, gold quartz, nuggets, etc. The labor of gathering together the necessary specimens is not yet completed.—*Denver News.*

How a Swarm of Bees is Suspended.—The sight of a swarm of bees suspended from the branch of a tree, and so heavy sometimes as to bend it, is a surprising one, and the observer naturally asks how so great a weight can be supported, without apparent fatigue, by the few scores of bees that are fixed to the inferior surface of the branch. According to Dr Bourgeois (in *Les Mondes*) modern science estimates the amount of weight which can be supported by means of vacuum (of which the anchor on a bee's foot affords an example) at one kilogramme thirty grammes per square centimetre. Now the sucker of a bee's foot, magnified sixty diameters, represents a surface of more than a centimetre. Each bee having six feet, it will therefore be possible for ten bees to support the weight of one kilogramme. Thus, the phenomenon in question may be accounted for. We find the above abstract in one of our English exchanges. Dr. Bourgeois appears to have forgotten that in magnifying sixty diameters the surface is magnified 3,600 times; so that, assuming the other elements of the computation to be correct, it would take 600 bees, instead of ten, to support a kilogramme, or about two and a half pounds avoirdupois.

England gets all her supplies of peppermint oil from this country, and still she feels an occasional uneasiness about the abdominal region, especially when Disston sends his saws to Sheffield.

The Voracity of Pickerel.—According to M. Peapion, who has been practically investigating the subject, a pickerel will eat 47 pounds and four ounces of fish per pound of its own weight per year.

Useful Information.

Trades of the Past.

Half a century ago bellows making was a thriving trade. Every house had its pair of bellows, and in every well furnished mansion there was a pair hung by the side of every fireplace.

But as stoves and grates took the place of open fireplaces, and as coal was substituted for wood, the demand for bellows diminished, and the business as a separate trade, died out.

The same is true of flint cutting. Flints were once necessary, but only for tinder-boxes, and a tinder-box was as necessary for every house as a gridiron or a skillet. Every one who looks back to a childhood of forty odd years ago must remember the cold winter mornings when the persistent, crack, crack of the flint against the steel sent up from the kitchen an odor of igniting tinder and sulphur which pervaded the house. We have no more idea what became of the flint producers than of the old man of sorrowful memory, who, three or four times a week, called at our house with brimstone matches, for a penny the half dozen bunches. Both have completely vanished from the country.

Then, again, are gone the pin-makers, who, though they have been in their graves this quarter of a century, still figure in lectures and essays to illustrate the advantages of division of labor. Instead of a pin taking a dozen men or more to cut, grind, point, head, polish, and whet not, as it used to do, pins are made by neat little machines at the rate of three hundred a minute, of which machines a single child tends half a dozen.

Nail-making at the forge is another lost industry. Time was, and that in this nineteenth century, when every nail was made on the anvil. Now, from one hundred to one thousand per minute are made by machines. The nailer who works at the forge has but a bad chance of competing with such antagonists, and he would have no chance at all were it not that his nails are ten-fold tougher than the former.—*Investigator.*

TOILERS AND LOITERERS.—Six hundred millions of people on this globe constantly toil all their lives long, while 19,000,000 sit quietly and complacently by, gathering the results to themselves. The laboring classes constitute 7-10 of mankind, and in any revolution they have nothing to lose but their chains; as the lowest stratum in society cannot rise without causing the complete disruption of all superincumbent classes we cannot measure the magnitude of the revolution that liberty, justice and equality to these millions evolve. To-day they are waking from the lethargy of ages, moving with that healthy discontent that marks every step in progress, and for the first time in the history of nations, combining the world over.—*Mrs. Stanton.*

BUSINESS KNOW-NOTHINGS.—The man who groans over his poverty without taking a step toward bettering his condition, is justly considered as a good-for-nothing dunce. Had he sense, the more desperate his fortunes, the more energetic would be his attempts to improve them. What is true of individuals is true of classes. Business may be dull just now, but the laws of demand and supply exist, as they always have done. They may be operating somewhat peculiarly at present, but the long-headed merchant or manufacturer will study how they may be turned to his benefit, instead of croaking about actual difficulties and imagining others worse to come.

ACTION.—Men who have half a dozen irons in the fire are not the ones to go crazy. It is the man of voluntary or compelled leisure, who mopes, and pines, and thinks himself into the mad-house or the grave. Motion is all nature's law. Action is man's salvation, physical and mental. And yet nine out of ten are wistfully looking forward to the coveted hour when they shall have leisure to do nothing, or something only if they feel like it; the very siren that has lured to death many a successful man. He is only truly wise who lays himself out to work till life's latest hour, and that is the man who will live the longest, and will live to most purpose.

THE IDEA OF PULVERIZED FUEL NOT NEW.—Nearly twenty years ago, John Bourne, in his "Treatise on the Steam Engine," pointed out the advantage of blowing coal dust into a chamber lined with fire brick, so that it might be ignited by coming into contact with red hot surfaces, after having been mingled with quantity of air necessary for combustion. There are now several large manufactories in the United States using pulverized fuel for furnaces and boilers.

DIVERSITIES IN WOOD.—The varieties of wood are more numerous than most people are aware of. At the Paris exposition of 1867, there were, from forty five different countries, no less than 3,769 different kinds of wood exhibited, 95 coming from Europe, 252 from Africa, 858 from Asia, 966 from Oceanica, and 1,298 from America.

WHEN A HOUSE IS NOT A FIXTURE.—A house set on blocks, resting on the surface of the ground, not attached to the soil, and removable without disturbing the land in any way, is not realty; and also a portable fence is not a part of the realty.

JUTE CULTIVATION.—Eight hundred thousand acres of Indian soil are now under jute cultivation, producing an amount of fibre, which ultimately takes the form of 32,767,930 gunny bags, and an enormous quantity of matting, cloth, twine and paper. California alone pays annually one million of dollars toward producing this amount of raw material—every pound of which should be produced on our own soil and manufactured into sacks by our own people. The State Grange of Patrons of Husbandry, which held its annual session in this city last week, put forward some very sensible ideas with regard to the introduction of this branch of industry into this State. They propose the employment of convict labor in the manufacturing portion of the industry, as a direction for utilizing such labor in a manner least liable to conflict with any of the existing industries of the State.

PEANUT CULTIVATION.—Many thousand tons of peanuts are exported annually from the Gambia, West Africa. The largest portion is carried to France, where it is converted into "the best olive oil." Why not extend the manufacture of "olive oil" in this State. A substitute for the inferior article made from the peanut?

THE Missouri-Mississippi has been most appropriately called the great continental river-tree, which has its roots in the Gulf of Mexico, its branches reaching to the Alleghanies, the Rocky mountains and Lake Itasca.

AN effort is being made to acclimate the Florida cedar in Germany, as it furnishes the only kind of wood suitable for the manufacture of lead pencils.

Good Health.

The Pain of Death.

It is the observation of all who have witnessed many deathbed scenes that the last struggle is usually painless. There are exceptions, but they are few. The writer of this was once drowned to insensibility, and it is probable that the violent arrest of life in full health in that way is as painful as most other forms of sudden death. If one had to suffer the pain of drowning under circumstances where the attention would be fixed upon it, it would doubtless be found quite severe; but the whole energies and attention are directed to efforts to escape—a *determination* to escape in fact, so that the sense of suffocation, while highly disagreeable, is not what we would call intolerable. This resolute battle for life lasts as long as sensibility remains, and fully occupies the attention to the last. The grip of a drowning man is proverbial, which shows that the determination to escape is so intense as not only to attract attention from the pain, but to cloud the reasoning faculties. It is well known that hand to hand combatants feel little or no pain, even in receiving mortal wounds. This attraction of attention from self is common to almost all forms of death. A very good illustration of the effect of this is known even in so acute a pain as the toothache. The sufferer will be relieved by anything that fully arrests his attention—for instance the appearance of the dentist's forceps. But this pain extinguisher is far less potent than many others which accompany disease. Cholera is one of the most violent of diseases, but the patient very soon relapses into indifference. Many other illustrations might be cited. There is a great deal of irrational dread of the article of death. Those who have well grounded hopes of a better life should never give themselves a thought of uneasiness about the narrow stream. The most they will ever know about it will be that they have crossed without knowing it.—*Interior.*

INVALID'S CUTLET.—One nice cutlet from a loin or neck of mutton, two teacupfuls of water, one very small stick of celery, pepper and salt to taste. Have the cutlet cut from a very nice loin or neck of mutton; take off all the fat; put it into a stewpan, with the other ingredients; stew very gently, indeed, for nearly two hours, and skim off every particle of fat that may rise to the surface, from time to time. The celery should be cut into thin slices before it is added to the meat, and care should be taken not to put in too much of this ingredient, or the dish will not be good. If the water is allowed to boil fast, the cutlet will be hard. It takes two hours' very gentle stewing.

DYING FROM A MAN'S BITE.—Yesterday, says a late number of the Washington *Star*, Dr. Newman, of the West End, amputated the right arm of Gilbert L. Joy, a colored man, who was bitten on the thumb by Josiah Edmonson, another colored man, some two weeks ago, in a fight. Gangrene has progressed to such an extent, however, that the physicians have no hope of his recovery. Edmonson was arrested after the doctor gave his opinion, by Officer Deaton, of the Fourth Precinct, and will be held to await the result of Joy's injuries.

BILE IS NATURE'S CATHARTIC.—Constipation frequently results from its deficiency. The office of the liver is to purify the blood by extracting bilious matter, which is brought to the service of the bowels for their daily action.

Scrofula.

Among the most terrible of the ills that afflict humanity is that too common, tedious and multiform disease, scrofula:

Pre-natal, or hereditary in its nature, insidious in its approach—and generally incurable; it is more to be dreaded by far than small-pox or yellow fever.

The name scrofula is derived from the Latin word scrofa, or scropha (a sow). Why, nobody knows. For hundreds of years people superstitiously believed it curable by the touch of some royal personage; hence the name "King's evil."

The characteristics of scrofula are a tendency to swelling of glandular portions of the system, which suppurate and discharge a curdy or mixed matter, and are exceeding difficult to heal.

Persons naturally or hereditarily subject to scrofula have, especially during childhood, pale complexions, large heads, narrow chests, protuberant bellies, soft flabby muscles and feeble circulations.

It is often indicated by red or light hair, grey or blue eyes, with large pupils, a fair transparent skin and rosy cheeks—but their rosy cheeks are very sensitive to cold, changing in a few moments of exposure to a purple or livid color, and are extremely liable to chills and chilblains.

Sometimes scrofulous children have dark muddy complexions, coarse black hair, and harsh skin, with mental and bodily energies sluggish and dull.

Oftenest, though, such children are precocious, clever, ready of apprehension, eager tempers, warm affections, lively, imaginative and susceptible.

Like other hereditary tendencies, it may skip two or three generations and re-appear just as family likenesses do.

The tendency may be so strong that nothing in the way of care will prevent its manifestation, or it may be so faint as to never break out dangerously if exciting causes be warded off—the most exciting causes are insufficient food, exposure to wet and cold, want of exercise, want of pure air, and mental disquietude. Climate exercises a very marked influence upon it.

Scrofula manifests itself in indolent glandular tumors, especially in the neck, lungs, ovaries, etc.—sometimes in the eyes or eyelids—the bones are also liable to disease, especially the bones of the spine.

Accidents of no consequence to others, produce serious trouble with these scrofulous constitutions.

All that can be done with any certainty of good results, is to keep up the tone of the system by careful attention to the air breathed, the food eaten and the clothing worn. Bathing, regular exercise, regular habits generally—are best. Iodine and cod liver oil are often used, but with doubtful results.—*Industrial Age.*

THE TREATMENT OF HYDROPHOBIA.—The French *Journal des Connaissance Medicales* relates that a man, forty-three years of age, having been bitten by a mad dog, was cauterized with a red hot iron four hours later. A month passed without any distressing symptoms, but at the end of that time he began to complain of epigastric and pharyngian constriction, and was very much cast down. Recourse was had to chloral at doses of about sixty grains, which succeded twice in affording a good night's rest; but the third time it remained without effect. The patient experienced great anguish; his voice was hoarse; he had tetanic contractions in the arms, neck, and breast, and expressed great fear, accompanied with hallucinations. In the morning he was utterly discouraged. They then administered sixty grains of bromide of potassium, which gave a quiet night, with a great improvement on the following day. Another dose of about seventy-five grains was given with equal success; all convulsive motions had disappeared. The medicine being suppressed, the convulsions began again a week later, when bromide was again administered to the amount of about ninety grains, which completed the cure. This remedy is readily tried, and we shall be glad to hear of any results that our readers can communicate.

TO PREVENT INCREASE OF CORPULENCY.—The *Phrenological Journal*, in answer to a correspondent, who inquires "What will keep one from growing too fat," says: "Sugar and fatty matter fatten those who eat them and can digest them. All the grains are fattening, and all animals that live on grain become fat if they have as much as they can eat. On the contrary, the animals which eat the flesh of other animals exclusively, never do become fat, no matter how much food they have at their disposal; but they do not feed on stall fattened beef, but catch game as it runs, and this is not fat enough to fatten the lion, tiger or eagle. Eat lean beef, mutton and fish, and avoid sugar, butter, and, especially, fine flour in all its forms, and eat but little breadstuff at all. Use tart fruit and common vegetables, and exercise freely."

A HINT.—Multitudes of women lose health, and even life, every year, by busying themselves until warm and weary, and then throwing themselves on a bed or sofa without covering, or in a room without a fire, or by removing their outer garments after a long walk, and changing their dress while still in a state of perspiration. If you have to walk and ride both, do the riding first, and, on returning, go to a warm room, and keep on all your wraps until your forehead is dry.

Domestic Economy.

Oat Meal for Children.

We see by an article in the *La France Medicale* that M. Dujardin has been experimenting with oat meal as a food for young children. He made use of a jelly prepared by soaking a tablespoonful of the meal in a glass of water for twelve hours, then straining through a sieve and boiling till the whole assumes the consistence of jelly, and adding sugar or salt to taste. According to analysis, 100 grammes of the meal contains 8.7 grammes of water, 7.5 of fatty matters, 62.5 of starch, 12.5 of nitrogenous matters, 1.5 of mineral substances, 7.6 of cellulose, dextrine and loss. Its nutritious value, therefore, as food for children, in regard to nitrogenous or plastic elements, and such as are respiratory, is analogous to that of human milk or cow's milk. Besides these it contains more iron than do most of the articles of food. Four newly born infants were fed with the preparation just described, and in every case with satisfactory results. In addition to its qualities as food it acts efficiently against colic and diarrhœa. It enters into the composition of the syrup of luther, which is said to be much used in Germany. M. Gillette, surgeon of the hospital of Melun, has also given oat meal, combined with cows milk, to six children, and finds it to be a valuable food in cases where the natural supply of milk is deficient.

A VERITABLE CURRY.—An Englishman who has traveled extensively, gives the following recipe for a curry he saw made in Malay, and vouches for its excellence: Cut up a fowl into small pieces, and provide four dried and two green onions, five chillies, half a teaspoonful of turmeric, one teaspoonful of coriander seed, one of white cummin, and one of sweet cummin. Pound the seeds, turmeric and chillies well, and slice the onions fine. Butter a saucepan, and, after slightly browning the onions, add the pounded ingredients, with just sufficient water to reduce them to a paste, and throw in the pieces of fowl, and mix well until the meat has a yellow tint. Lastly, add cocoanut milk and boil until sufficiently cooked. The cocoanut milk is obtained by soaking the finely scraped meat of an old nut in warm water, and straining out the fiber.

TREATMENT OF NEW WOODEN UTENSILS.—Wooden vessels for containing articles of food and wine, and wooden vessels for culinary purposes, can be rendered fit for immediate use by the removal of the unpleasant extractive matters, by treatment with a solution of washing soda. Thus an ordinary barrel should be half filled with water, and a solution of about two pounds of soda in as much water as will dissolve it; then head up the barrel and thoroughly mix the liquids by shaking the barrel, which should then be filled to the bung with water, and allowed to remain for twelve or fourteen days; then after withdrawing the discolored liquid, it should be well rinsed and filled with pure water and allowed to remain several days, when it will be fit for use. Other wooden vessels may be treated with a similar solution of soda.

COOKING GREENS.—Every housewife thinks she can cook "greens." It is the simplest of all dishes, and yet, in most cases, they are not well served, for much depends on the manner in which they are boiled. The water should be soft, and a tablespoonful of salt added to a large sized pot of it, which should be boiling hot when the greens are thrown in; and then it should be kept on the boiling gallop, but uncovered, until they are done, which can be told by their sinking to the bottom of the pot, and they should be skimmed out as quickly as possible into a colander, so that all the water will run out. Press them with a small plate, then turn upon a platter, add a large piece of butter and cut up fine. Serve while smoking hot.—*American Grocer.*

SUPERIORITY OF DUCKS' EGGS OVER HENS' EGGS.—The following details are given as the results of French experiments: An ordinary hen's egg weighing 60.4 grammes was found to have 7.2 gr. of shell and skin, and 53.7 gr. of contents, the latter, therefore, forming 88.07 per cent. of the whole weight. A duck's egg, weighing 59.8 grammes had 7.7 gr. of shell and skin, and 52.1 gr., or 87.12 per cent. of contents. Analysis of 100 grammes of the contents of hens' eggs gave 26.01 dry residue, 1.03 ash, 11.27 fatty matter in the form of sulphuret of carbon. An equal weight of the contents of ducks' eggs gave 28.89 dry residue, 1.16 ash, 15.49 fatty matter, showing that ducks' eggs contain a notably larger proportion of nutritive matter than hens' eggs.

MINCED FOWL—A FRENCH RECIPE.—Mince from the bones all the more delicate parts of the flesh of either cold, roast or boiled fowls; boil the bones, well bruised, in a pint of water until reduced half, then strain the gravy and let it cool; put it into a clean saucepan with a gill of cream, an ounce of butter well mixed with a dessert spoonful of flour, nutmeg and grated lemonpeel; keep stirred until it boils, then put in the fowl finely minced, with three or four hard boiled eggs, chopped fine, with pepper and salt to taste; stir in a squeeze of lemon juice; dish it with sippets of toasted bread, and serve immediately.

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Latest from Panamint.

Mr. Jacobs, the well known discoverer of the Panamint mines, is now in this city. We learn from him that there has been of late a decided improvement in mining results and indicationa in that district. Just before he left, hia company had taken out $7,400 in nine days' work with a five stamp mill—bullion 956 fine. The ore is free and easily worked—plenty in sight. The mill is now running regnlarly during the daytime.

The company of which Senator Jones is at the head, is also reported as doing well. They have already made a shipment of one ton of bullion and have another ton ready to ship. This company is rnnning a twenty atamp mill. The railroad is now within 150 miles of Panamint, and stages are running between that point and the end of the road every other day. Mr. Jacobs assnres us that the prospects there at this time are exceedingly hopeful; bnt he does not advise a rnsh of miners thither, although there is full employment for all who are there.

Giant Powder.—A fnrther explanation than that given in our issue of October 2d, concerning the suit of the Giant powder company vs the manufacturers of Hercules powder, seems necessary in order to give a full understanding of the effects of the decision, and we shall mention the subject further hereafter. In a late oirenlar the Giant powder company make the following significant assertion: "Onr powder is, and always has been, mannfactured nnder a distinct, independent patent, known as the Dynamite or Giant Powder patent—a patent having no connection with the two patents affected by the late docision."

A large cargo of lumber has been landed on the beach at Lompoc for the use of that colony.

Saving Gold From Sulphurets—"Rusty Gold."

At a meeting of the Microscopical Society of this city, held September 16th, a paper was read from Mr. Melville Attwood, nnder the above heading, which has attracted so much attention that we here reprodnce the same, with additional notes, specially furnished us by Mr. Attwood. The subject matter of this paper is of great importance to the quartz miner, and bids fair to work a complete revolution in the milling of quartz rock, and especially in the treatment of snlphurets.

"Rusty Gold."

Those who heve been for the past twenty-three years in any way connected with the California gold mines, will frequently have heard the complaints of minors and millmen that the gold of such and such a mine or claim was rusty, rebellious, coated with some snbstance that prevented it from amalgamating; that it floated on the snrface of the water and mercnry, and that they had tried all the different processes in use in the district, and that they could not by those methods save the gold. In speaking of their mines they said the rock contained so much free gold, besides that in the sulphurets, thereby inferring that the gold in pyritic matter was mineralized.

I heve good reason to know that in too many cases the fanlt arose, not from the imperfect mode of treatment, but that the rock really contained little or no gold to save.

Now, the fact is that gold occurs mineralized only by tellurium, that there is no ore of gold except the tellnride of gold and silver, which is found in such limited quantities as to be hardly deserving of notice, so that with that nnimportant exception all the gold met with in the different mines of California exists as a metal, and in that form is only mechanically combined with other minerals existing in exceedingly minute partioles, with the arsenical and iron pyrites, sulphide of zinc, etc., in consequence of which all these require to be stamped or reduced to a very fine state to liberate it. I trust by the aid of the microscope and these slides which I have prepared (as imperfectly as I nnderstend the nse of the instrument), to prove to you the fact of this mechanical combination, which is still regarded by many as an open question.

This is a most important thing for millmen to know, as it simplifies the treatment of the quartz rock, and shows, where it contains much pyritio matter, the absolnte necessity of fine stamping.

I have for the last forty years been more or less practically engaged in mining and milling for gold, and during that time seen processes too numerons to mention tried to save the gold, from the most primitive down to what is nsed at the present time; also, the plan of roasting the vein matter, and the chlorination process for the sulphurets or pyritic matter, and oen now fully realize what time and money might have heen saved had a mioroscopic examination been made of the vein matter under treatment by the different processes. In answer to the complaint of the miner and millmen

A Microscopic Inspection Would Have Revealed

To them that there was no such thing as rusty gold, and that the float was only laminated gold, caused by the action of the stamps, or from other causes, and in that state exposing a great amonnt of surface in proportion to its weight, and that the pyritio matter had only to be reduced or stamped to an exceedingly fine state to free the gold encased in it, which would then amalgamate with the same facility as the rest of the gold in the quertz. If an examination had been made of the roasted veinstone, it would have been found that a large portion of the gold by that process was in a manner really coated or enveloped in a slag, and thereby partially rendered unfit for amalgamation; I refer to what is called roasting in heaps.

Description of Slides.

No. 1. Monnted on this slide is a specimen showing gold mechanically combined with prismatic iron pyrites. I selected it not only for its great beauty, but that a careful examination of it will snpport what I have stated in reference to the mechanical mixtnre of the gold with the pyritic matter.

No. 2. Section of veinstone from a mine near Nevada City—gold in mechanical combination with arsenical pyrites and zino blende. The gold can be easily distinguished encased in the pyrites. I have used a two-inch objective, but if examined with a higher power it will show the minuteness of some of the particles of gold.

No. 3. Gold in mechanical combination with the telluride of gold and silver.

No. 4. A beautiful speoimen of the tellnride of gold and silver, and gold.

No. 5. The telluride of gold and silver, and gold in a leaf form, or feldspar.

No. 6. Gold in jacotinga (micaceons specular iron ore) from Gongo Coco mine, Brazil. In Brazil veins of jacotinga yield large qnantities of gold. Veins of thet charaoter have not yet been found in California. The speoimen from which this was broken waa taken from the mine in 1832. The yield of gold for six months in that year was 2,371 pounds, Troy.

No. 7. Gold in talo.

No. 8. Gold in talc.

No. 9. Gold in rock, after roasting in heaps.

No. 10. Section of veinstone from the Sumner mine, Kern, with zinc blende and arsenical pyrites.

No. 11. Gold from the Sumner mine, showing the minute metallic particles in which it oconrs in the sulphuretted matter, and the necessity of fine stamping in order to liberate it. To treat it properly, the rock or vein stone ought to be stamped fine enough so as to pass through a sieve having 10,000 holes to the aqnere inch.

No. 12. Float gold, from gold sands found on the south beach, at the entrance of Humboldt bay.

No. 13. Beach gold, and gold from the pyritio matter, mounted together to show how much larger the particles are from the beach gold.

No. 14. Placer gold having the appearance of being rusty.

Before concluding I wish to make a few remarks respecting the milling of gold-bearing rock, and though it may not be exactly what should be brought before our Society, yet being done for the parpose of interesting the millmen, so thet it may indnce them to avail themselves of the use of the microscope in their works, and my endeavor to show the importence of the microscope to any one engaged in milling or mining must plead my excuse, if any be required.

For a number of years at the St. Johu dal Rey mine, Brazil, they have obtained all their gold from the concentrated pyritic matter, (here called sulphurets) by simple amalgamation in barrels. The concentrated stuff or sulphurets, which is a mixture of arsenical, common, and magnetio iron pyrites, is also termed in California *rebellious ore*. Mr. Dietzsch in his report to the company in 1867, says:

"Onr actnal process of amalgamating the sand is under ordinary circumstances sufficiently complete. Fifty pounds of ordinary mercury combine with thirty-six to forty ounces of gold dust disseminated in sixteen cubic feet of pyritio sand (sulphurets) free from decompesition, in the rotating barrels dnring twenty-four to twenty-six honrs, leaving in the residue little more than half an ounce nf the gold contents, part of which, being still in mechanical combination with the send, is afterwerds extracted by a further grinding in the arrastras."

By Mr. Dietzsch's report it appears that the actual loss of gold in the amalgamation of their snlphurets in barrels does not amonnt to one per cent.

In the same report it states that the stamps in that year reduced 60,685 tons of veinstone, and the quantity of snlphurets amalgamated was about 3,891 tons. The loss of mercnry 1,461 pounds, or at the rate of a little more than six ounces to the ton of sulphnrets. The cost per ton of the veinstone treated was four shillings and sixpence half-penny.

The St. John del Rey veinstone, when it is called pure, may be taken at forty-three of silica, and fifty-seven per cent. of pyritous matter. Of these minerals arsenical pyrites is nsually the most anriferous. Gold is rarely seen previous to concentration in any of the veinstone from thie mine.*

By the Washoe pen process, the waste of mercnry in the working of the Comstock silver ore, and argentiferons gold, amounts to nearly three times that of the St. John del Rey, notwithstanding that the mineralized silver treated in the pan mills scarcely ever reaches to more than two per cent.

It may not be known to many, yet it is nevertheless a fact, that the milling of any of the rich gold veinstone of Californie, excepting those holding the tellurides, even if it contain 80 per cent. of pyritic matter, may be accomplished with a loss of under four per cent. of the gold conteuts of the veinatone, by the simple process of dry stamping and amalgamation in barrels, and with a loss of under fifteen per cent. by the Washoe process of wet atemping and amalgamation of the pnlp in pans—without chemicals even when the gold contents of the veinstone is nnder $10 per ton. Low grade veinstone will not, hnwever, hear the expense of dry stamping and barrel amalgamation, or even the Washoe process.

I believe when fairly tested that the nse of chemioals in the treatment of a large portion of the Washoe silver orea will be fonnd to be as great a mistake aa that of allowing (aa they now do in aome of the large new mills) the pans to do the work of the stampe. In other words, that the Washoe mills would get through more ore and obtain larger resnlts by finer stamping and naing little or no chemicals in their milling operations. The loea in working low grade gold rock in Australia, from the published reports of the different mining companies, averages about twenty per cent. on eight or a ten dollar rock. What is done at onr California gold miues I am unable to say, ae in their reports they do not give either the gold contents or loss on treatment. I am inclined to think that no check is kept of their workings. In Australia they appear to work to a profit a lower grade of rock than is done in California.

*Mr. Attwood has placed in our possession some small samplee, which are said to be a fair average of the character of the veinstone raised from this mine dnring the year 1867, which can be inspected by any person interested in this paper, or in the extraordinary results of the milling process at the San Juan del Rey.

The owners of the Livermore coal mine have just bought a new engine and tested it and pnt it at work. It is worth about $8,000 and will prove very efficient in hauling up coal.

The Bakersfield presa are agitating the snbject of building a road direct from that town to the coast *via* San Luis Obiapo.

Pleasant Talks About Inventions.

No. 3.

In the seventeenth century steam and steam engines reached a high development and became the great power of the world. A new impetus was given to commerce, the arts and industry, which created a vast demand for labor-saving mechinery of all kinds. Heretofore, as a rnle, inventions or discoveries were accidental or the resnlt of the necessity which suggested them. Now inventors begen to assume the rank of a profession, and at the present day tens of thousands of great and smell inventions attest their skill and deep research.

Balloons were invented by Gnsmao, a Jesnit, in 1729. They were not brought before the public for some years after, and then by the Montgolfier brothers, of France. Aerial navigation, ever since its first success, has been made the subject of acientific and laborious research and experiment, and as yet the problem remains unsolved. As far as practical navigation is concerned the balloon of to-day is nnder no better control than the first tiny air ship thet sped upward to the nnknown region beyond. Franklin bottled lightning in 1748, and his daring experiments led to the triumph of thet science. The next important invention was that of the spinning jenny, in 1759, over 400 years after the invention of the spinning wheel. It was named after the wife of the inventor, an honor hardly deserved, for she was a reguler termagant and led her hnshand a terrible life, and finally kicked him and his model out doors. It took him weary months to repair the damages resulting from her causeless fit of anger. It was done, however, and the genins and patience of the hnmble mill-hand rewarded by the greatest labor-saving machine of the age.

The cotton gin, a machine that made cotton king, and developed the resources of the Sonth as no other one discovery haa since the settlement nf the country, was invented by Eli Whitney, in 1793. Whitney wes a school teacher and the idea was suggested to him by a Southern lady, at whose house he was stopping. Lithography was discovered in 1796-8 at Munich by one Aloys Senefelder. The most important discovery of the century was that of galvanism in 1786. Thia great science is, and will ever be, of inestimable benefit to the human family.

As an indication of the primeval manner of the early gastronomists, it will be noted with interest that forks were invented in Italy, and introdnced into England, in the seventeenth centnry. The table and its auxiliaries have been very greatly improved since accnbation was considered quite the thing by the ancients, who lifted their food with their fingers and were satisfied. Or even onr own worthy ancestors, who gathered abont tha well-filled tureen of swimming fat pork and gravy and "sopped" ont their fill, meanwhile passing aronnd the hnge chunk of maple sugar snspended over the table, biting off a due qnantity to sweeten each sip of their fragrant Bohea. Such proceedings in this dey of finger bowls, napkins, etc., would be apt to disgust the fastidions.

To enumerate the inventions of the present centnry wonld be a hercnlean task. Of their magnitude and practical benefits, we have ample evidence on our oceans and rivers, in our workshops and mannfactories, in the chambers of art and the halls of science, in the miles of iron and steel rails that diverge to the nttermost limits of civilization, and in the transmission of intelligence by the network of electrio wires that encompasa the entire world.

One of the most important inventions of this century, is that of locomotive engina in 1804. In 1820-40 mechanics' institutes made an appearance and rapidly spread over Europe and America. The greatest invention of the age is, beyond cavil, the electric telegraph, olaimed by Morse, as his inventioo, in 1832. It was not developed and introduced nntil some years later. Thia invention is also claimed by Cooke and Wheatstone, of England, they having patented their system in June 19th, 1837, while letters patent were nnt obtained by Morse until September 27th, 1837, a diff rence of nearly three months in favor of the Englishmen. It is and probably will remain a vexed qnestion as to whom the honor is due, although public opinion throughont the world generally sustains Morse in his claim. Daguerreotypes, named after the inventor, were the product of 1839. Another experimenter claims that he communicated the discovery of photography to the French Academy of Science at an earlier date. As Daguerre was several years perfecting his snn pictures before he brought them to the notice of the world, there is no doubt bnt that he is entitled to the honor of the invention. Gnn cotton belongs to the year 1846, and nitro-glycerine followed in 1847. A minor invention, but one of wide spread nsefulness, is that of steel pens, in 1803. Before that time, he who wonld write had to depend npon his gray goose quill. An innovation was attempted late in the seventeenth century, by the introduction of tortoise shell pens, tipped with gold. They were not a snccess.

The entire world is now anxiously awaiting the development of the Keeley motor. If it sustains all that is claimed for it by its inventor, its advent will completely revolutionize mechanica and trade. It will be a power beyond calculation. The stories told of its capacity are so fabulous that thinking men are apt to doubt their reliability. A few months will determine, however, whether the Keeley motor is a myth or the acme of invention. M. J. K.

Metallurgy of the Copper-Silver Ores of Inyo County—No. 7.

[Written by Samuel Purnell.]

Concentration.

The devices for wet concentration heve been and are now almost endless. The curious reader, hy refsrence to works on this subject, will find that ores have been attempted to be concentrated hy an almost infinite variety of machines, and that in many oasee they were hased on principles exactly opposite to each other. Among the latest water oancentrators, aspiring to popular favor, ere thó Cazin, the Utsch end the Frue automatic jigs. Thet they will do good work nn a certain class of orcs oannot be douhted; hnt it is not probable, iudeed herdly possiblo, for them to concentrato a glanco or fehl ore (such ae those of Inyo oounty) with profit. Soldom have the most approved wet coucentratore heretofore been able to hendle oree of this description at a less lose than 40 per cent.; and from the nature of the subject, it seems likely that this proportion of loss cannot be lessened. In Earope, where centuries of skill have heen hestowed upon silver ore oancentration, it is considered iu a high degree of perfection when only 15 per cent. of silver is loet. The preeence of lime, clay, etc., may ran the losses up to 80 or 90 per cent., thus rendering concentration impossible. It is common for the ownere of patent water jigs to claim much lower losees than thie, with their perticular devicee—they are generally eelf-deceived. But when the buyer attempte to oancentrate his fahl oree with them he ie lucky if he escapes with eo emell a loss as 40 per cent. Could such ores he profitehly concentrated by water jigs, every mining camp, in which these minerals occur, in California, woald have them in operation; but as far as the observation of the writer goee, there is not one eteadily at work in the State. The expense of erecting a oomplete water dressing works ie high. At Mine La Motte it ie reported thet a complete wet dressing works, on the plans of Rittinger, were srected a few years ago, at a ooet of $300,000, but after a succession of failures they were abaadoned. Silver slimes will alwaye he lost in tailings and waste water.

The result of an examination into the subject of water concentration for the fehl oree of Inyo county, leads to the ooncluaion that they are ill adapted to the process, and that experimente in that direction must end in failure. Were there no other known method to concentrate thees silver oree economically, then concentration might be said to be practically impoesible. It ie fortuaate that a dry air jig hae lately heen perfected, which seems better adapted to these orea than any wet procese yet devised. Ae it is oonsidered to he an important contribution to Americen metallurgy, some space will be devoted to ite explenation.

Krom's Air Jig.

Concentration by an air jig wae first introduced into Germany, by Aafermann, some thirty yeers ago. The first triele did not prove eatisfactory, owing to the crudity of the apparatue employed. The growth of an importaat invention is the slow process of years, and eeoh saccessive inveator adds to its completeness. (Fig. 8.) Under the hande of Mr. Krom, the dry eir jig has now become an almost perfect device. The dry ore in powder and coarse grains is subjeoted to eudden puffs of air from helow, through a grete. The ore ie automatically supplied upon a horizontal sieve, and the concentrated portion is discharged upon one side and the tailinge upon the other. The principle is besed upon the agitation of the ore, hy meens of jets of air rapidly applied. The machine is valuehle in concentrating nearly all minerals—even though in some special caese water oancentration may also be practicehle—but it will also concentrate, with profit, clasese of oree wholly uamanageable hy eny wet process. Especially is this true of complex silver. This was proved by experience in Nevade, Utah, Colorado, and various Eestern states. So euccessful have thees air jigs proved, when operated hy skillful men, that it ie thought by those familiar with the subject that they will in time nearly displece all water jigsin the separation of complex ores. It is difficult to imagine a machine doing ite work more satisfactorily. That there is considerable prejudice against air concentration ie well known, but it will be found that this prejudice is not among those who are heet informed on the snbject, but among those who refuse to be inetructed, and will not believe that anything whatever oen be adopted that ie superior to water for dressing oree.

For some of the facte and argaments which follow, iadebtedness ie acknowledged to some letters by G. W. Baker, of Colorado. The argamente most readily used against the air system have been mainly those cited—experimentel failures, theories and eystems in Europe wherein air, as the medium, failed to sustain the merits claimed for it by inventors and experimenters. But thie kind of argument will apply to the water eystem just as well, or indeed to anything elee. The use of water jigs hae never produced results as good as those of air. It is aesumed that the perfection of water dressing is found in the modern water jigs, in which the principle is eimply submitting the ore to the action of intermittent impulses, suddenly lifting the body of ors to he operated upon, and then allowing free sahsidance of the particles, so that each may as nearly as possihls fall according to its specific gravity. In like manner, the perfection of air dressing ie found in a like intermittent action, euddenly lifting the body of nre to he acted upon; subsidence here allowing each atom to act on ite own gravitating laws. Experiment has proved that the number of impulses to be given hy or to water oannot exceed 100 per minute, if more frequent there ie no subsidsnce. In the use of air, 400 impulsee may be given por minute, without destroying the principle of impulses and subsidence. This is due to the fact tbnt hodies fall much more rapidly in air than in water. Therefore, on the quantity separated of light from heavy, the proportion will he as one to four in time. In the water jig, the samo fluid which oausee tho upwerd impulse stays with and must accompany the ore to he discarded as tailings, and so far as the separation is not perfect, there is no remedy against the flowing awey of valuable meterial. If thie were the fact with air it would he apparent that nnder liko circumstancee eir would oarry off loss valuahls materiel than water, inaemuch as air is very much lighter than water. But in the case of air the medium or fluid which oauses the upward impulse does not etay with or accompeny the ore to be discerded ae tailings. Air does its work and leaves, mingling with the etmosphore, and the only flow is thet of tailings. The amount of dust carried away from the machine is easily recovered hy a suitable dust chamber. It can be drewn away hy exhanst fans. A denser medium must cerry off more dust or slimes, which will contain more veluable matter as its specifio gravity is greater. Hence, if the flow of air and weter were the same, the former would carry off less than the latter; but in air, the ore particlee have lese interference than in water, and results are obtained by the use of air which are scarcely possible with water. Soms advocatee of water dressing have considered that even a denser medium than water would he adviseble, and that it would effect a closer separation; but it would seem that these partice must reaeon from mistaken notions of the nature of ore concentration; the facts being exactly opposed to their reasoning. Sizing the ore graiue is less essentiel in eir than in water dressing, elthough proper sizing ehould never be omitted in any system.

The eir jigs are automatio in their action, requiring no aseistaace or attention. In arranging a dry concentrating worke, it is ueual to so place the machinery that the ore ie untouched by hand from tbe time it is fed into the rock breaker till the concentrates are sacked. Tailings may be discharged into a stream of water and carried away; they seldom contain minerel enoagh to pay for reooncentration. The tailings do not, and need not, usually assay more than from $3 to $5 per ton. The extent to which the concentration may he carried will vary locally for each ore. It ie possible to obtein tailings almost entirely harren, if so desired. The rates of ore to concentretes must aleo continaally vary. In some cases the concentration of five tone into oae may be a suitehle proposition, while in other oaees thirty tons have heen concentrated into oae with advantage. No rules can be laid down in advance for this; it is only experiment on each ore that will decide the question. (Fig. 9.) A complete mill, for air oancentration, with a capacity of 30 to 40 tone a day, will embrace a suitahle building on the hill eide; a rock breaker; two eets of steel crushing rolls, one coarse, the other fiae; a eet of riddlea to eize the ore; an elevator; an exhaust fan; half a dozen air jigs; a dry floor; power, aud euitable bine for holding the concentrates. Erected in California, euch a mill will cost ahout $40,000.

For a better underetaading of the accompanying engraving, we give the following explanation of the figures appearing on the face of the plan: *A*, ore; *B*, Blake crasher; *C*, drying cylinder; *D*, engine; *E*, screws; *F*, crnshing rolls; *G*, elevator; *H*, dust exhanst fan; *I*, dast chamber; *K*, bins for sized ore; *L*, air concentrators; *M*, sluice for tailings.

The number of men required in the oancentration proper is smell, one to look after the machinery, one to feed the rock breaker, and another to remove the concentrates. The complete cost of treatment, from first to last, nnt including losses, amounts to about $5 per ton. Almost the entire loss is in the tailings. The dust from the rollers and screens, collected from the dust chamber, may uadergo a special concentration, or it may be worked for its silver direct. From an air concentration mill erected in Star canon, Neveda, it is reported that everything worka admirably. Tho nrss are similar to ths fahl ores of Inyo oounty, and substantially the same manipulatione would he necessary with ths latter. The Star oanon mill, unfortanetsly, has not been ahle to run regularly for want of a supply of ores from the mines. From one lot of 700 tons, the assay valae of which was $54.56 per ton, the concentrations were valued at $1,660 per ton, and the tailings $3.47. Tho entire cost of separation wae about $5 per ton. The most approved methods of water coucentration had been tried on these oree and had proved a failare, as the losses in silver amounted to 75 per cent., end the resalting 25 per cent. was not sufficient to leave any profit. By the eir jigs, 95 per cent. of the silver was saved, e result wholly unattainahle by any system of water dressing. The cost of an air jig is eome $500, and the capacity is about helf a ton of ore per hour, with an expenditure of one-eighth-horse power.

All clnsees and varieties of orss, from every part of the country, have been eeperated hy these mechines with satisfactory resalts. The character of the medium of separation, the delicecy and precision of operation of the machinery employed, renders ooncentretion posible

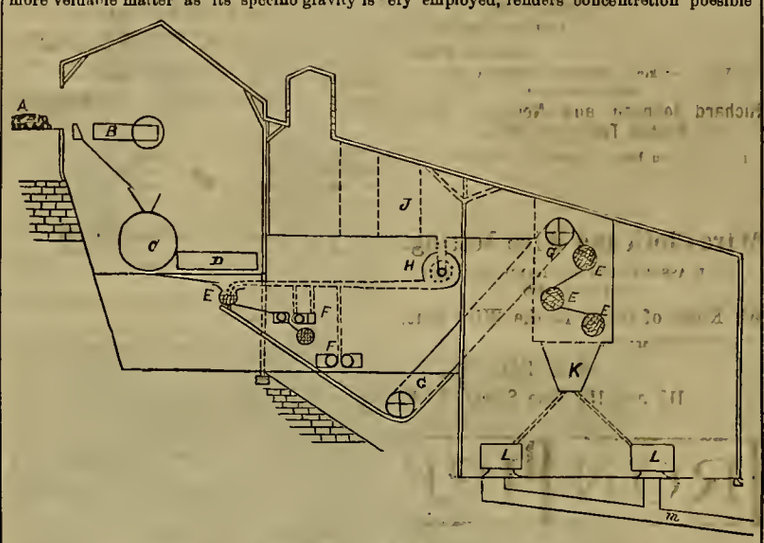

Fig. 9. DRY ORE CONCENTRATION WORKS.

end practicable with all eubstances which have a difference of specifio gravity of only one per cent. This hes been done by the Pennsylvania ealt company in the separation of cryolite from epathic iron ore, on whioh water jigs had failed. The separation of blende from galena ie aleo eeeily effected.

It would seem from the experience of intelligent and competent parties, who have worked air jigs on ores most diffioalt of concentration, and on thoee similar in constitution to the ores of Inyo coanty, that the introduction of thie machine in thet county (and elsewhere) would prove a oomplete success; at leaet, no reason is known to the contrary. The cost of a oomplete mill is a formidable item, but it should be remembered that a complete wet concentration worke cenaot he erected for any less eum, and the result would not really be so profitable. It is, of course, possible to concentrate ores, hy both the wet and dry syetems, entirely by hand. The expense of this would prevent its adoption on an economical scale. Whatever advantage there may be between the two systems, as regards ooet of machinery, will rest on the side of the air system.

In conclusion, it would seem probable that a proper application of the metallurgical processes, only briefly expleined in the preceding pagee, would reise the mining industry of this county from its present languishing condition. And the same may be said of other districts, where the ores are similar. It is almost neeless to depend on the amalgamation procese, and keep looking for a chemical to neutralize the base metals. It was never found in Europe aad never will he here. The orude amalgamation process should be diecarded in the workiag of these ores. However well it may operate on what is called "free milling ores," it will never work profitably on what is called "rehellious ores." The object of this paper has been to point out better methods which are within the reach of all. It must eventually come to this, that these improved methode muet he introdaced or the working of these oree must be abandoned. Capital will not go on forever losiug itself in useless amnlgamation mills, which are soon closed ee failares. The melaucholy wrecks strewn all over California and Nevada are sufficient evideoce of whet the general resalt will be. The abandonment of a crude process and the adoption of these modern scientific methods is a necessity of the day. The longer it is delayed, hecause of the general unwillingness to learu eny thing nsw, the worss it will he for minera and mining capital. Thess nsw processes mnst be adopted soonsr or later, and those sagacious enough to first put them in practice will reap the greatest harvest. Their general adoption can be only a question of time.

Macneale and Urban Safes.

George A. Raymond, No. 121 California street, makes a very neat display of the Macneale & Urban firs and burglar-proof safes, vaults, locks, eto. A prominent fsature in the exhibit is a No. 20 safs of this meke, which went through a very fierce fire when the town of Tularo was hurued thie yeer. The aafe fell iuto the cellar of the stors, and upon it fell the hurning timbers of the building and several tons of flour and suger. Flour and sugar iu burning creete a very intense hoat, and yet after ten hours of this severe test, the booke of Sieeon, Wallece & Co., ths ownere, were found in perfect condition. Ou account of the inside bolt work, the eefe wae opened without the leest difficulty, hy means of the lock. The battle scerred veteran now attracts oonsiderable attention. The inside is somewhat stained by a quantity of opium which wes placed in the sate at the time of the firo, but otherwise it was uninjured inside, even in appearance.

The peculiar constraction of theee safes affords entire security against burglers. The doore are rebated and provided with tonghe and groove joint extending entirely around them. This joint is accuretely fitted eo thet no explosivee can he introduced, and wedging ie rendered abeolutely impossible. The metal ie "Malacent steel." The menner of fastening ths plates together with reverse thread, conical holts, ontside eteel surfaoee, solid corners, double tongue aad grooved doore, rebated edges fitted so closely, makes the safes impregnable. The perfect workmanship, ground jointe and close fitting all around, with the smooth-working locks, square shoulders, spindles and detachable bolt work, make the large vaults a first clasa protection againet fire or thieves.

All of these safee bave triple flange doore, seven inches thick, with the petent inside holt work. The bolts and looks ere placed inside of the fire-proof material, and thereby protected from injury by fire, while in many other makee of sefes, it ie foand necessary to cut them open after paesing through a fire, in order to gain access to their contente. On examining the safe it will be seen that the hinged cep of door being thrown open, expoese the bolt work and lock to view, placed on the inside of the filling or concrete instead of on the outside, or next to the outer plate of door, ee is ths case in other eafes. The value of this device must be pateat to every one.

The Great Pump Trial.

Probebly there wes no exhibition at the late fair of the Mechanics' Institute of more general interest to both mining and sciontific men than that of steem pumps. It had been arranged that the trials of the severel pumps entered for competition ehould take place during the lest days of the fair. It was not, however, until Friday, the 8th inst., that preparations had heen sufficiently completed to allow of the commencement of the trial. Four pumpe hed been entered for a competitive trial, viz: The Bleke, entered hy H. P. Gregory; the Knowles, entered by A. L. Fish & Co.; the Hooker, entered by W. T. Garratt, and the Wilcox, entered hy W. C. Wilcox & Co. It wae arranged that a day should be allowed for each pump, and each ehould use the amount of steam they deemed fit. The following geutlemen were selected as the committee on these trials: George H. Dickey, of the Risdon iron works, chairman; Mr. Fish, of the Delamater iron worka, New York, and Mr. Detrick, of the Union iron worke. When the triel took plece it was fouud that the Blake and Knowles pumps each used an eight inch steam end an eight inch water cylinder; the Hooker pump ased an eight inch steem and five inch water cylinder, and the Wilcox ased an eight inch steem and a six inch water cylinder. The amount of steam in the test wae, in the Hooker pump, 25 lbs., the Blake, 45 lbs., and the Knowles and the Wilcox 70 lbs. each.

The result ot the triel wae so nnsatiefactory that the committee, after consaltation with the parties interested, resolved on heving a second test, which will take place in ahout ten days' time, when each of the co nteetante will task their pumps under en equal steam pressure of 60 lbs., and with an eight-inch steam and eight-iach water cylinder. It will be required to force 15,000 gallons of water through an upright pipe 58 feet in hight, one day being allowed to the trial of each pump.

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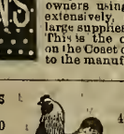

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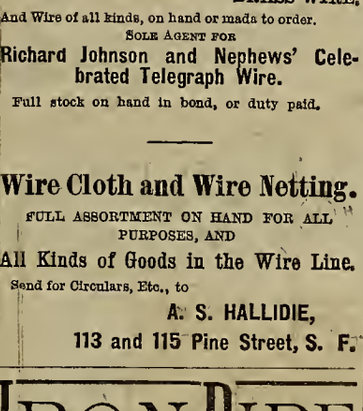

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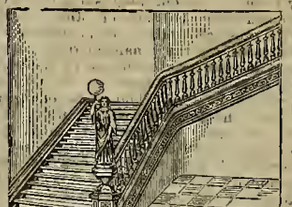

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ONLY PERMANENT WINDMILL

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To clinch the nails after the grooves are cut, the handles are opened, and the roughened plate is put beneath the hoof. The edge of a steel plate on the handle of the forceps is then placed above the nail point, and by closing the handles the nail will be bent down into the groove already cut, where it lies nearly flush with the hoof. The plate can be adjusted for large or small hoofs. The groove cut by the graver is about one-eighth of an inch long and one-eighth of an inch wide. No hammering or rasping is necessary. The foot is not bruised or scarred. Any one can learn to use it in a few minutes. Tender-footed horses can be shod with no pain to them. Further information given, if desired, by CHARLES DONNER, Inventor, or C. F. SUHL, Cor. Commercial & Drumm Sts., S. F. eowbp

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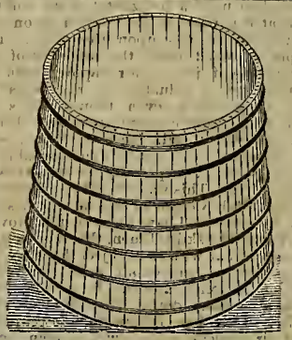

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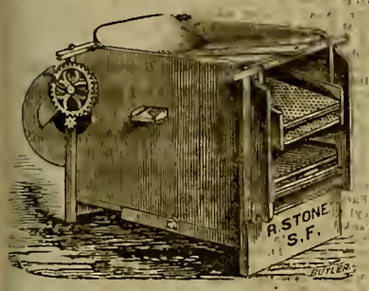

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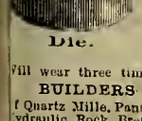
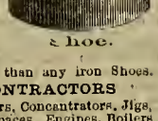


Die.



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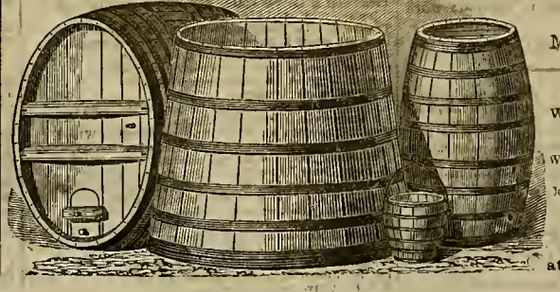

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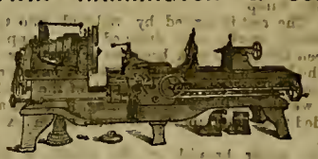

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(Continued from Page 241.)

class of *jigstuff*, which is discharged out of its largs end into receptacles, and from these feeds directly into its reepective jigger, and sifts off screenings, which pass on to the next sieve drum. To this end the lower half of the drum is surrounded by a cast iron mantle, having a spout at its lowest end, through which the discharge of the pulp into the next drum takes its course.

To save space and fall, the drums are laid with receiving and discharge end alternating, so that the pulp follows a serpentine course in passing through the apparatus.

Designating the products of the drum by the diameter of the openings in the several screens, the apparatus *a* 4 yields *coarse gravel* of 22, 16, 11.3, 8 and 5 mm., and the screenings of the fifth drum, which are lifted to the top drum of apparatus *a* 5.

This latter yields *grit* of 4, 2.8, 2 and 1.4 mm., moreover, one mm. *sand*, and the screenings of the fifth drum, which, passing through the 0.7 mm. openings into the sluice, *a* 8, run finally into the *funnel apparatus*, *a* 9, for condensation. From here it is lifted by the cup elevator, *d* 6, into the V tanks, in which, and in the following *funnel tanks* it is *graded*.

In order to avoid lifting the whole pulp—which would not only require much power, but would also deteriorate the classing work of the drums, on account of the great current of water in that case passing through them—part of the water is run out of the top of the elevator hasins into several reservoirs, placed below the floor of the building, in which the sand and slum contained therein can settle. From time to time this is shoveled back into the elevator basin, *a* 7.

Two workmen are engaged in the transportation of pick stuff, and one man tends to seven automatic continuous jiggers.

The work of the jigger will be described further on.

IV.—The Crushing of the Coarse Rock, or "Knockings," With the Rock Breaker.

The large pieces of ore, (Engl. knockings,) hoisted from the mine, are subjected, in the immediate vicinity of the shafts, to a rough sorting, by spalling them down to six or eight inch pieces, and pickings.

The products from this work are:

1. *Piece ore* (specimens,) which go directly to the smelter; and

2. Waste rock, or *deads*, which are thrown on the dump.

3. The rest is carried by railroad into the dressing works and dumped into hoppers placed above two rock breakers or "crushers."

The bottom of the hoppers has a considerable inclination toward the mouth of the crushers, which facilitates the feeding, it being attended to by one laborer without much exertion.

The upper breadth of the mouth of the crusher is sixteen inches, the lower nineteen inches, the width ten inches on top, and varying below as fine or coarse crushing requires; usually it is one and one-fourth inch, enlarging three-eighth of an inch at each stroke. The shaft makes from 200 to 250 revolutions per minute. It has been found advantageous to lubricate the bearings of these machines with oil and water alternately, their heating being thereby entirely avoided.

The construction of the crushers does not vary materially from those in use in Germany. From the Blake's crusher they differ in several details: the inclining of the jaw-plates downward, and the absence of corrugations on them, (being made preferably of late of wrought iron;) the absence of the power lever, and many differences in other details of construction.

Each crusher will break up three and a half to four tons of knockings of six to eight inches, down to pieces about one and one-fourth, to one and three-fourth inches in size per hour.

Below each of the crushers, *b* 1 and *b* 2, is a cleansing or washing drum, *b* 3, and a rotating sorting table. These tables are the same as above described. The cleaning drums however, are somewhat smaller, otherwise the same as those used in the rubbish work. The openings in the screen are twenty-two mm in diameter. The drums also make eighteen revolutions per minute.

The crushed ore falls from the breaker directly into the wash drum, and the material retained by this—the pick stuff—discharges from its front end on to the sorting table. The hopper surrounding the latter is constructed as before described in the rubbish works.

The products of this sorting are:

1. Piece ore, first quality, with fifteen to twenty-two per cent. copper.

2. Piece-ore, second quality, with six to ten per cent. copper, both ready for the smelter.

3. Crush-stuff for the Cornish rollers.

4. Stamp-stuff—poor ore, with finely disseminated copper pyrites.

5. Barren rock or deads, in proportionately small quantity, as they have already been separated as much as possible in the *rough sorting*.

The stamp-stuff, being the greatest mass, remains on the table, and is scraped off into its compartment in the hopper, all other sorts having been picked off by hand, as before described.

The assorted stuff falls out of the five compartments of the hopper into care placed beneath, is carried in these and on the elevator up to the garret floor, and thence to its respective destination.

The screenings of the clearing drums are *classed* in the two sieve drum apparatus, *b* 5 and *b* 6, which are counterparts of those above described, *a* 4 and *a* 5. The screenings-pulp firstly goes to the elevator, *b* 7, is raised by this into the topmost sieve drum of apparatus, *b* 5, passes this, as also the four following, and, the five sizes or classes of *gravel* being thus separated and given to the jiggers, the siftings of the fifth drum are raised by the elevator, *b* 8, into the top drum of apparatus, *b* 6, and the finer classes following are separated, etc.

The number and size of the several products thus obtained, are the same as enumerated in the classing of the rubbish work, and the further operations to which they are subjected the same as there designated. Here, however, the several classes are led from their receptacles into the jiggers by mechanical means.

The two crushing, etc., apparatus are usually in alternate use, and the arrangement is such that the drip of either wash drum is carried to the elevator, *b* 7.

The sorting is done by twelve boys in contract, and the transportation of the products performed by the two laborers engaged at the same time in the rubbish dressing works.

V.—The Crushing of the Ores With "Cornish Rollers."

The *crush stuff*, which contains the copper pyrites in heavy seams, or more or less coarsely disseminated, has a size of one and one-half to two inches, and is broken down to pieces of eight mm, or about one-third of an inch, which operation yields at the same time proportionate quantities of fine grit, sand and dust. One set of cylinder rollers, *c* 1, is used for coarse crushing, and the other, *c* 2, for fine crushing.

The diameter of the cylinders is thirty-nine inches, and their length ten and a half inches; their peripheral velocity is 2,5 to 3 feet, so that fourteen to eighteen revolutions per minute result.

The cast iron mantle rings of the rolls are cast in chill boxes, and are conical inside, the diameters being thirty-one and one-half and twenty-nine inches. They are fastened to the cast iron core, of corresponding form, by means of four bolts. The pillow blocks of one roller shaft are fixed on the cast iron bed frame, while those of the other roller are moveable, so that it can move out in case too much or too large pieces of ore—causing danger of breakage—should get between the rollers. The moveable roll is held up to the other by powerful rubber buffers.

The crush or roll stuff is fed from the hopper on to the rollers mechanically, with a percussion box or shoe. This consists of a trough seven feet long, twelve inches wide and eight inches deep, open on top. It is made of two inch plank, and lined inside with sheet iron. It is set on an incline of 12°, being hung on the back or high end with iron rods to the hopper, and resting on a roller in front. It is pushed back from fifty-five to seventy times per minute by a cam, and sprung forward again by a rubber buffer, whereby the material is moved forward, and drops through a slit in the bottom between the rolls. The quantity of feed is regulated partly by the length of the stroke, and partly by the greater or lesser tension of the buffer.

For the classing of the crushed roll stuff, there are at present eight sieve drums. One of these, the preparation drum, *c* 3, is situated alongside the rollers, *c* 1; a second one, *c* 4, opposite the first, will come into use with the rollers, *c* 2. The pulverized roll stuff runs from the rollers, *c* 1, directly into the preparation drum, *c* 3, and the material retained by this, consisting of ore insufficiently pulverized, is raised by means of the elevator, *c* 5, back into the feed trough of the fine rollers, *c* 2, and thence through its drum, etc.

The drip or screening of the 8 mm. holes of the drums, runs into the elevator basin, *c* 6, and is lifted into the top sieve drum of the classing apparatus, *c* 7. This consists of seven sieve drums, which in dimensions and arrangement are identical with the ones previously described. The screens of the five upper ones, and also those of the preparation drums, are of sheet steel; those of the two lower drums are of sheet copper.

The reserves of the drum fall into their respective compartments of the store-box, and are carried from these, partly by their own gravity, partly by mechanical means, into five automatic continuous jiggers; the coarsest sands from the screenings of the seventh drum are also given to a jigger, while the rest of the pulp is condensed in the funnel apparatus, *c* 8, and then lifted to the V boxes for further sorting or grading.

The seven classing drums yield 8 and 5,6 mm. gravel, 4, 2.8, 2 and 1.4 mm. grit, 1 and 0.7 mm. sand, and finer sand and slum.

With one set of rollers two to two and one-half tons roll stuff can be pulverized per hour.

The supervision of the classing drums, rollers and the auxiliary appliances, is the part work of one man only.

(To be Continued.)

Subscribers are requested to examine the printed address on their papers. If mistakes occur *at any time* please report them to this office. The last figures (at the extreme right) represent the year that your subscription is paid to. Next to these the day and month is represented. For instance, your subscription being paid to July 4th, 1876, it would be represented, viz: jal 4 76; or 4j176; or jn1 4,76.

The immense sales of Hale's Honey of Horehound and Tar proves that the people consider it the only sure remedy for coughs and colds and all pulmonary diseases. Sold by all druggists.

Pike's Toothache Drops cure in one minute.

Award of Premiums at the Mechanics' Fair.

The following is a complete list of the award of premiums made up to Thursday, the 14th inst. Additional awards are still to be made by the Board of Managers. Unless otherwise specially stated, all are first premiums.

Cash Premiums.

George West: Best Special Exhibit of Grapes, $25.00.
Dr John Strentzel: Tropical Fruits, $25.00.
H W Crabb: Largest Collection and Variety of Wine and Table Grapes, $20.00.
Mr Tristram: Mission Grapes. $10.00.

Gold Medals.

C Newman & Co: Best display Glassware.
Hueter Brothers: California made Varnish and Artists' Materials.
Pioneer Woolen Mills: Woolen Goods.
Tubbs & Co: Manila Rope.
W F Palmer: Edge Tools.
E K Howes & Co: Woodenware (sweepstakes).
Cornell Watch Co: Watches.
John Roach: Mathematical Instruments.
Linforth, Kellogg & Co: Largest and Best General Exhibit Agricultural Implements.
J Neumann: Best display of Silk Culture.
Consolidated Tobacco Co: Best Exhibit of California Tobacco and Cigars.
Will & Finck: Cutlery.
Pacific Saw Co: Best general display of Saws.
California Standard Sack Co: (Garlands.) Spiral Needle for Overhand Sewing Machine.
G W Swan: Box Nailing Machine. Special Premium.
Bradley & Rulofson: Best general exhibit in Photography.
National Tube Works, Dunham, Carrigan & Co, agents: Boiler Tubes and Flues.
California Furniture Company: Best general display of Furniture.
Carvill Manufacturing Company: Best display of Carriages.
W. T. Garratt: Best display of Brass Work, (sweepstakes).
W K Vanderslice & Co: Largest and Best General Exhibit of Silver ware.
C Jas King of Wm & Co: Best Exhibit of Hermetically sealed goods.

Silver Medals.

A Paltenghi: Statuary, Marble Mantle.
Bergman Bros; Rockingham and Yellow Ware and Terracotta Vases.
Mrs Anna Getz Lucas: Best display of Wax and Preserved Flowers.
Main & Winchester: Best General Display of Harness and Saddlery.
H Royer: Frilled Rawhide Goods.
Hawkins & Cantrell: Portable Hoisting Engine.
C O Farciat: Pump and Condenser.
J M Eckfeldt & Co: Best General Exhibit of Wire Goods.
A L Bancroft & Co: California Publications.
J S Hittell: Resources of California and History of Culture.
Union Pacific Silk Manufacturing Co: Silk Ribbons
Nelson & Doble: Blacksmith's Tools.
G W Swan & Co: Dovetail Boxes.
B F Freeman & Co: Stair Newells and Banisters.
M Fulda & Sons: Wine Casks.
P Liesenfeld: Cabinet Work and Superiority of Cushions, Billiard Tables.
S S White: Dental Goods and Appliances.
Joseph Wagner: Grain Operator.
Fisher & Harford: Best Conchological Display.
Gustave Mahé: Golden Wine.
Emil Boesch: Lamps and Reflectors.
A Eisenberg: Clocks and Chronometers, Home manufacture.
Lelia Curtis & Co: Wood Engraving.
Wing & Co: Lasts.
Mrs J G Bead: Cbe ills Embroidery,
Florence Sewing Machines.
Locke & Montagne: Best General Exhibit in the Class.
Honsewortb & Co: Albatypes.
Lucas, Gesner & Co: California made Plaster.
Prescott, Scott & Co: Ont Cast Iron Gears.
Pacific Wire Manufactnring Company: California made Wire.
San Francisco Gas Light Company: Ammonia.
Standard Soap Company: Standard and Toilet Soaps.
Goodwin & Co: Second Best General Display of Furniture.
Jacob Zech: Best Pianos on Exhibition.
S. P. Taylor & Co: Best Printing, Book and Wrapping Paper.
California Rock Drill Co: Rock Drill.
Parks & Lacy: Best General Exhibit of Tunneling Machinery.
J. C. Sendeling: Bakers' Rotary Blower.
Kimball Manufacturing Company: Second Best Display of Carriages.
Weed & Kingwell: Display of Brass Work.
Cooper, Jones & Cadbury: Best Display of Plumbers' and Gas Fitters' Goods.

Memorandum of Diplomas.

Robert Samisch: Painting on Porcelain.
F Seregni: Penmanship.
Samuel McDowell: Carpet Beating Machine.
S Lachman & Co: White Wine.
Lang & Co: Muscatel Wine.
J Browell: Chimney Tops.
F B Burney: Fire Escape.
W Jones: Files.
E F Menomy: Cement Pipe.
J B Owens: Fire brick and Iron Stove Pipe.
Eureka Marble Works: Marbelized Mantels.
G Hays & Co: Galvanized Architectural Iron Work.
J K Firth: Mechanical Drawings.
J W Bones: Architectural Drawings.
John Mallon: Glass Cutting.
California Pottery and Terra Cotta Works: Terra Cotta Ware, second Premium.
New England Glass Co: Flint Glassware.
Mrs A O Cook: Samples of Preserved Flowers.
Mrs Albert G Nye: Prepared Mosses.
Mrs C M Chapman: Human Hair.
Weaver, Taylor & Co: Rubber Goods.
F X Kast: Children's' and Misses' Shoes.
P Kelly: Best Display of Boots and Shoes.
H N Cook & Co: Hose and Leather Belting.
Parke & Lacy: Combined Engine and Boiler.
Treadwell & Co: Yacht Engine.
Treadwell & Co: Portable Threshing machine, (Hoadley's).
Treadwell & Co: Gardiner's Governor (Engine).
Prescott, Scott & Co: Horizontal Engine (Cortiss).
U. S. Salamonder Felting Co: Boiler Felting.
Cooper, Jones & Cadbury: Keystone Injector.
Cooper, Jones & Cadbury: Steam Gauge.
D Hicks: Book Binding.
LeConnt Bros: Best general display of Stationery.
J J Knowlton: Ink and Mucilage
F M Trnworthy: Improved Rubber Printing Wheel.
Thomas Saywell: Best display Gladiolas.
E A Upton: Best display of Dahlias.
D Tisch: Best Foliage and Colored Leaf Plants.
F Bailey & Son: Exhibitors of Encalyptus Seedlings.
Jonothan Begg: Best collection of Conifers.
W Brehmer: Collection of Cereals.
Thos W Appleby: Tree Ferns.
Gilbert & Moore: Rustic Letters.
C Jurgen: California Glue.
Chemical Paint Co: Chemical Paint.
Pacific Rubber Paint Co: Rubber Paint.
A Nahl: Crayopaque Drawing.
T G Cockrill & Co: Sour Mash Whisky.
J Renz: Blackberry Brandy.
S Lachman & Co: California Grape Brandy.
W Faulkner: Rum Punche.
McMillan & Kester: Syrups and Cordials.
Sweetser & DeLong: Best Cider Vinegar.
Schultz & Fisher: Superior Engraving and Designing in Silver, second premium.
Cornell Watch Co: Watch Cases.
R F Rochicioli: Galvano-Plastic work.
San Francisco Plating works: Plated Ware.
B W Jackson: Abalone Shell Jewelry.
Mrs Letitia Ferris: Glove Fasteners, California invention.
American Tract Society: Best general exhibit of Bibles and Fine Binding.
A L Bancroft & Co: General exhibit of Printing, etc.
Detrick & Co: Grain and Flour Bags.
Alex Mackay: Domestic Carpet.
A Viannay: Dress Silk and Weaving.
Joseph Green: Striped and Checked Silk Ribbons,
W S Brown & Co: Silk Thread and Twist.
Flint, Peabody & Co: Paper Barrels.
S P Taylor & Co: Best display of Book Printing and Wrapping Paper.
Pacific Cordage Co: Manila Paper.
W G Conklin: Bilge Water Gauge.
Osgood & Stetson: Ships' Lanterns.
Britton, Holbrook, & Co: Reflectors.
Wiester & Co: Washing Machine.
Joseph Bros: Yontbs' Clothing.
Lancaster & Nortbon: Coats.
P Beamish: Gent's Underwear.
T Rodgers Johnson: Military Clothing.
Pillsbury, Adair & Co: Edge Tools, second premium.
Osborn & Alexander: Mechanics' Tools.
C F Marwedel: Moulders' Tools.
E D Morgan: Sash Balance.
Sanborn & Byrnes, Stair Newells and Banisters, second premium.
Kimball Manufacturing Company: Baskets.
S F Steam Brush Factory: Brooms and Brushes.
Jacob Unna & Sons: Stable Brooms and Feather Dusters.
Robinson, Fowler & Co: Metallic Socket Brooms.
Geo H Mixer: Iron Bungs.
Henry Wass: Corking Machine.
F C M Fenn: Meat Shaver.
E K Howes & Co: Refrigerator.
Adolph Grossman: Scrubbing Brush.
Household Furnishing Company: Household Furnishing Goods.
Jacob Strahle & Co: Cabinet Work and general exhibit of Billiard Tables, second premium.
Georgs Tieman: Surgical Instruments.
J H A Folkers & Bro: Surgical Bandages and Orthopedical Appliances.
Y G W Parkhurst: Scales.
Bryant & Taylor: Combination Bank Locks.
Mrs. Quigley: Spirit Levels.
S Farjeon: Watchmaker's Lathe.
Weyl & Co: Best display of Bronzes.
Frank Bros: Harvestors.
Kimball Manufacturing Company: Road Scraper.
James Harris: Tubular Iron Harrow.
Pillsbury, Hussey, Adair & Co: Lawn Mower.
H Walton; Side-Hill Plow.
C Bonney: Hay Rake.
Treadwell & Co: Thresher and Separator.
Price Press Co: Best Hay Press, Excavator and Ditching Machine.
Marcus C Hawley & Co: Best Sulky Plow.
Frank Bros & Co: Grain Binder.
E N Dudgeon: Improved Hydraulic Jack.
R B Prince: Silk Cocoons, second premium.
L G Yates, M D: Conchological Display.
F Gruber: Taxidermestry.
Hermann & Co: Fossils.
A C Robison: Curiosities.
Thos Butterfield & Co: Best display of Wool.
Journal of Commerce: Best display of California Products.
John Bollman & Co: Best Cigarettes.
Henry G Hanks: Best Mineralogical Collection.
Crystal Salt Works: Salt.
J G Pettit: Wood Engraving, second premium.
Griffith Griffith: Polished Native Granite.
Mrs J G Read: Afghan.
Mrs John Cornwall: Silk Bed Spread.
Mrs S Kincaid: Crotchet Bed Spread.
Mrs Sutherland: Two-Thread Bed Spread.
Mrs H Stettin: Colored Silk Embroidery.
M Lichtenstein: White Silk Embroidery and best general display White Underwear.
John F Snow & Co: Cleaned Kid Gloves.
Mrs H Cantel: Cleaned Laces.
S H Roberts, Lace Ruffling.
C J Weldon: Improved Buckles for Ladies' Hose.
Mrs Maxfield: Best exhibit of Bands and Supporters for Ladies' Garments.
May Arnold: Gent's Shirt, band made.
Mrs C Sullivan: Stamps and Stamped Goods.
Mrs A Young: Netted Lamp Mat.
Mrs L Allison: Worsted Lace Shawls.
Mrs T Atkinson: Combed Worsted Wreath.
C D Alden: Raised Worsted Work and Pictnre Needle Work.
Mrs E Barringer: Best display Paper Patterns.
M Frend: Corsets.
New Wilson Sewing Machine Co: Best display fine Needle Work and Embroidery.
Davis Sewing Machine Co: Display of Work of all Kinds, second premium.
Mrs Crosby: Blue Satin Quilt.
Treadwell & Co: Wood Carving Machine.
H P Gregory: Four Sided Moulding Machine (Fay's.)
Carl Weinberger: Saw Gummer and Sharpener.
Warren Holt: Head Tenon Machine.
C Bonney, Jr: Wood Shaping Machine.
L C Mumford: Circular and Jig Saw.
Wellwood Murray: Knitting Machine.
Davis Sewing Machine Co: Automatic Bobbin Winder and Vertical Feed.
Weed Sewing Machine Co: Needle Bar.
John Lewelling: Best collection California Dried Fruits.
Wm R Smith: Best collection Fruit Confections.
Brittan, Holbrook & Co: Medallion Range:
Brittan, Holbrook & Co: Plain and Japanned Tinware
Geo H Tay & Co: Best display Stove Castings.
Locke & Montague: Vau's Urns.
Osgood & Stetson: Best Portable Range (Norman.)
Osgood & Stetson: Tin, Copper, Planished and Japanned Ware.
W Weymuller: Stovepipes Elbowe.
Thos Tweedals: South Sea Island Curiosities.
M Lynch: Best Sidewalk Skylight and Ventilator.
Carolan, Hooker & Co: Bessemer Steel Shoe Shapes.
Thos McKibbin: Metallic Tubular Wheelbarrows.
Falkinburgh & Co: Granger and Borax Soap.
E Gnittard & Co: Yeast Powders.
J J Knowlton: Liquid Blueing.
W G Heney & Co: Best Dining Room Set and Extension Table.
West Coast Furniture Company: Best Hotel Furniture.
W H Burton: Awnings.
Pacific U W Furniture Company: Best Chamber Set and Cabinet Work.
B C Brown: Wooton's Cabinet Office Secretary.
John Hoey: Best Sofa Bed.
Gilbert & Moore: School Furniture.
C H Townsend: Best Kitchen Table.
Henry Marsh & Co: Music Stands.
Tnebner & Hoffman: Best Show Cases.
John West: Best Ladies' Work Table.
New York Furniture Company: Revolving Lounge.
Ackerman & Co: Best Display of Fancy Goods.
Warner & Silsby: Double Spiral Springs.
Edward Falkingbam: Best Rocking Horse.
Hartshorn & McPhun: Opaque Window Shades.
California Furniture Company: Curtain Work and Material.
Louis Dampf: Passe Partout.
Hallet, Davis & Co, W G Badger, Agent: Second best Pianos on Exhibition.

C R Hall: Upright Pianos.
Georga Woods & Co: Best Cabinat Organs.
A T Sherwood: Best Hospital Beds.
California Rock Drill Company: Air Compressor.
J Handy: Concentrator and Ore Feeder.
Parke & Lacy: Farmer's Battery.
J W Qnick: Punched Qnartz Screens.
Larkins & Co: Fine display of Carriages.
T Cunningham: Gearing for Milk Wagons.
Does & Clark: Milk Wagons.
King & Co: Best Carria,e and Wagon Wheel.
J H Smiith: Baby Carriages.
Bette Spring Co: Carriage Springs.
Liljanburg Brothers: Carriage Smith Work.

Memorandum of Certificates of Merit.

J Spaulding: Carpet Beating Machine.
William Jones: Encaustic Tiling and York Flagging.
J G Hodge & Co: Second best display nf Stationery.
A Roman & Co: Second best display of Bibles, Books, etc, second premium.
S F Chronicle: Matrix and Plates.
C W & Foards: Silk Thread and Twist.
Linforth, Kellogg & Co: Edge Tools, third premium.
A C Moore: Washing Machine, second premium.
Joseph Figel: Youths' Clothing, second premium.
Chas R Donnar: Horse Shoeing Tool.
Herman Rhalnbard: Belt Punch.
Max Bernstein: Wood Carpet.
Cornwall & Wyman: Wood Hangings.
Gillespie & Zinn: Brooms and Brnshes, second premium.
J H Pessinger: Door Springs.
Linforth, Kallegg & Co: Files.
Pillsbnry, Hussey & Co: Files.
E R Cleaveland: Combination Lock.
F C M Fenn: Twine Cutter.
Sweepstake Plow Co: Harrow, second Premium.
B F Lorqnin: Taxidermestry, second premium.
L Hnerstel: Curiosities.
J D Stewart: Fringed Afghan.
Miss Annie Weston: Bedspread.
Mrs H Stettin: Chenille Embroidery.
C W Chapman: Lace Ruffling.
Mrs J E Ceressy: Silk Qnilt.
Minna Spreen: Worsted Wreath.
Mrs R Alexander: Combed Worsted Flowers.
Mrn A A Eaton: Raised Warsted Work.
Treadwell & Co: Band and Scroll Saw.
H P Gregory: Sand Papering Machine.
H P Gregory: Emery Wheels.
J M Bryan: Stoves, Tin and Copperware.
Misses Gaffney & Hall: Exhibit of Carnival Figures.
Bowen Bros: Yeast Powders.
J Hendy: Ore Feeder.
A Chalgnean & Co: Printed Labels.
Bryant & Taylor: Yale Time Lock.
W F Kelsey: Best Display Colored Leaf Plants.
Additional awards are to be made by the Board of Managers.

METALS.

[WHOLESALE.]

WEDNESDAY M., Octnber 13, 1875.

American Pig Iron, ₱ ton	38 00	@	36 00
Scotch Pig Iron, ₱ ton	35 00	@	37 00
White Pig, ₱ ton	—	@	38 00
Oregon Pig, ₱ ton	—	@	40 00
Refinad Bar, bad assortment, ₱ lb	—	@	— 3½
Refinad Bar, good assortment, ₱ lb	—	@	— 4
Boiler, No. 1 to 4	—	@	— 5½
Plate, No. 5 to 8	—	@	— 5½
Sheet, No. 10 to 14	—	@	— 5½
Sheat, Na. 16 to 20	—	5½@	— —
Sheet, No. 22 to 24	—	6	@ — —
Sheet, No. 26 to 28	—	6½@	— —
Horse Shoes, per keg	7 50	@	8 00
Nail Rod	—	10	@ — —
Norway Iron	—	9	@ — —
Rollad Iron	—	6	@ — —
Other Irons for Blacksmiths, Miners, etc.	—	—	@ — 4½
COPPER.—			
Brazers'	—	35	@ — —
Coppar Tin'd	—	37½	@ — —
O'Niel's Pat	—	37½	@ — 40
Sheathing, ₱ lb	—	24	@ — 40
Sheathing, Yellow	—	—	@ — 25
Sheathing, Old Yellow	—	—	@ — 12½
Composition Nails	—	24	@ — —
Composition Bolts	—	24	@ — —
STEEL.—English Cast, ₱ lb	—	20	@ — 25
Anderson & Woods' American Cast	—	—	@ — 16½
Drill	—	—	@ — 16½
Flat Bar	—	18	@ — 22
Plow Steel	—	9	@ — 10
TIN PLATES.—			
10x14 I C Charcoal	10 50	@	11 00
10x14 I X Charcoal	12 50	@	13 00
Roofing Plate I C Charcoal	10 00	@	10 50
Banca Tin	—	26	@ — —
Australian	—	18	@ — 20
ZINC.—By the Cask	—	—	@ — 11
Zinc, Sheat, 7x3 ft, No 7 to 10 ₱ lb	—	—	@ — 11
do do 7x3 ft, No 11 to 14	—	—	@ — 11½
da do 8x4 ft, No 8 to 10	—	—	@ — 11½
do do 8x4 ft, No 11 to 10	—	—	@ — 12
NAILS Assorted sizes	3 60	@	3 75
QUICKSILVER, per ₱	80	@	85

LEATHER.

[WHOLESALE.]

WEDNESDAY M., October 13, 1875.

City Tannad Leathar, ₱ lb	22@29
Santa Cruz Leathar, ₱ lb	22@28
Country Leather, ₱ lb	22@29
Stockton Leathar, ₱ lb	25@29
Jodot, 8 Kil., per doz	$50 00@ 54 00
Jodot, 11 to 13 Kil., per doz	68 00@ 72 00
Jodot 14 to 19 Kil., per doz	82 00@94 00
Jodot, second choice, 11 to 16 Kil. ₱ doz	57 00@ 74 00
Cornellian, 12 to 16 Ko	57 00@ 67 00
Cornellian Femalas, 12 to 15 Kil	63 00@ 67 00
Cornellian Femalas, 14 to 16 Kil	71 00@ 76 50
Simon Ulimo Femalas, 12 to 13, Kil	60 00@ 63 00
Simon Ulimo Femalas, 14 to 15, Kil	70 00@ 72 00
Simon Ulimo Females, 16 to 17, Kil	73 00@75 00
Simon, 18 Kil, ₱ doz	61 00@ 63 00
Simon, 20 Kil, ₱ doz	65 00@ 67 00
Simon, 24 Kil, ₱ doz	72 00@ 74 00
Robart Calf, 7 and 9 Kil	35 00@ 40 00
French Kips, ₱ lb	1 00@ 1 35
California Kip, ₱ doz	40 00@ 50 00
French Sheep, all colors, ₱ doz	8 00@ 15 00
Eastern Calf for Backs, ₱ lb	1 00@ 1 25
Sheep Roans for Topping, all colors, ₱ doz	9 00@ 13 00
Sheep Roans for Linings, ₱ doz	5 50@ 10 50
California Russett Sheep Linings	1 75@ 4 50
Best Jndot Calf Boot Legs, ₱ pair	5 00@ 5 25
Good French Calf Boot Legs, ₱ pair	4 00@ 4 75
French Calf Boot Legs, ₱ pair	4 00@ —
Harness Leather, ₱ lb	24@ 32½
Fair Bridle Leathar, ₱ doz	48 00@ 72 —
Skirting Leather, ₱ lb	33@ 37½
Welt Leather, ₱ doz	30 00@ 50 00
Buff Leather, ₱ foot	17@ ⅜
Wax Side Leather, ₱ foot	17@ —

Gold, Legal Tenders, Exchange, Etc.

[Corrected Weekly by CHARLES SUTRO & CO.]

SAN FRANCISCO, October 13, 3 P. M.

LEGAL TENDERS in S. F., 11 A. M., 86¼ to 86¾.

GOLD in N. Y. 115⅞.

GOLD BARS, 890. SILVER BARS, 6½ and 7⅛ per cent. dis count.

EXCHANGE on N.Y., 60-100 per cent.premium for gold; on London bankers, 48; Commercial, 49¼; Paris, five francs per dollar; Mexican dollars, three to five per cent. discount.

LONDON — Consols, 93 to 93⅛; Bonds, 102⅝

QUICKSILVER in S. F., by the flask, per lb, 67½@70c.

A REAL CONVENIENCE.—DEWEY & Co: Please send me the RURAL PRESS. It is a real convenience and I cannot do without it. Enclosed you will find five dollars. Fraternally, B. F. E. K.

Anabeim, Cal., October 12, 1874.

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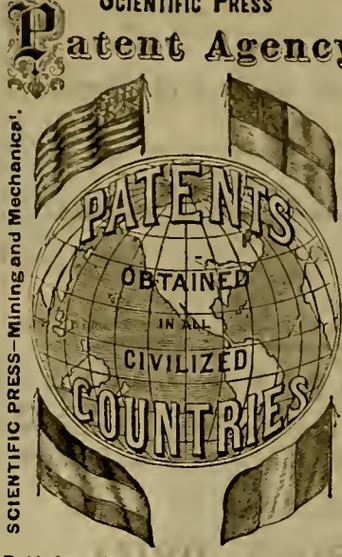

SCIENTIFIC PRESS—Mining and Mechanics'. PACIFIC RURAL PRESS—Agricultural.

Publishers, Patent Agents and Engravers.

No. 224 Sansoma Street San Francisco Cal

UNITED STATES
Mineral Land Laws, Revised Statutes,
And Instructions and Forms Under the Same.

We have jnst issued a pamphlet containing the general mineral land laws of the United States, with instructions of the Commissioner of the Land Office The contents of this pamphlet comprise all of the Government laws with relation to mineral lands of Interest to the mining community, as follows: Mining Statute of May 10th, 1872, with Instructions by the Commissioner of the Land Office; Mining Statute of July 26th, 1866; Mining Statnte of July 9th, 1870 Forms required under Mining Act of May 10th, 1872, as follows: Notice of Location; Request for Survey; Application for Patent; Proof of Posting Notice and Diagram of the Claim; Proof that Plat and Notice remained Posted on Claim during Time of Publication; Registers' Certificate of Posting Notice for Sixty Days; Agreement of Publisher; Proof of Publication; Affidavit of $500 Improvements; Statement and Charge of Fees; Proof of Ownership and Possession in Case of Loss or absence of Mining Records; Affidavit of Citizonship; Certificate that no Suit is Pending; Power of Attorney; Protest and Adverse Claim; Non-Mineral Affidavit; Proof that no Known Veins Exist in a Placer Claim, etc. There is also given the U. S. Coal Land Law and Regulations thereunder. The work comprises thirty pages, and will be sold, post-free, for 50 cents. It should be in the hands of every one having any mining interests. DEWEY & CO.,
Publishers of MINING AND SCIENTIFIC PRESS, S. F.

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We are prepared to do fine Wood Engraving for illustrating Landscape Scenery, Buildings, Machnery, Works of Art, Manufactured Articles, Trade Marks, Seals, Etc. We have a first-class

Machine for Engraving

A portion of the work, which can be finished thereby more perfectly than by the eye and hand alone. Our patrons can depend upon first-class work always, and at reasonable prices. Samples can be seen at our office.

DEWEY & CO.

Our Agents.

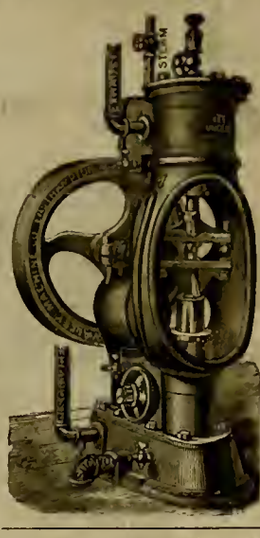
OUR FRIENDS can do much in eld nf our paper and the cause of practical knowledge and science, by assisting Agents in their labors of canvassing, by lending their influence and encouraging favors. We intend to send none hut worthy men.

J. L. THARP—San Francisco.
B. W. CROWELL—California.
A. C. CHAMPION—Tulare, Fresno and Inyo Counties.
JOHN ROSTRON—California.
A. C. KNOX, California.
G. W. MCGREW—Santa Clara conty.
CHAS. T. BELL—California, Oregon and W. T.
D. J. JAMES—Australian Colonies.
CHAS. T. BELL—Montana, Utah, Idaho and Nevada.
C. K. LAWTON—Santa Barbara County.

APPRECIATION ABROAD.—We copy tha following from the *Mining and Monetary Gazette*, of London, Eng.: "We deemed it advisable, as affording valuable information to our readers, to publish in recent issues of *The Gazette*, the full text of the "United States Mining Laws and Instructions, by the Commissioner of General Land Office," taken from our talented contemporary, THE MINING AND SCIENTIFIC PRESS, of San Francisco. The documents have now been issued in a handsomely-bound volume by Messrs. Dewey & Co., the publishers of our transatlantic contemporary, and it will be found very useful to those already interested in American mines, and to others who may be tempted to embark in that enterprise in the States."

WOODWARD'S GARDENS embraces an Aqnarnm, Museum, Art Gallery, Conservatories, Tropical Houses, Menagerie, Seal Ponds and Skating Rink.

PARKE & LACY,
310 California street, San Francisco



BUCKET-PLUNGER STEAM PUMP.
ALWAYS RELIABLE.
Sole Agents for WRIGHT'S

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MANUFACTURERS OF
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ARTESIAN WELL PIPE.
Having the Latest Improved Machinery, we can make it an object to
Mining & Water Companies
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To Contract with us for
SHEET-IRON PIPE.
All Sizes Made and all Work Guaranteed
30 Beale Street.

Miners and Capitalists.

Assistauce is required to develop an exteneive Gravel Mine on the richest lead in Sierra County—tha above has been thoroughly prospected, and proved to be rich. For further particulars,

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OREGON PILE CURE.
To those anffering from Piles—External, Internal and Itching Piles: You can be cured, as hnndreds of others have been. Send for Circular and see undoubted testimony. Will send sample bottle for $1, or 6 bottles for $5.
Call upon your Drnggist, or address
DR. RUSSELL,
No. 5 Post street, San Francisco.

Glasgow Iron and Metal Importing Co.
Have always on band a large Stock of
Bar and Bundle Iron, Sheet and Plate Iron
Boiler Flues, Gasand Water Pipe, Cast
Steel, Plow and Shear Steel, Anvile,
Cumberland Coal, Etc.
WM. MCCRINDLE, Manager, 22 & 24 Fremont St., S. F
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ONE of our most valued exchanges is the PACIFIC RURAL PRESS, pnblished hy Dewey & Co., San Francisco, Californie. Every number contains a large amount of general news from the far west, besides much valuable information in the way of Grange news.—*The Farmer's Friend, Mechanicsburg, Pa.*

Mining and Other Companies.

Keystone Quartz Mining Company—Principal place of business, San Francisco, California. Location of works, Butte Township, Sierra county, California.

Notice is hereby given, that at a meeting of the Board of Directors, held on he 22d day of September, 1875, an assessment (No. 5) of fifty (50) cents per share was levied upon the capital stock of the corporation, payable immediately, in United States gold coin, to the Secretary, at the office of the company, northwest corner Pine and Sansome streets, San Francisco, Cal.

Any stock upon which this assessment shall remain unpaid on the5th day of November, 1875, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Monday, the 29th day of November, 1875, to pay the delinqnent assessment, together with costs of advertising and expenses of sale.

Office, northwest corner Pine and Sansome streets, San Francisco, California.

Hope Quicksilver Mining Company—Location of principal place of business, San Francisco, California. Location of works, Cinnabar Mining District, Sonoma County, State of California.

Notice is hereby given, that at a regular meeting of the Board of Directors, held on the 2d day of August, 1875, an assessement (No. 2) of Five cents per share was levied upon the capital stock of the corporation, payable immediately, in United States gold coin, to the Secretary, at the office of the company, Room 2, No. 408 California street, San Francisco, Cal.

Any stock upon which this assessment shall remain unpaid on the 9th day of September, 1875, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Thursday, the 30th day of September, 1875, to pay the delinquent assessment, together with costs of advertising and expenses of sale.

Office, Room 2, No. 408 California street, San Francisco, California. JACOB HARDY, Secretary.

POSTPONEMENT.—The date of the delinquency of the above assessment is postponed to the 8th day of October, and the date of delinquent sales to November 1st, 1875. By order of the Trustees. J. HARDY, Secretary.
September 8, 1875.

SECOND POSTPONEMENT.—The date nf the delinquency of the above assessment is postponed to November 9, 1875, and the day of delinquent sales to December 1, 1875. By order nf the Board of Trustees.
JACOB HARDY, Secretary.
San Francisco, October 8, 1875.

Mount Auburn Gold Quartz Mining Company. Location of principal place of business, San Francisco, Cal.

NOTICE.—There are delinquent upon the following described stock, on account of assessment, levied on the 25th day of August, 1875, the several amounts set opposite the names of the respective shareholders, as follows:

Names.	No. Certificate.	No. Shares.	Amount.
Frank McCoppin	35	10	$ 2 50
Isabella G Prince	5	100	25 00
Isabella G Prince	1	100	25 00
Isabella G Prince	10	50	12 50
Isabella G Prince	11	50	12 50
Isabella G Prince	12	50	12 50
Isabella G Prince	13	50	12 50
M Klinkstrom	16	100	25 00
J Trigg	17	5	1 25
Henry Eitel	18	10	2 50
Henry Eitel	41	10	2 50
M A Cary	19	25	6 25
M A Cary	28	10	2 50
E J Hutchinson	20	25	6 25
E J Hutchinson	21	25	6 25
Nicholas Larkig	55	100	25 00
Nicholas Larkig	22	10	2 50
Nicholas Larkig	23	10	2 50
Nicholas Larkig	25	10	2 50
Nicholas Larkig	26	10	2 50
Robert Kirk	30	75	18 75
Robert Kirk	31	100	25 00
Robert Kirk	32	100	25 00
Robert Kirk	33	100	25 00
Charles Benn	29	300	75 00
James Curley	30	20	5 00
James Curley	31	20	5 00
James Curley	32	20	5 00
James Curley	33	20	5 00
James Curley	34	20	5 00
John Ronke	35	20	5 00
John Rouks	36	20	5 00
John Rouke	37	20	5 00
John Ronke	38	20	5 00
John Rouke	39	20	5 00
S D Melville	42	100	25 00
S D Melville	48	100	25 00
S D Melville	29	125	31 25
P N Carroll	43	50	12 50
P N Carroll	44	50	12 50
E H Coe	59	100	25 00
P H Canavan	45	1000	250 00
Jacob Bacon	49	50	12 50
P Kedrollvansky	46	50	12 50
N Kavigin	47	50	12 50
Chas J Hobler	50	200	50 00
Mrs Dr Howard	8	100	25 00
Mrs Dr Howard	9	100	25 00
Mrs Dr Howard	10	100	25 00
Mrs Dr Howard	11	100	25 00
Mrs E B Rider	12	100	25 00
Mrs E B Rider	13	100	25 00
Catharine Carney	14	100	25 00
Mrs Mary Relay	60	25	6 25
Heywood & Hendley	52	100	25 00
Elbridge Durbrow, Trustee	53	15	3 75
Elbridge Durbrow, Trustee	54	35	8 75
Mrs Cosgrove	18	25	6 25
Joseph Jourden	57	50	12 50
John Nugent	58	10	2 50
Geo T Knox	61	25	6 25
M M Harkness	36	990	247 50
M M Harkness	62	50	12 50
Solomon Johnson	15	100	25 00
Solomon Johnson	16	100	25 00
Solomon Johnson	23	500	125 00
Solomon Johnson	24	100	25 00
Solomon Johnson	25	100	25 00
John C Jamison	63	5	1 25
M M Hill, Trustee	37	500	125 00

And in accordance with law, and an order of the Board of Directors, made on the 25th day of August, 1875, so many shares of each parcel of said stock as may be necessary, will be sold at public auction, at the auction house of John Middleton & Son, 310 Montgomery street, on the 28th day of October, 1875, at the hour of 10 o'clock A. M., of said day, to pay said delinquent assessments thereon, together with costs of advertising and expenses of sale.

C. A. JAMES, Secretary.
Office, No. 402 Montgomery street, Room 9, San Francisco, California.

Pacific Wool Growing Company—Location of principal place of business, San Francisco, Cal. Location of works, Santa Barbara county, Cal.

Notice is hereby given, that at a meeting of the Board of Directors, held on the 25th day of September, 1875, an assessment (No. 2) of four dollars per share was lavied upon the capital stock of the corporation, payable immediately, in United States gold coin, to the Secretary, at the office of the company, room 28 Stevenson Building, No. 331 Montgomery street, San Francisco, Cal.

Any stock upon which this assessment shall remain unpaid on the 27th day of October, 1875, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Saturday, the 20th day of November, 1875, to pay the delinquent assessment, together with costs of advertising and expenses of sale. By order of the Board of Directors.

G. D. SQUIRE, Secretary.
Office, room 28 Stevenson Building, 331 Montgomery street, San Francisco, California.

Yosemite Mining Company—Location of works, Humboldt County, Nevada.

NOTICE.—There are delinquent upon the following described stock, on account of assessment (No. ——) levied on the 29th day of July, 1875, the several amounts set opposite the names of the respective shareholders, as follows:

Names.	No. Certificate.	No. Shares.	Amount.
A H Atwater	Not Issued	5	$ 1 25
D H Crowe	Not Issued	10	2 50
W H Hedges	49	5	1 25
W H Hedges	50	15	3 75
N M Hedges	91	35	8 75
E H Levy	Not Issued	10	2 50
Jas Mauning	119	20	5 00
S Rosenthal	137	10	2 50
S Rosenthal	118	10	2 50

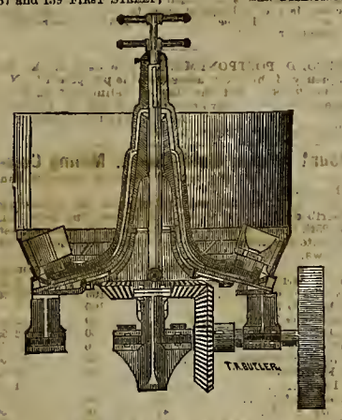
And in accordance with law, and an order of the Board of Directors, made on the 29th day of July, 1875, so many shares of each parcel of such stock as may be necessary, will be sold at public auction, by R. D. W. Davis & Co., No. 219 Sansome street, San Francisco, on Saturday, the 23d day of October, 1875, at the hour of two o'clock P. M., of said day, to pay said delinquent assessment thereon, together with costs of advertising and expenses of the sale.

S. O. PUTNAM, Secretary pro tem.
Office, 210 Battery street, S. F.

Iron and Machine Works.

Occidental Foundry,

137 and 139 First Street, - - San Francisco



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IRON CASTINGS of all descriptions at short notice. Sole manufacturers of the Hepburn Roller Pan and Callahan Grate Bars, suitable for Burning Screenings.

Notice.—Particular attention paid to making Superior Shoes and Dies. 20v28-3m

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CAPITAL.....$1,000,000.

LOCATION OF WORKS:

Corner of Beale and Howard Streets,

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Manufacturers of Steam Engines, Quartz and Flour Mill Machinery, Steam Boilers (Marine, Locomotive and Stationary), Marine Engines (High and Low Pressure). All kinds of light and heavy Castings at lowest prices. Cams and Tappets, with chilled faces, guaranteed 40 per cent. more durable than ordinary iron.

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JOSEPH MOORE...Vice-President and Superintendant
LEWIS R. MEAD.....Secretary

24v17-qy

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Quartz, Flour and Saw Mills,

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CROSS' PATENT BOILER FEEDER AND SEDIMENT COLLECTOR

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Front Street, between N and O streets, Sacramento City.

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Heavy and light Castings of every description. House Fronts, Mining and General Machinery estimated and constructed at shortest notice. On hand the celebrated Occident and French Kangea, Burial Caskets, Grates and Fenders, Road-Scrapers, Hydrants, Tuyere Irons, Ploughwork, Sash Weights, Ventilators, Dumb Bells, Gipsies, Ship Castings, SOIL PIPE of all sizes, Fittings and Cauldron Kettles in stock at Eastern rates. SHOES and DIES a specialty. Ornamental Fences in large variety. 4v30-1yr.

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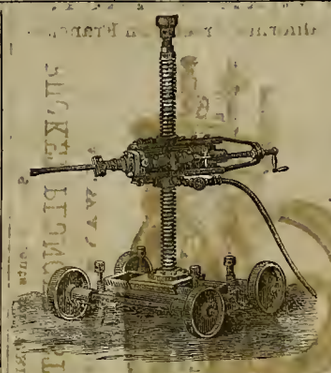

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THE ONLY SAFE BLASTING POWDER IN USE.

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For hard and wet Rock, Iron, Copper, etc., and Submarine Blasting.

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For medium and seamy Rock, Lime, Marble, Sulphur, Coal, Pipe Clay and Gravel Bank Blasting, Wood, etc.

Its EXCLUSIVE use saves from 30 to 60 per cent. in expenses, besides doing the work in half the time required for black powder.

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Established for the Manufacture of

RAILROAD AND OTHER IRON

—AND—

Every Variety of Shafting,

Embracing ALL SIZES f

afts, Cranks, Piston and Con-
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—ALSO—

MMERED IRON

Of every description and size.

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☞ The highest price paid for Scrap Iron.

SHEET IRON PIPE.

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Risdon Iron and Locomotive Works

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Are prepared to make SHEET IRON AND ASPHALTUM PIPE, of any size and for any pressure, and contract to lay the same where wanted, guaranteeing a perfect working pipe with the least amount of material.

Standard sizes of railroad Car Wheels, with special patterns for Mining Cars. These small wheels are made of the best Car Wheel Iron, properly chilled, and can be fitted up with the improved axle and box—introduced by this company, and guaranteed to outlast any other wheels made in this State.

☞ All kinds of Machinery made and repaired.

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MACHINERY AND CASTINGS

OF EVERY DESCRIPTION.

Heavy Forging Boilers, Stationary and Marine.

JOBBING AND REPAIRING WORK OF EVERY KIND. SPECIAL ATTENTION GIVEN TO MINING AND HOISTING MACHINERY.

Sole Manufacturers and Agents of

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Steam Engines and all kinds of Mill and Mining Machinery.

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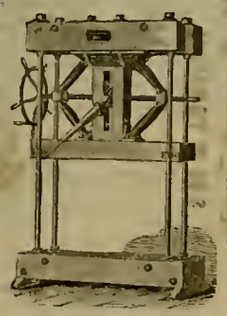
Hawkins' Blowers and Exhaust Fans.



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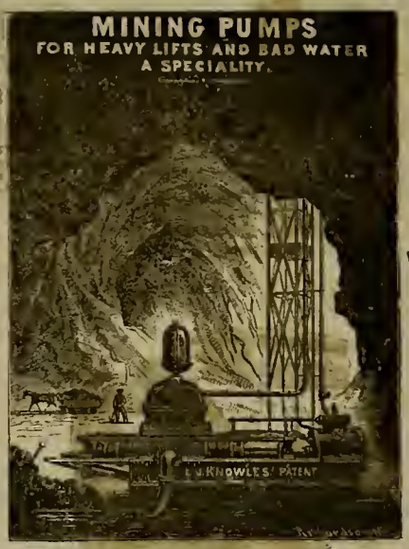
For Wine, Cider, Lard, Etc.



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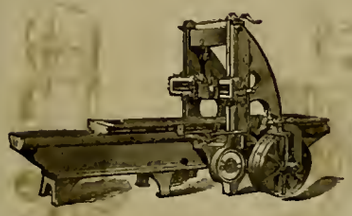

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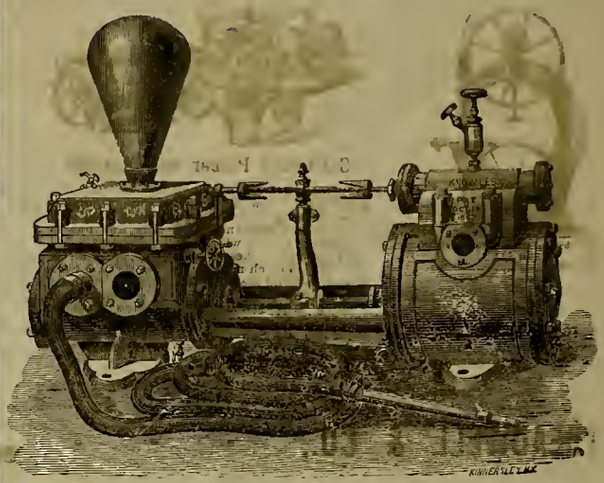
THESE ARE THE ONLY PUMPS ARRANGED TO WORK NOISELESSLY AND WITHOUT ANY SHOCK OR JAR ON PUMP OR PIPES
THESE FEATURES GUARANTEED



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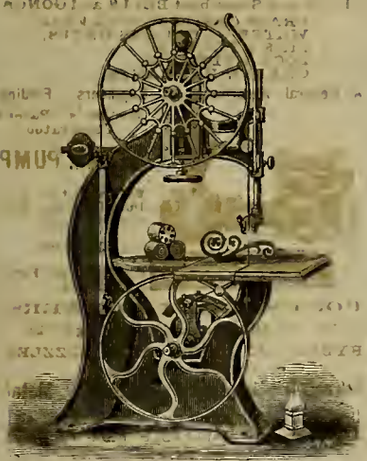

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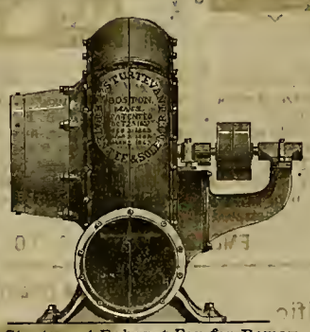

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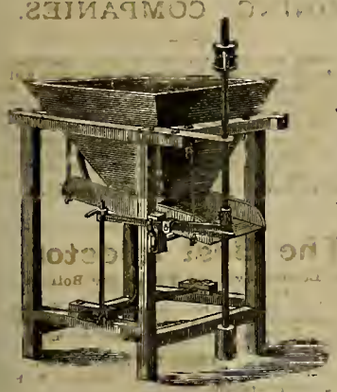

Will Feed Wet or Dry Ore Equally Well.

Will Increase the Quantity from One to Two Tons Per Day.

Are Durable, Compact and Cheap.

For Full Description, Send for Circulars.

F. OGDEN,

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SAVE $50! WHY PAY $85?

SEWING MACHINES.

REDUCED PRICE, $35.

HOME and HOME SHUTTLE SEWING MACHINES.

Reduced to Live and Let Live Prices.

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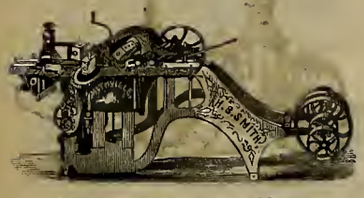

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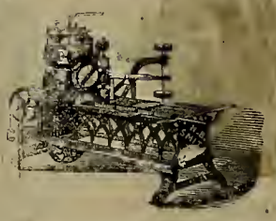

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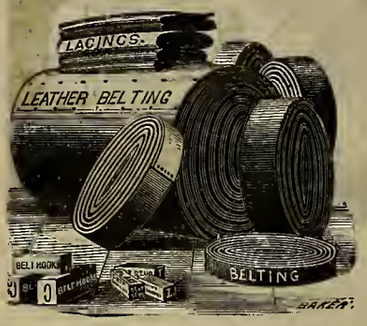

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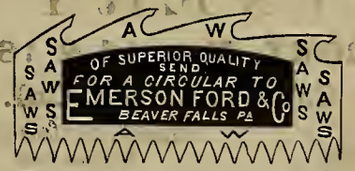

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SAN FRANCISCO, SATURDAY, OCTOBER 23, 1875.

VOLUME XXXI Number 17.

Enameled Water Pipe.

A question which has puzzled property owners and house builders for years past has been, "What kind of pipe is best for bringing water into our houses and grounds?" Lead pipe has long since been considered as dangerous to health. Lead pipe lined with tin is very expensive and has a questionable record. Plain cast and wrought iron will rust and corrode. Iron lined with cement is full of imperfections. Iron lined with porcelain or glass would be a good conduit, but is found impracticable from its brittle, unbending, unelastic nature. Galvanized iron, which on its discovery bid fair to solve the problem, is found seriously wanting, particularly where iron, lime, sulphur or alkalies form any part of the ingredients of water. Recently our attention has been called to an indestructible enamel coating for the inside and outside of pipe, which is now being extensively adopted by water boards and private parties. The coating is put on with great heat and resists all corrosive tendencies; neither alcohol, acids, alkalies, sulphur, salts of any composition, or other corrosives in solution dissolve it; it forms a durable, elastic, indestructible coating for both the inside and outside of the pipe. The testimony of chemists, the practical experience of numbers using it and the readiness of the manufacturers to guarantee its claims, lead us to believe that at last this vital but perplexing question has been answered and a reliable means found for supplying pure water for domestic use at a reasonable cost and with perfect satisfaction.

On this coast, where such large quantities of heavy, expensive pipe are used for mining purposes, in addition to that for domestic use, the question in relation to water pipes is even of more importance than elsewhere. The mining pipe must be of the best character, made to stand a heavy pressure, and, being originally so heavy and expensive, should be durable to be at all economical. The only means as yet adopted here to preserve the wrought iron of which the pipes are usually made, is to coat it inside and out with tar or asphaltum, put on while hot by dipping the pipe in it. Recently, however, the pipe to which we refer has been introduced on this coast by the National tube works company, owners of the patent, and has already been extensively adopted in the mining regions of California and Nevada.

The National tube works company are probably the largest manufacturers of pipe in the United States, owning two very extensive factories, one at Boston, Mass., and the other at McKeesport, Pa. An idea may be gained of the extent of these works from the engravings on this page. The company manufacture seamless wrought iron lap welded pipe, coated inside and out with enamel, or plain, made under a patented process owned by the company. The rolling mills are new and cost upwards of one million dollars. The consumption of sheet iron is not less than 150 tons per day, Sundays included, the year round. They employ from 800 to 1,000 men at the McKeesport mills alone. All the iron used is domestic—from the ore to the pipe. The capital is all American, as are everybody connected with the institution. The patents used are also all American inventions. The furnaces at these mills have never been let out since the day they were first built except for repairs, and on Sundays, when they are let down, not out.

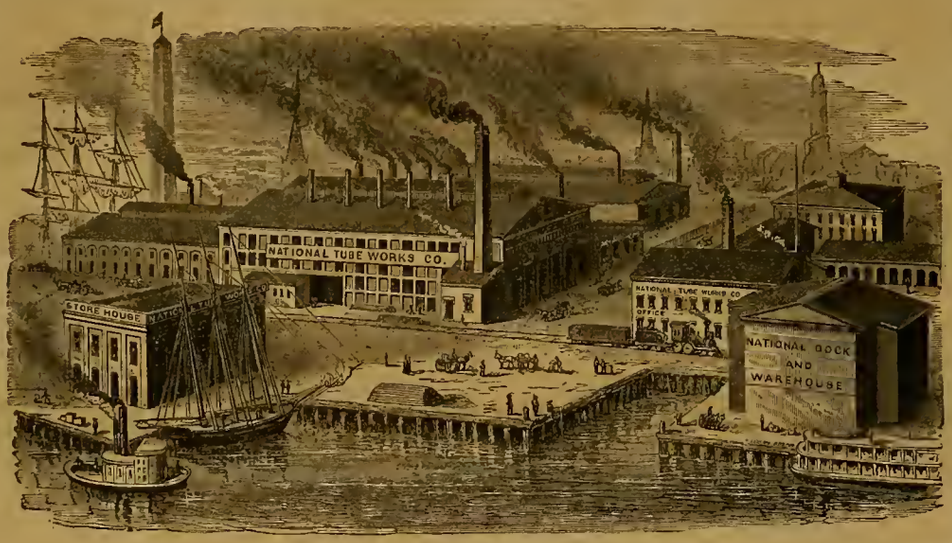
At the McKeesport mills is the enameling branch of the business. The process is one of bath and baking, and is patented. It is put on at from 250 to 350 degrees of heat, according to the size of the pipe. There is no common property in nature in solution that will touch it. To salts, alkalies, sulphur, etc., it is found to be a most perfect repellant. It meets the difficulties that have existed all along in the use of pipe, for the conveyance of water, and is regarded by those who have used it as a very great invention.

Another use of value for this enamel is for gas pipe. By using the enameled pipe, we are informed, that a gasometer is increased in capacity one-third; the pipes being smooth and frictionless. The New York gas company is now using this pipe for the street lamps. No heat will affect it nor will cold.

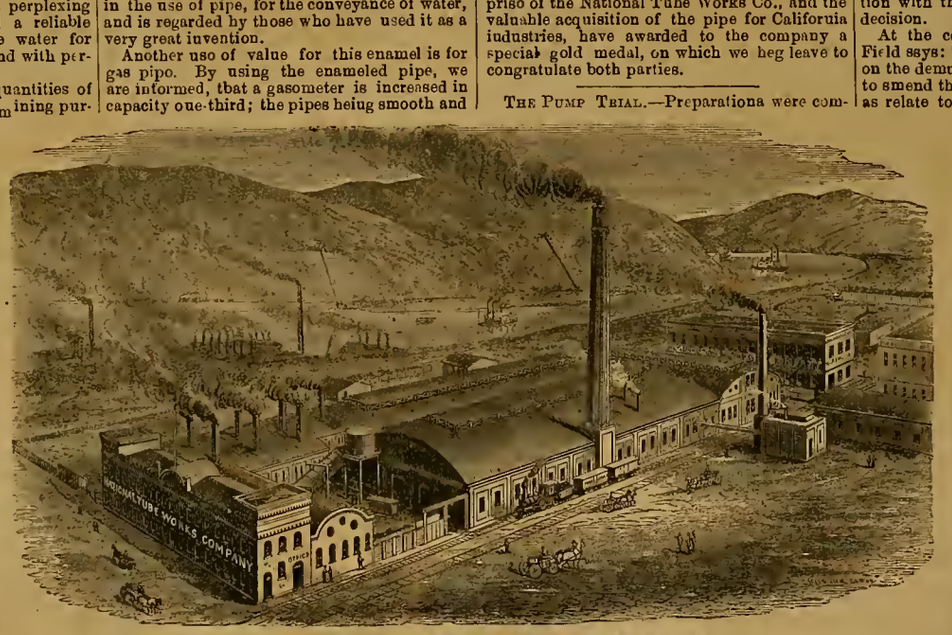
From what we are told it is probable that the seamless, lap welded, wrought iron, enameled pipe will be of great value in the mines, where sulphur is so destructive. Pipe of this character is now used for pump columns in the Consolidated Virginia and other mines. They are made also of very light gauge for deep air shafts. Large quantities are now being sent here for hydraulic mining purposes, for which they are very valuable, there being no rivets to cause friction. Another great advantage is, that they are made in long lengths.

They are made of all gauges up to 15 inch. The manufacture of these gauges has been attended with a great deal of difficulty and expense. The Siemens gas furnace is used—this company and one other owning the sole right for the United States. By the patented processes now in use, it is comparatively easy to make the pipe.

The managers of the recent Mechanics' Institute Fair, appreciating the skill and enterprise of the National Tube Works Co., and the valuable acquisition of the pipe for California industries, have awarded to the company a special gold medal, on which we beg leave to congratulate both parties.



NATIONAL TUBE WORKS, BOSTON, MASS.



NATIONAL TUBE WORKS, M'KEESPORT, PA.

THE PUMP TRIAL.—Preparations were completed for beginning the great pump trial at the Mechanics' Pavilion this (Thursday) afternoon. As we stated in our last issue one day will be allowed to each pump, consuming four days in all. In the SCIENTIFIC PRESS of next week we hope to be able to give a full and accurate report of the trial and announce the award of the judges. The trial has awakened a large interest in mining and scientific circles, and we have but to add that we hope to see the best pump win.

THREE of the Chinamen engaged in the riot at Bakersfield last week have since died.

Giant Powder.

We have been requested to correct some misapprehension which exists concerning the decision rendered by the courts, in the case of the Giant Powder Co. *vs.* The California Powder Co., *et al.* The suit was for an alleged infringement of three letters patent, all of which were re-issues, numbered respectively 5,799, 4,818, and 4,819; No. 5,799 is the important one, being that under which the company now operates in making its powder. No. 4,818 was a patent for a compound of nitro-glycerine with gunpowder or gun cotton. No. 4,819 was for a patent for a compound of nitro-glycerine with rocket powder. Neither of these two latter patents have ever been used in any shape by the company. The validity of these two re-issues was assailed on the alleged ground that they describe and claim a different invention from that described and claimed in the original patent; and their validity was the question presented by the demurrer, the judges holding them invalid.

In the decision of Judge Field, however, he states explicitly, "upon the validity of the latter re-issue (No. 5,799) no question is made." This is the Dynamite patent under which the Giant powder company is manufacturing their powder; so the Giant powder is manufactured under a distinct, independent patent, known as the Dynamite or Giant Powder patent—a patent having no connection with the two patents affected by the late decision.

At the conclusion of the decision Judge Field says: The defendant must have judgment on the demurrer, with leave to the complainant to amend the bill by striking out all such parts as relate to the patents Nos. 4,818 and 4,819. The counsel of the Giant Powder Co., however, then decided not to amend the bill at all, but to allow judgment to be entered up against them on all these re-issues in order to get the case before the supreme court of the United States. This was done to settle the matter as speedily as possible, although the judge had stated that upon the validity of what the company consider the important patent (No. 5,799,) no question was made. The Giant Powder Co. therefore consider that the decision, though apparently adverse, incidentally confirms the rights upon which it mainly relies, and touches only those of no special value. As the papers are now being prepared to send to Washington, the controversy between these two companies will, no doubt, now be speedily adjudicated. The Giant Powder Co. are confident that they will be able to prove that their patents have been infringed upon, and have taken this opportunity to take the question before the highest court of the United States.

THE contract for running the tunnel of the Sonoma & Marin railroad through the *puerto suello* has been re-let, this time to M. W. Connolly and J. B. Hinkle, of Petaluma. The tunnel will be 1,100 feet long, 12 feet 8 inches in the clear at the bottom and 16 feet high. Work was commenced last Monday at both ends of the tunnel with a force of 120 men, and the tunnel is to be completed by July 9, 1876. The entire cost will be about $100,000.

THE stockholders of the Woodland, Clear Lake and Humboldt railroad company had a meeting at Woodland on Saturday last.

CORRESPONDENCE.

Eastern and Central Nevada—The Mines of the Tybo and Reveille Districts.

MESSRS. EDITORS:—Whatever the general public may now think of the mines and mineral resources of Eastern and Central Nevada, there exists no longsr a donht in the minds of those best acqnainted with thess sections of the value, prodnctiveness and permanence of the numerons mines locatsd in tbeir midst.

Five years ago, and Eureka scarcely had an sxistence, except upon the map, while to day it is the recognized center of a rich and extensive mining region. Trne the east cannot compare with the west, either in the magnitude of its wealth or in its claims to public attention, but it can, nevertheless, present a showing which will bear comparison with that of any other quarter of Nevada. When we consider the character of the developments which have been carried out, and the quantity and quality of the precious metals which have been extracted from its various mines within the past six years, we are lost in astonisbment at the apathy displayed by the operators of your city, when dealing with the stocks of the aforesaid mines. The future of Eastern Nevada is now, however, assured; for, if mineral wealth and great natural resources should entitle it to the favorable consideration of the mining men of the city and coast, then there is an absolute certainty of its fnture being unusually bright and prosperous. These things are becoming every day more msnifest, and the time is not far distant when mines that are now being thought little of, will become as prominent bullion producers as any in the State of Nevada.

Nye county has always been noted for the richness and extent of its minersl deposits. It has, however, until lately, labored under many disadvantages. Capital, enterprise, and energetic action were wanting to fittingly develop and utilize its bonndless resources and bring to light the vast treasures that lay dormant within the bosom of its majestic hills.

Professor Frank Stewart, of Virginia City, one of the Centennial commissioners from Nevada, one of the most accomplished geologists and mineralogists of the Pacific States, writes to the *Enterprise*, in No. 10 of a series of articles entitled, "What I Saw in the Great East." In that letter he discnsses the merits of Tybo and Reveille districts, and since he is no mean authority in things pertaining to the mineral kingdom, I have no hesitation in quoting from him, or rather from the Eureka *Sentinel* of a recent date. He says:

Tybo.

"Twenty miles south of the Hot Creek range of monntains, in a deep mountain gorge, lie the famous Tybo mines, five in number, whose united lineal extent covers nearly 5,000 feet of lode matter. These mines are owned by the Tybo Consolidated mining company of San Francisco, where they have been lately incorporated.

"The only point at Tybo where the everlasting limestone ceases, and where a more propitious geological feature appears, is at the lower town, or at a point where the smelting works and reduction works have been erected. At the point designated there is a wide belt of quartzite and porphyritic matter, in the center of which is the celebrated Two G mine, which has been developed to the depth of about 300 feet (nearly 400 feet in depth now). It has a good dip towards the northeast, has a northwesterly and southeasterly strike, and is trnly a well defined fissure vein of great value, and is from three to nine feet in dismeter (main average seven feet). Like the South Prussiau, at Jefferson, the Two G contains well defined strata of fine ore, with alternating layers of galena and other base metals. For this reason the owners have wisely concluded to work the ores by the dual process of smelting and milling. At Tybo there is now in complete running order a twenty-stamp mill and a first-olass furnace of thirty tons reduction capacity each twenty-four honrs. With snch complete reductiou appliances the mines at Tybo cannot fail to prove successful, for the ore is rich by assay and practically inexhaustible."

The foregoing, though dealing fairly enough with the state of things at Tybo, is yet far from accurate, bnt then it must be borne in mind that nearly five months have elapsed since the writer met the professor and State geologist, Whitehill, at Tybo, and much has been done since then in the way of substantial improvement and development. Of

Reveille District

And the Gila mine, now so nnjustly condemned by stock operators, he writes at length, and since I cannot quote him in extenso, I subjoin the concluding portion of his remarks on this now mnch maligned mine and district:

"The principal mine now being worked at Reveille is the Gila. The ore is shipped twelve miles away to a ten stamp mill, which I have have been told works the minerals very satisfactorily. The ore is unusually rich, yielding from $150 to $2,500 per ton, assay value (general pulp assays $400 per ton), and yst the mins managers of the Gila have, in their supreme ignorance, rnn three tnnnels into the hill, and were last summer, at their third level, only fifty-eight below the ontcrop. Being in the heart of a great zone of quartzite and porphyry, and having, as it does, the true striks and dip of first class qnartz lodes, the Gila onght to be one of the best mines on the coast, and if it does not prove so the fault will be with the mine management."

The foregoing extract gives the unbiased opinion of an old and experienced mining expert, whose jndgment is worthy the respect and attention of the people of San Francisco who hold Gila stock. That the mine is good there is no doubt, bnt unfortnnately for its reputation, the cessation of active operations at the mills, which had to be shnt down for repairs, took place at a most inauspicious moment; yet for all this, had the late panic not intervened at the time it did, the prics of Gila would be far above what it is at present. However, since the mill starts up on the 14th proximo, we may soon hope for a greater measure of success than has yet attended the Gila, there being a large qnantity of high grade ore on hand to run upon. The mine is also in a very desirable condition, and although brilliant as has been its past, I am fully satisfied that its future prosperity will eclipse all that we have known of its past history. J. D. P.

Tybo, Oct. 15th, 1875.

Toughened Glass.

The invention of M. de la Bastie, by which he toughens glass by plunging it in an oil and tar bath, was, according to the Pittsburg *Herald*, anticipated at the works of Bakewell, Pears & Co., as early as 1822. It was used to temper blown glass previous to its being cut. A large kettle was filled with the wsre, and fish oil poured over the whole till all the space was occupied. A fire was then put under the kettle and kept up till the highest attainable heat was secured. Then the fire was allowed to die out and the glass to cool gradually. In this way the object was effected, and there was no more trouble by the breaking of ware on the cutter's stone. In recent conversstion on the subject with Professor Sweet, of Cornell University, he stated that his brother, a manufacturer of springs in Syracnse, had succeeded in making glass very hard and strong by an oil bath used for tempering his springs. The glass was so strong that strips of from one to one and a half inches in width, and of the thickness of ordinary window glass, could not be broken by the hands. However, the slightest check upon the surface with a diamond resulted in the total disintegration of the glass, it being reduced to fine powder throughout its entire extent. It would appear that the statements that have been made relative to nicety in the preparation of the quantity of the different materials which form M. de la Bastie's bath have been considerably exaggerated. The experiments at Bakewell, Pears & Co.'s works, and Mr. Sweet's experiments, indicate that oil is sufficient to harden and strengthen the glass; but the statements made in regard to cutting the glass, after tempering, at the Pittsburg works, do not agree with those made in regard to the breaking of the glass, resulting in its total destruction, and from the slightest scratch. A piece of iron or steel, when broken, may be again joined together, but the tempered glass, as far as yet discovered, can never be mended when once broken. This will, unless further improvement is made, greatly limit its usefulness. It is to be hoped that further experiments may result in the production of a glass which, while it is as hard as that produced by M. de la Bastie's method, will still be really tough.

ENGINEERING FEAT.—A remarkable feat of engineering has recently been accomplished by Messrs. Weeks & Bros., well knowu builders in this city. This feat consisted in the removal of a wall 65 feet in hight, 60 feet in length, and of an average thickness of 14 inches. The wall having been found to encroach upon neighboring property, it was necessary to take it down in the usual way and re-erect it, or to adopt the alternative successfully carried out by Messrs. Weeks & Bros. They carefully removed the masonry which joined the wall to the rest of the building, and pierced the wall at the bottom with holes, into which a double set of needle beams were inserted. These beams formed ways upon which the wall was slid along. The beams were thoroughly greased and shoes placed upon them. The entire weight of the wall rested upon these shoes. Screwjacks were then applied and carefully manipulated by trained workmen, so that while the wall was slid bodily along its parallelism with the opposite wall of the building and its perpendicularity were all the while maintained. The entire weight was said to exceed 270 tons. After the preliminary preparations were made only about five hours were absorbed in the removal of the wall to the position it was destined to occupy. This wall has been joined to the building again, and it is stated that a large economy was the result of the operation. The successful removal of this wall will doubtless be the beginning of many similar removals. Messrs. Weeks & Bros. have exhibited great ingennity and skill. Our readers will comprehend that the utmost care was necessary to remove a wall of this kind, balanced upon so narrow a base, without toppling it over or cracking it.—*N. Y. Artisan.*

A New Self-Acting Saloon.

The London *News* of a late date says: "An invention which has been favorably regarded by the leading authoritiss on the subject of channel navigation, and which notably is nnder the attentive consideration of Mr. Mills, engineer in chief to the London, Chatham and Dover railway, with a view to its adoption by that company, was yesterday explained by its originator, Mr. Alexander Walker, C. E., to a party of professional and scisntific gentlemen, assembled at the Terminus hotel, Cannon street. In order to understand the nature of Mr. Walker's plan for accomplishing that great public benefit which has hitherto fallen short of practical attainment, we must imagine a longitudinal section of an ordinary passenger steamboat betwsen Dover and Calais. Fore and aft we perceive two circular hall-shaped saloons, each divided into three compartments. The middle space is intended for the general use of the passengers, and the division on either side is severally for ladies and for gentlemen. Each of these saloons is carried on a strong central shaft or spindle, which passes vertically through the saloon itself, then through a ball and socket joint fixed in a rigid iron framing beneath the saloon floor, and so downward to a hnge spherical counter-weight at its lower end. This globe of solid metal is calculated to compensate donbly the weight of the saloon with its complement of passengers. This might be taken, at a maximum, as eleven tons, and the counter-weight of twenty-two tons wonld then be ample to secure a free action in accordance with the simple principle of gravitation. Nothing could be more nicely accnrate than the maintenance of a true level on a line with the earth in Mr. Walker's working model; nor is it easy, looking at the design on this miniature scale, to detect any point so weak as to invalidate the entire project. The dimensions of the vessel on which it is proposed to make the first trial of the new saloon are 190 feet length between perpendiculars, 20 feet breadth, 14 feet 3 inches depth of hold, and 824 tons burden. The number of passengers accommodated on board will be 150, that is, sixty-five in each saloon. These proportions, however, may he increased or diminished; and it is claimed for the invention that, without loss of stowage, it is applicable to ships not only of all sizes bnt of all descriptions, and that it may be easily adapted to troopers. Ventilation is easily provided for by fans of novel conetruction; and, on the whole, Mr. Walker seems to have spared neither thought nor pains in perfecting his invention."

KID GLOVE MAKING IN FRANCE.—There are three departments in glove making in France—cutting out, sewing, and finishing; that is to say embroidering the back, making the button hole, and setting on the button. It is the work of men to cut out the glove; bnt women place it on the iron hand which forms the measure, strike it with a stamp, and prepare it for the cutter. This is not difficult work; it is done by the piece, and they receive tenpence for five dozen. The sewers are less favored; the price paid for a dozen pairs of lady's gloves with one button is 3s. 9d.; ont of this they had to pay fifty per cent. to their employer, and forty per cent. goes in silk, which they find; so that it only leaves about threepence-halfpenny a pair. If it be asked how many pair a good workwoman can complete in one day, the answer will be that if working twelve hours without interruption, she may manage to get through four pair; but most of the hands only do two pair and a half. This arises from the attention they must pay to household work. Glove making requires the most perfect cleanliness; not only are soiled gloves returned to the sewer, but she is obliged to pay for the leather. Four pair will be thus paid at the rate of elevenpence, from which a deduction must be made for lights of two and a half, leaving eightpence-halfpenny. These wages are still lower in Aveyron and Haute-Marne; but in the department of Isere, this occupies no less than twelve thonsand women, representing a value of sixteen million francs. The manufactory at Grenoble employs twelve hnndred cutters-out, making five hundred and forty thousand dozen. Those who work the back of the glove and finish it off are better paid; seven-and-sixpence is given for a dozen, bnt then the silk is not found. It requires six or seven hours to make a pair of embroidered gloves; supposing she does a pair and a half a day, she will not earn that sum in a week. At this work a woman must sew regularly, and have neither children nor many household matters to distract her attention, as it requires great nicety and skill. In Paris the work is done at the workshop of the maker, where it can be better performed, and the highest class of embroiderers obtain there about twelve shillings a dozen.

NAVIGATING TORPEDOES.—Denayrouse, in France, has invented an apparatus intended to place submarine torpedoes in position unobserved by the enemy. Experiments lately made in England before the torpedo committee of the Admiralty, have proved that a man provided with this apparatus can remain under water, without any communication with the surface, for two hours at a time, and being guided by a compass illnminated by a lamp, is able to move in all directions, or to a before determined place. He can thus remove torpedoes placed by the enemy, or can place them where desired. The committee, after a thorough examination, have declared themselves to be perfectly satisfied that everything claimed for this apparatus can be accomplished with it.

Manufacture of Machine Paper-Hangings.

The first process in machine-printing is preparing the ground of the pattern to the color or shade required. This is done by passing the paper through a machine which sprsads over it an equal coating of color, by means of brushes moving transversely. As the paper comes off the machine it is quickly dried, by being drawn through a hot air chamber. All the paper is treatsd in this manner, except the very lowest qnalitiss, in which case it receivss the requirsd tint during the process of manufacture. The paper for satin grounds is prepared in a similar mannsr to that nsed for block papers, and polished afterwards by means of revolving brushes with French chalk. The printing machins contains a varying numbsr of rollers or blocks, constructed of wood with a metal axle, and they print the pattern npon the paper. Great care and exactness are required in the preparation of these rollers, and a separate one is required for each color. The design having been traced upon them, it is raised on the surface by driving slips of copper into the wood, and filling up with *felt* the portions which are to make the impression. In some patterns as many as twenty colors are used, requiring as many separate rollers. To print a flower, for example, several blocks are required, and in a design embracing various light shades and deep colors, each shade and color requires a corresponding roller. By changing the colors very different effects may be produced and various qualities of the same pattern are produced with the same set of rollers. Of course, every new pattern requires a fresh set of rollers, and a large sum is frequently expended in producing a novel design. The rollers or blocks are arranged in a circular form around the machine, which is about 10 feet in hight. Each roller having been supplied with its proper color from a corresponding trough, the paper is taken up by the machine in a continuous web, or at least in pieces from 5,800 to 6,000 yards in length. The rollers press the paper against a large central cylinder, and as it moves along it receives the various colors in succession, and comes out with the design fully developed. Many of the colors are printed one on the other, bnt blending is prevented by the use of several varieties of size. There are machines for printing different numbers of colors; one with two rollers prints about 500 pieces in an hour according to the pattern; one with twelve rollers about 200 pieces; and one with twenty rollers about 100 pieces in an hour. A machine with two rollers produces the printed paper at the rate of four miles an hour; and one with twelve rollers at about half the speed. Plain paper is produced from pulp at the rate of one mile an hour. The printed paper is marked off in twelve yard lengths during the process of printing, and on leaving the machine it is dried by means of hot air. The rolling-up of the paper is also effected by machinery.

Although machine paper hangings have been wonderfully improved during the last twenty years, there is still a wide difference between them and those printed by hand blocks. They are printed npon thinner paper, with less color on the prepared ground and in the formation of the design. Machine paper hangings are, upon the average, about a third, and those in general use about half the price of those printed by hand labor. About three-fifths of the paper hangings sold are produced by machinery. They have provided the cheapest possible means of giving a clean and cheerful aspect to all kinds of rooms, and are used by all classes of the community.

A Water Motor.

At the Sulzbach Alteuwald colliery, near Saarbrucken, Prussia, machinery has been established for the transmission of power from a steam engine at the surface, by a column of water circulating nnder pressure, the circumstances of the case not admitting of the establishment of a direct acting steam pump nnder ground. The mine is sunk 306 yards below the surface. The piston rod of the high pressnre engine above is conuected with the pressure plungers, each of which plungers is connected with the underground engine by a tube filled with water. The last mentioned engine consists of four pressure pumps arranged in pairs, and between each pair is placed the working plunger of one of the mine pumps. When the engine on the surface acts the power is transmitted by one pressnre plunger through one water tube to a pair of pressnre pumps nnder ground, and thence to one working plunger, which either aspirates or forces air, according to its position. The opposite pair of pumps and connections work conversely. The water is forced into an air vessel and thence throngh the rising main, 303 yards in hight, in one lift to the surface. On the change of stroke, the water in the cylinder of the pressure pump rises in the second water tube and follows the retiring pressure plunger at the surface, the power supplied by the descent of water in one column being sufficient, with the exception of a slight allowance for friction, to effect its return in the other. If the cataract pauses of the engine at the surface are not too long, the discharge is practically continuous. The *Engineering and Mining Journal*, from whose translation of the German description we condense the above, adds that at the Phœnix mine in Cornwall, England, an arrangement of similar description, consisting of a plunger attached to the main pumping engine, connected by a length of tube with a water pressure engine in another shaft, has been at work for ten years.

Scientific Progress.

Constitution of the Sun.

Professor Balfour Stewart, in an address before the late meeting of the British Association of Science, on this subject, said: Several new metals have been added to the list of those previously detected in the solar atmosphere, and it is now certain that the vapore of hydrogen, potassium, sodinm, rubidinm, barium, strontium, calcinm, magnesinm, alnminum, iron, manganese, chrominm, cobalt, nickel, titaninm, lead, copper, cadmium, zinc, uranium, cerinm, vanadium, and palladinm occur in our inminary.

If we have learned to be independent of total eclipses as far as the lower portions of the solar atmosphere are concerned, it must be confessed that as yet the npper portions—the outworks of the sun—can only be successfully approached on these rare and precious occasions. Thanks to the various government expeditions despatched by Great Britain, by the United States, and by several Continental nations—thanks, also, to the exertions of Lord Lindsay and other astronomers—we are in possession of definite information regarding the solar corona.

In the first place, we are now absolutely certain that a large part of this appendage unmistakably belongs to our luminary, and in the next place, we know that it consists, in part at least, of an ignited gas giving a peculiar spectrum, which we have not yet been able to identify with that of any known element. The temptation is great to associate this spectrnm with the presence of something lighter than hydrogen, of the nature of which we are yet totally ignorant.

A peculiar physical structure of the corona has likewise been suspected. On the whole, we may say that this is the least known, while it is perhaps the most interesting, region of solar research; most assuredly it is well worthy of fnrther investigation.

Magnetism.—In ordinary observation, magnetism is scarcely known except as existing in iron, and especially in steel, and as related in some obscure manner to the earth. But there is reason to believe that it is one of the most extensively diffused agents in natnre. It can be traced not only in iron, but also in every snbstance into which iron enters into composition. It is found in nickel, cobalt, chromium, and other substances, and even in some gases. Wherever a galvanic current exists in nature, whether produced by chemical action, or appearing in the thermo electric form as originating from the effects of heat at the place of union of different substances, magnetic effects can be elicited. On the larger scale, it is certain that the whole earth acts as a combination of magnets, and there is reason to think that the sun and the moon also act as magnets. The laws of magnetic force, however, have been experimentally examined with philosophical accuracy, only in their connection with iron and steel, and, by inferences bearing considerable probability, in the influences exerted by the earth as a whole. The ferruginous minerals of the formula Fe_3O_4 possess the property of attracting iron and its filings, and are called natural magnets or lodestones. Experience has demonstrated that the attractive action of magnets takes place in a vacuum and through all bodies, whether gaseous, liquid, or solid, when they are not themselves magnetic. All the properties of natural magnets may be permanently communicated to needles or to bars of steel properly tempered, which are then said to be magnetized, and take the name of artificial magnets.—*Scientific American.*

Gender in the Hemp Plant.—The influences which determine gender in the hemp plant have lately been made the subject of study by M. Haberlandt. Having satisfied himself that neither the size nor the specific nor absolute weight of the seede gave an indication of gender, he made a series of experiments to ascertain how far the factors of growth influenced the result. He found that neither the amount of water afforded nor the quantity of space allowed for the growth of the roots had any perceptible influence in causing a preponderant development of male or female plants; but there appeared to be such an influence in withdrawal of light and strong manuring. In eight cases the proportion between male and female plants was altered from 3.7 to 5.7; and only in three pots were all the plants female. These were plants which seemed to be beyond the influence produced, and they were greatly delayed in their development. The author believes the relation between strong manuring, and perhaps shading, on the one hand, and the formation of the female flowers on the other, may be accepted.

Testing Oils by Electricity.—Professor Palmieri has invented an instrument for testing oils and textures by electricity. It is said to be capable of showing the quality of olive oil, distinguishing it from seed oil, and also detecting the mixture of the latter with olive oil. At the same time it affords a means of testing seed and other oils, and will indicate the presence of cotton in silk fabrics.

An Interesting Electrical Experiment.—In a recent number of *Comptes Rendus* M. Lippmann describes the following curious experiment: A rubbed piece of resin is brought near the surface of water in a glass jar, the water communicating with the ground by a platinum wire. Positive electricity comes from the ground and is distributed over the water surface, and bubbles of oxygen are liberated from the electrode. The hydrogen that was combined with the oxygen remains in excess, and, in some sort, *masked*, so long as the water is electrified. On removing the red thin hydrogen escapes in bubbles. The masked hydrogen is neither combined nor dissolved; one cannot remove any part of it either by diffusion or by oxidation, or by any physical or chemical action which leaves the electric charge intact; yet it is there, for it is liberated when the rod of resin is removed. The words *dissolved* or *combined* may apply to hydrogen held in the interior of a certain mass, but here we seem to have an example of another order of material connection. The masked hydrogen is entirely held at the surface of the water; we might change the entire mass without affecting it.

Ocular Inequality.—A writer in *Science Gossip* speaks of the difficulty which some persons experience in the use of binocular microscopes, owing to a focal difference in the eyes. In a case mentioned one eye was far sighted, while the other was near sighted. For reading purposes, this person wears a pair of spectacles in which the one glass is made for the far sight, while the other is a plain glass, the left eye being near sighted, and consequently requiring no aid from spectacles with which to read. Instances are cited of persons who, while employing both eyes for ordinary vision, usually employ only one in reading. If any difference of the kind exists between the visual powers of a pair of eyes, it may be readily detected. Hold up a piece of card before one eye, so as to cut off its field of view, and then look at some object before you with the other. Then gradually bring the card before the other eye, and view the same object. If the object is seen with the same distinctness in each case, then your eyes are perfect as regards the balance of their foci; if not, then there is focal difference more or less decided It would no doubt be advisable to take account of the very frequent difference of focus, in selecting a pair of spectacles.

Earthquake Investigations.—Father Bertelli, an Italian monk, for several years past has made a study of the tremblings of the earth, and more especially those which are so extremely slight as not to be perceptible save by pendulums placed in the fields of microscopes. In one year he recognized 5,000 of these movements; and graphically representing the same over many years by a curve, he finds that the line corresponds neither with the thermometric curve, nor with the tidal phenomena, nor can it be brought into relation with the distances or positions of the sun or moon. With the barometric curve, however, it is otherwise; and it appears that in the large majority of cases, the intensity of the movements augmented with the lowering of the barometric column as if (as the investigator states) the gaseous matters imprisoned in the superficial layers of the earth escaped more easily when the weight of atmosphere diminished.

Effects of Electricity on Plants.—The effects of electricity on plants have not been closely studied. It is known to produce contractions in sensitive plants, and to retard the motion of sap. M. Becquerel has studied its influence on germination and development. It decomposes the salts contained in the seed, the acid elements being carried to the positive pole, and the alkaline portions to the negative. Now, the former are hurtful to vegetation, while the latter favor it. M. Becquerel further examined the influence of electricity on the color of plants. The discharge from a powerful machine produced remarkable changes of color on the petals, due, he thinks, to the rupture of cells containing coloring matter.

Hygroscopic Paper.—The *Journal of the Franklin Institute* gives a mode of preparing a useful hygroscopic paper, by Percy Smith. A bibulous paper is impregnated with a concentrated solution of chloride of cobalt. It is very sensitive to atmospheric variations, being blue in a dry atmosphere, changing to red when the air becomes humid. Four observations a day, made for a year, with every precaution, prove that this paper may be employed to indicate readily and precisely the hygrometic state of the air.

To Preserve Metallic Sodium.—According to Bottger, if sodium be placed in alcohol until its surface becomes brilliant, and then in naphthalic ether chemically pure, and finally in a concentrated solution of naphtualine in naphthalic ether, the metal may be preserved unalterable, with its luster unimpaired, for a long time.

MM. Robin and Leoros, experimenting with *noctiluca*, the little organi me which produce in great part the phosphorescence of the sea, found that on passing an electric current through some sea-water in the dark, its course was marked by a luminous trace, the phosphorescence of the animals being excited by the electricity.

Mechanical Progress.

Production of Bessemer Steel in the United States.

The eight completed Bessemer steel works in this country, though doing a good business, were not fully occupied during the year 1874. The production of this class of steel in the United States is rapidly increasing. Starting in 1867, with a production of only 3,000 tons, we find the production in 1874 has reached 176,579 tons. The rate of increase will be seen by the following tabular statement:

1867	3,000	1871	45,000
1868	8,500	1872	110,000
1869	12,000	1873	157,000
1870	40,000	1874	176,000

Of the total product during 1874, there were 144,944 tons employed in the manufacture of steel rails. The 31,635 tons not so used, were employed in the manufacture of spring and bar steel railway axles, crowbars and other railway tools, wagon and carriage tires, machinery and steamboat forgings, etc.

The English Product of Bessemer Steel.

The quantity of Bessemer steel made in the United Kingdom during the past five years is stated as follows, by competent authority, in gross tons: In 1870, 215,000; 1871, 329,000; 1872, 410,000; 1873, 496,000; 1874, 540,000. We give these figures for comparison with our own achievements in building up the Bessemer industry, and that we may call attention to the fact that when the three new Bessemer establishments are all put in operation—making eleven in all—the capacity to produce Bessemer steel will be as great in this country as it now is in Great Britain.

The Production of Steel other than Bessemer

There are forty-two establishments in the United States, making cast, puddled, blister and open-hearth steel. The aggregate production of these establishments in 1874 was 47,481 tons. The production of open-hearth or Siemens-Martin steel is steadily increasing in the United States. There are now thirteen establishments here, which are using the Siemens-Martin furnace, whose aggregate product is about 10,000 tons. In 1872 it was only 3,000 tons.

As a further encouraging evidence of the rapid progress of steel making in this country, we clip the following extract from the *American Manufacturer*, from which journal we have also condensed the above:

During the calender year 1874 our imports of steel ingots, bars, sheets and wire amounted to $2,678,611, against $3,865,316 in 1873; $4,206,087 in 1872; and $3,460,735 in 1871. Our exports of these articles in 1874 amounted to 343 net tons of the value of $29,557, against twenty-six tons in 1873 of the value of $5 481, nine tons in 1872 of the value of $3,624 and thirty tons in 1871 of the value of $7,364. The increase our exports and the decrease of our imports of these commodities in 1874 are very marked, and the statistics of the exports and imports of the manufactures of steel for 1874, are equally encouraging to the home manufacturer of steel or steel products.

New Mode of Raising Sunken Ships.—Numerous suggestions have been propounded with regard to raising the British ironclad, recently sunk by coming in contact with another monitor off the English coast. With one exception, they have all been based upon some plan for raising the sunken ship directly from her present position. One engineer, however, presents a new plan, as follows. "It appears to me worth consideration whether the object sought does not permit of being attained by the application of power in a different direction—viz., traction, using the bottom of the sea as the plane along which to move the load. I would recommend that, after the guns and all other moveables have been removed, to make fast to the wreck by chain cables passed through the portholes, and yoke on some of our most powerful steamers, harnessed abreast as horses, and try the practicability of sledging her into shallow water, where she could then be more efficiently dealt with. It is simply a question of power, and not difficult to calculate the amount required, where the load is known, and approximate allowance for friction to be overcome. The trial (compared with the value of the prize) would not be costly, and it may perhaps be regarded as a less formidable undertaking than moving the Great Eastern from her bed, after the first failure in attempting to launch her. A little pulling was done on that occasion, but on a small scale, owing to the confined space available."

Pernot-Martin Furnace.—It appears that the products of the Pernot-Martin furnace are likely to give rise to a new nomenclature. This furnace turns out what is almost a new metal, with a highly granular fracture, and the engineers who have visited the Saint Chamond works, distinguish between it and Bessemer metal without any hesitation. Is this metal wanting in homogeneity? Does not the question of the duration of the operation in the Martin process preponderate in attaining a good molecular arrangement? The operation seems to be performed rather too quickly with the Pernot-Martin furnace, and, perhaps, if a minute analysis were made of the grains, the carbon would not be found distributed in a sufficiently uniform manner?—*English Paper.*

Multiple Engines.

There was quite a discussion on the subject of multiple engines at the late Manchester meeting of the British Iron and Steel Institute. As a general thing, the speakers did not believe in their economy; but there was such an array of a "practical facts" presented in their favor, that it was hinted that a recommendation would be made to the Manchester Steam Users' Association to erect, at an early day, a pair of experimental engines for the express purpose of giving the principle a thorough practical test. During the discussion Mr. Wroa, a large steam user, but not an engineer, remarked that he owned two cotton mills, one running 57,000 spindles, and driven by a triple cylinder engine, and the other running 47,000 spindles driven by a quadruple engine. During the last six months the engines with the triple cylinders had consumed fifty-tons one hundredweight per week, while the quadruple engines had only used thirty-five tons twelve hundredweight per week, the mill in which they were fitted turning out nearly as much work as the larger one. Mr. Wroa stated further that the triple cylinder engines had used, during the twelve years they had been put down, about two and a half pounds of coal per horse power, while the quadruple, which had been down only twelve months, had consumed only one and a half pounds per horse power. Mr. Wroa declared that the "saving was obvious" when the directors of the company found that the consumption of coal was reduced from sixty to thirty tons.

Mr. Adamson remarked: It must be admitted that steam engineering is advancing with rapid strides, and a few years may produce unlooked for changes. Twenty years ago the proposal to construct a quadruple engine would have been regarded as a freak of eccentricity, now we have such curiosities—and valuable ones, too—as the three-cylinder engine of Brotherhood and Hardingham, the three-cylinder quick-speed engine of Mr. Willan, and the compound engine of Messrs. Field and Cotton, besides others, that a few years ago would have been ridiculed. Every year we are getting nearer and nearer to obtaining the theoretical effect of a pound of coal; and although it is, no doubt, practically impossible to reach that pitch of perfection, something has been done towards it, though much more remains to be done before it is generally attained.

Economy in Furnace Heating.

A correspondent of the *Scientific American* writes to that journal as follows: "In an article recently published in your paper on combustion, the practice of admitting air to the top of a fire for the purpose of consuming the carbonic oxide is recommended. The theory of course is an old one, but is it a correct one in an economical point of view? In practice it is found, I believe, that the more air you admit to a fire, the more rapidly is the heat evolved carried up the chimney. It is no use making the fuel give out more heat if we cannot retain that heat and utilize it. At the great factories at Mulhouse, in Germany, a series of experiments was tried in relation to the combustion of smoke, with a view to the saving of fuel. The result was disappointing. When the necessary amount of air for the perfect combustion of the smoke was admitted to the fires, there was a loss of heat. The same result was described by practical engineers in London. At Mulhouse the practice now is to admit as little air as possible to the fires (one-half of the amount formerly admitted) and to 'feed a little at a time and often.'"

The journal quoted comments on the above as follows: "We do not think these matters are so definitely settled that a general rule can be given which will be applicable to all cases. We have known of a number of cases in which it seemed to us that there was an advantage arising from admitting air above the fire. We do not at present recall the experiments to which you refer, and would be glad if you would send us a record, in case it is convenient."

Punching Boiler Plates.—At the late meeting of the Iron and Steel Institute, held at Manchester, England, Mr. Adamson, one of the leading speakers, presented some rather severe strictures on the mode of boiler construction. He denounced the practice of "punching" holes as "barbarous." All rivet holes should be truly cylindrical, and drilled through with both plates *in situ*, so as to insure perfect accuracy in riveting. He was convinced that if boilers were made by engineers of recognized skill and care, with suitable tools for drilling the rivet holes, and fitting the various parts together, that pressures of 100 to 150 pounds might be used with less risk than at present attaches to boilers carrying only fifty pounds per square inch.

Hemp and Wire Rope.—Round steel wire rope will bear more than double the weight required to break iron rope of similar diameter.

Sales at S. F. Stock Exchange.

FRIDAY, A. M., OCT. 15.

80 Alpha.....17@16½
50 Am Flat.....50
50 Amazon.....50
140 Andes.....4@4½
95 Baltimore & N.....23
510 Best & Belcher..50½@50
50 ....do.....b 5..50½
115 Belcher.....11½@11¾
25 Bacon.....
50 Bulli'n.....47@50
45 Challenge.....70
25 Confidence.....71
152 Con Virginia.....3 5-32
270 Caledonia.....18@17
740 California.....61½@62
420 C Point.....22¼@22½
200 Baytoa.....
100 Empire Mill.....
165 Exchequer.....50@48
1130 Gould & Curry...21@21½
10 Hale & Norcross.....32½
110 Imperial.....93@93½
305 Justice.....30
45 ....do.....b 5..30
610 Julia.....8@8½
60 Kentuck.....11½@11¾
240 Kossuth.....
100 Knickerbocker.....2½
105 Lady Bryan.....1¼@1.6
350 Lady Wash.....2½@2¾
765 Mexican.....2½@2¾
180 Mides.....2½@2¾
630 Nile.....9½
190 New York.....2½
1045 Ophir.....66@65½
105 Overman.....47½@48
100 Occidental.....3¾
50 O G Hill.....1¾
75 Savage.....85@84½
315 Sierra Nevada...15@14¾
200 S Hill.....7¼@7¾
100 Succor.....75c
55 Seg Belcher.....10@7½
100 Tyler.....3½
110 Utah.....9½
980 Union.....9½
100 Wells-Fargo.....40c
744 Woodville.....2¼@2¾
50 Yellow Jacket.....61

AFTERNOON SESSION.

190 Bullion.....52@52½
35 Belcher.....17½@17¾
805 Best & Bel.....52½@53
845 California.....62½@63
50 ....do.....b 5..63½
100 Gholiar.....75
100 ....do.....s 30..74
185 Coa Virginia.....
60 Confidence.....18
10 Caledonia.....18
25 Empire f.....50c
325 Eureka Coa.....15@15¾
350 Gila.....2@2¼
325 Gould & Curry.....22
505 Golden Chariot.....1
270 Hussey.....1¼@1½
120 Imperial.....9½
20 Jackson.....
300 Julia.....8½@8¾
280 Justice.....31@30
60 Kentuck.....12@11¾
835 Leopard.....12@11¾
50 Meadow Valley.....2½
500 Mansfield.....16c
585 Mexican.....2@2¾
1175 Ophir.....48@49
260 ....do.....b 30..47½
98 Overman.....50@49½
385 Raymond & Ely...31@30
70 S Nevada.....1c
80 Savage.....86@85
525 Union.....46@45
50 ....do.....b 5..16
805 Utah.....7¼@
100 Y Jacket.....61

SATURDAY, A. M., OCT. 16.

105 Alpha.....19@18½
175 Am Flat.....2
100 Alta.....
40 Baltimore Con.....2¾
715 Belcher.....18¾@18
20 ....do.....b 5..18
1465 Best & Bel.....54½@53½
680 Bullion.....53@50½
365 Challenge.....100@1
20 ....do.....b 30..77½
625 C Point.....24@24½
360 Confidence.....22½@21½
315 Con Virginia.....31@31¼
20 Caledonia.....18
1220 California.....64@63½
100 ....do.....b 5..64
100 Dayton.....5½@5¾
750 Empire.....65@66
215 Eureka Con.....15
650 Gould & Curry...23@22½
55 Hale & Nor.....46@47
825 Imperial.....10½@11¾
770 Justice.....32½@33
75 ....do.....b 5..33
735 Julia.....9¼@9
120 Kentuck.....12½@12¾
155 Knickerbocker...2½@2¾
450 Lady Bryan.....1¾@1¾
995 Mexican.....2¾@2¾
375 Meadow Valley...2¾@2½
405 New York.....2¼@2¾
2450 Ophir.....70¾@69
50 ....do.....s 30..70
100 Occidental.....3
280 Overman.....54@54½
50 ....do.....b 30..55
100 Phil Sher.....1
100 Rock Island.....2¼
180 Ray & Ely.....29½@30
280 Savage.....90@89
290 Sierra Nevada...16¾@16
25 Seg Belcher.....15@17½
150 Succor.....10@12½
200 S Hill.....8¾
100 Tyler.....37½
925 Utah.....8½@8¾
980 Union Con.....10¾@11
200 ....do.....b 30..10¾@10½
910 Woodville.....2¼@2¾
285 Yellow Jacket...70@73½

MONDAY, A. M., OCT. 18.

90 Alpha.....18¼@18½
425 Bullion.....51@50
1463 Best & Bel.....51@50
605 Belcher.....18@19¾
20 ....do.....b 30..19¾
75 Bal Con.....2¾@2¾
300 Buckeye.....2¾@2¾
460 Crown Point.....24@25
185 Chollar.....75@73
10 Caledonia.....17

SALES OF LAST WEEK AND THIS COMPARED.

THURSDAY A. M, OCT. 14.

65 Alpha.....18
495 Best & Belcher..50@50½
180 Belcher.....17¾@17½
55 Bullion.....46½@47
95 Baltimore Con.....2¾
35 Crown Point...22¾@22½
135 Chollar.....70@73
50 Challenge.....5
10 Confidence.....
320 Caledonia.....17¾@18
1080 California.....61¾@63
135 Con Virginia...30½@31
300 Dayton.....4
60 Empire Mill.....
25 Eclipse.....5
435 Gould & Curry.19½@20¾
140 Hale & Norcross..44@45
200 Imperial.....19@19¾
495 Justice.....32@32½
200 Kentuck.....11@11¾
165 Knickerbockor...2@2¾
375 Lady Bryan.....2¾
775 Mexican.....2½@2¾
255 New York.....2¼@2¾
1050 Ophir.....64½@65
370 Overman.....50@52
240 Savage.....85@90
455 Sierra Nevada...15@15¾
325 S Hill.....7¾@7¾
20 Seg Belcher.....60@68
30 Succor.....1
450 Confidence.....22½@21½
120 Con Virginia.....31@30
1460 California.....63@62½
50 Challenge.....5¾@5½
1450 Gould & O.....22@21¾
500 Gold Hill Q.....
2900 Ophir.....68@67¾
50 ....do.....b 30..69
160 Rock Island.....2¾@2¾
335 Sierra Nevada...15@15½
15 Savage.....85
45 Seg. Be cher.....70@72½
540 Sil Hill.....8@7¾
200 Kentuck.....13
1335 Mexican.....2½@2¾
325 New York.....2½@2¾

company now have in the permanence and richness of the mine, the superintendent is preparing to further open it for extensive working, by running a tunnel on a level 100 ft lower than the first, and with additional facilities for smelting and retorting the ores.

KERN.

The Defiance.—*Southern Californian*, Oct. 14: Mr. P. Reddy is at Darwin, engaged in overlooking the erection of the machine for the famous Defiance mine. He says he will be able to get it completed in 30 days, when the mine will turn out 150 bars of bullion per day. It will soon take 3 teams per day to move the bullion from Darwin, with the mill now turning out 120 bars per day. The bars weigh 85 pounds each, and large teams and heavy wagons are required to move them to Caliente, the next station beyond us on the Southern Pacific railroad.

Ore from Keanville.—We are in receipt of some fine specimens of ore from the Al. Bunnell mine, sent by Mr. J. S. Collins. They have gone the rounds of the town, and have excited general interest. We are glad to see some spirit of that kind of enterprise, which enables us to know something practical of the mines in the county. Mr. Collins has the thanks of the office and the people.

Good Assay.—From Col. Burr, one of the owners of the Buonell gold and silver mining company, we learn that the last assay made in October of a 4 ft depth, was $1,010 silver and $251 gold; total, $1,261, and improves daily.

LAKE.

Advance in Quicksilver.—Middletown correspondence of the Lakeport *Bee*: The advancing price of quicksilver is stimulating renewed activity at the mines in this vicinity, and were it not for the stringency in the money market, the coming winter would chronicle heevier shipments of the metal than were ever before known from this locality. As it is, old locations are hunted up and re-recorded, and there is a general sharpening of picks and drills, and other preliminary mining arrangements going on that indicate a vigorous prosecution of the work of prospecting for the enchanted metal.

PLACER.

Mining About Auburn.—*Argus*, Oct. 16: The St. Patrick's mines are showing better than ever, and everything indicates a prosperous future. The mill during the past month, crushed 400 tons of ore, yielding 806 ounces of gold. This falls short of the expectations, but owing to the need of repairs on the ditch, the water was turned off for some time, reducing the running time of the mill to 20 days, and thus cutting down the yield, almost one-third. The ore dumps at the mine and the mill platforms are crowded with fine ore, and as the mill is now running to its fullest capacity, to make up for lost time, we may look for a big clean-up at the end of the current month.

Doing Well.—*Herald*, same date: The St. Patrick company cleaned up again last week after 22 days' run with remarkably good results obtaining something over 800 ounces of gold. The pay chute in the Crater mine is wide, and the rock at the present depth uniformly rich, making it unquestionably a good mine. Under the superintendency of Mr. Townsend the mine is opened in good shape, and with comparatively few men, rock is taken out as fast as the mill can possibly crush it, something that with ever so large a force, has not been done before; thus demonstrating to a nicety the advantage of having a thoroughly practical miner for superintendent, instead of a California street sharp, whose conceited theories have ruined the reputation of many good mines.

Ore from Good Friday Mine.—Ten tons of ore recently crushed at the Pugh mill, from the Good Friday quartz mine, yield $1,800, an average of $180 per ton. Work is steadily progressing in this mine, and from the above the indications are that it will prove one of the substantial lodes of the district.

SOLANO.

Quicksilver Furnace.—*Times*, Oct. 16: E. N. Smith, of this city, has just completed a four and a half ton quicksilver furnace at Mr. Loop's mine, which is situated about half a mile southeast of the Brownlie mine. Considerable rock of a promising quality has been gotten out, and the furnace will be put in operation soon. This furnace is of about the same size as that at the St. John's mine.

Nevada.

WASHOE DISTRICT.

Ophir.—Gold Hill *News*, Oct. 12: Daily yield of ore, 350 tons. The ore breaets continue to both look and yield well, the ore extracted being of a good milling quality. A shipment of bullion to the value of $40,000 was made on the 6th inst., and another to day of between $65,000 and $70,000, proving beyond a doubt the richness of the body of ore extending upward from the 1465 ft level. The mills are all running steadily, and a sufficient amount of ore is being extracted to create a reserve supply in case of need at the mills. The up-raise from the 1300-ft level is still in good ore and is looking well. The old station on the 1100-ft level has been reopened, and a main working drift, intended to cut and prospect the ore body found in the raise on the 1200-ft level, is now being driven vigorously forward. On the 1700-ft level the east cross cuts, Nos. 1 and 4, are being steadily advanced. In west cross-cut No. 4, on this level, a station is being cut out for an air engine, designed to sink a winze at that point, down to the 1800-ft level. The main north drift on this level is also being driven ahead toward the Mexican south line.

Consolidated Virginia. — Daily yield, 650 tons of ore. The ore breasts are looking well and yielding the usual amount of rich ore, with no signs whatever of exhaustion. The mills are all running steadily, and the yield of the mine for October will be fully up to the returns of last month. The new hoisting engines of the C. & C. shaft will be ready to start up in a day or two more, when sinking the new shaft will be crowded downward at a rate that will astonish even the mining sharps of the Comstock. The regular almost daily shipments of bullion are being made, and the prospects of the mine were never better than at the present. The usual monthly dividend of $10 per share, aggregating $1,800,000, was declared on the 7th.

Lady Bryan.—Owing to a breakage of a pump flange a delay of a day or two was caused in the sinking of the shaft during the week; everything is, however, again in good running order and the sinking going ahead as usual. The north drift on the 380-ft level is steadily advancing, without change of value to report. The main south drift on the 380-ft level is in a distance of 381 feet, the face in very soft, favorable vein matter. At a distance of 200 feet south of the shaft a west cross cut has been started from the main south drift on the 380-ft level, the face of which is showing some very favorable quartz and ore.

Sierra Nevada.—Sinking the new shaft is making rapid progress, the new drills working well, both in the bottom of the shaft and in the main west tunnel at the 1000-ft station. These drills are driven by compressed air, and add greatly to the progress of both drift and shaft. The north and south drifts on the 700-ft level of the old shaft are steadily advancing, without any changes worth recording. Everything in and about the mine is in good working order, and the prospects are encouraging.

Silver Hill.—The 4th station is completed, and a drift started to cut and prospect the ore vein at that point. On the 3d station level the drifts have shown the ledge to be over 200 ft in width, the most of which is composed of a fine character of quartz with streaks and spots of ore that give good assays in both gold and silver. The recent rich ore developments in the Justice prove almost conclusively that the Silver Hill has a continuation of the same ledge, and that the finding of the same ore body further to the south is but a matter of time. The managers of the mine feel greatly encouraged. Its prospects are certainly looking up.

Imperial-Empire.—Daily yield, 40 tons of ore. This ore is being extracted from the ore stopes between the 1850 and 2000-ft levels. The stopes are looking well and promise a considerable yield. Another mill—the Boston—has been added, which will increase the working capacity of the mine 15 to 20 tons per day. An air connection has been made between the ore stopes and the 1930-ft level, which greatly aids the work in that portion of the mine. Burleigh drills have been placed in the east drift on the 2000-ft level, which will greatly expedite that portion of the work.

Yellow Jacket.—Both the north and south winzes, sinking below the 1840-ft level, have reached the 1940-ft level, at which point the bottom of both are perfectly dry, and station are being opened for the purpose of cross-cutting and prospecting the ore vein. Each of the winzes will be sunk 15 or 18 ft below the stations to form a sump for water in case any shall be encountered while cross-cutting the ledge. Nothing new of any of the cross-cuts on the 1740-ft level.

Chollar-Potosi.—Daily yield, 50 tons of ore, the assay value of which is $33 to $35 per ton. This ore is being taken from the old upper workings. The south drifts on the 1150, 1250 and 1350-ft levels are severally being advanced at the rate of 25 ft per day. No important changes at any point to record. Sinking the new shaft is making steady and favorable progress, the rock in the bottom blasting out finely.

Belcher.—Daily yield, 150 tons of ore. The ore breasts are looking finely and yielding well. Prospecting the 1600-ft level is being advanced as rapidly as possible, with every expectation of good results. Everything in and about the mine is in first-class order, and the future of the mine is putting on quite a favorable aspect.

Overman.—The pumping machinery is all again in good running order, and the water is being rapidly lowered in the main shaft. The prospecting on the 900-ft level is still pushed rapidly ahead. No change of interest to report. The south drift from the bottom of the winze on the 1100-ft level is also being rapidly advanced.

Baltimore and American Flat.—Sinking the incline below the 900-ft station is making rapid progress. No change worth noting. It is the intention in a short time to commence cross-cutting the ore vein on the 850-ft level. Preparations for receiving the water when the cross-cutting is done have already commenced.

Europa.—Sinking the shaft is making splendid progress, the rock in the bottom blasting out finely, and the work being pushed with all the energy possible. A drift has been started from the 320-ft station to cut and prospect the ledge at that point, and new life is being infused in every portion of the work.

Utah.—The hoisting works of this mine were destroyed by fire last Sunday evening, and the new and powerful pumping machinery but recently erected considerably damaged. All work in the shaft and mine is of course suspended for the present. The shaft is but little damaged, and the management, with their usual force and vigor, are rapidly clearing away the ruins and preparing to erect a new building, and put everything in good running order at the very earliest day possible.

Leo.—The work of driving the prospecting drifts north and east from the bottom of the winze goes steadily on, and good progress is being made. The water has increased a little, but not enough to retard the developments. The vein material in the face of the north drift shows considerable improvement this week; the quartz veins are stronger and of better character, and the indications generally are more encouraging.

Silver City.—Plenty of good milling ore continues to come from the northern extension of the main drift, and the work of exploring for more good ore, and putting the mine in good productive paying shape, goes ahead with energy and good judgment.

Buckeye.—Sinking the shaft is making fair progress, the bottom in quartz and ledge matter of a highly encouraging character.

Woodville Consolidated.—The erection of the new pumping machinery is making favorable progress. Nothing doing in the mine at present.

Julia.—Sinking the shaft is making excellent headway, the Burleigh drills working with the utmost perfection and the work being pressed ahead with all possible activity. The quartz and ore veins in the bottom of the shaft are increasing in size and are of a highly encouraging character. The face of the main southwest drift, on the 1400-ft level, is being advanced by the aid of the Burleigh drills at the rate of 6 ft per day, the face in ledge material of a highly encouraging nature. This drift is being run nearly parallel with the ore vein, is perfectly dry, large and roomy, so that cross-cuts can be started at almost any time to prospect the ore vein. A fine streak of quartz and ore has been following the face of the drift for some distance and still continues. The face of the main south drift, on the 1000-ft level, is in a much softer character of quartz and porphyry mixed, with a considerable seepage of water in the face. The prospects of this drift are also looking more encouraging.

California.—Sinking the winze below the 1550-ft level is making good progress. It is now down 95 ft, the bottom still in rich ore. The north drift on the 1550-ft level is also being steadily advanced, the face in good ore. On the 1550-ft level the main drift north of cross-cut No. 6 is again being advanced toward the Ophir line. A winze has also been started in cross-cut No. 5, to connect with the main north drift on the 1550-ft level, for ventilation purposes. The main north drift on the 1400 ft level is in a distance of 312 ft from cross-cut No. 3, the face in a much better character of ore than has been before encountered. The upraise on the 1400-ft level is up 105 ft. The battery mill is almost completed; the pan mill is also fast approaching completion. The hoisting works of the C. & C. shaft will be ready to start up in a day or two more. The shaft is down 605 ft to-day, the sinking progressing at the rate of 4 ft per day.

Justice.—The fine ore body being developed in the southern portion of this mine, from the 600-ft level upward, is of great value and importance, as showing a bonanza being found in the southern section of the Comstock. This ore body at the 600-ft level was estimated to be at least 50 ft wide, but its real dimensions are not yet ascertained. It shows more and more in both width and length, and although not of uniform quality, it is certain that there is a large amount of good paying ore developed in the Justice mine.

Lady Washington.—The huge pumping engine is completed, the pump rods are finished and in place, and in fact, with the exception of placing a small portion of the valve gear and the finishing up of the mason work around the new boilers, everything is in the most complete running order. It will probably take about a week yet to get everything in place and working smoothly. Then the water will be drained and the shaft started downward for the north end of the Justice big bonanza.

Bullion.—Sinking the main incline is progressing at the rate of 4 ft per day, the bottom in good working ground. The main north drift on the 1700-ft level is steadily advancing along the west wall of the ledge, the face in a fine character of quartz, and spots of ore of a very encouraging character. The combination drift on the 2000-ft level of the Imperial is making fine progress.

Union Consolidated.—The bottom of the winze below the 1300-ft level is looking well, and the face of the north drift on the same level is showing a promise of the development of an ore body in that direction in a very short time. Everything working well, and good progress is being made in both the winze and drift.

North Chipman.—Sinking the new shaft is making splendid progress, the bottom in soft, favorable material, of a very promising character. The managers of this mine are going to work in good style, and evidently mean business. The location is an excellent one, and it seems strange that it should have lain so long neglected.

Prospect.—No change of material in either drift or shaft, and no increase of water in drift. The frame of the hoisting works building is being sided and enclosed, the extensive pit for the pump hole, excavated in the solid rock, is nearly completed, and the work generally is being driven ahead as fast as possible.

New York Consolidated.—Steam was gotten up this morning, and the new machinery tested, everything working with the greatest perfection. In a day or two more everything will be running smoothly, and the pumps will be set to work extracting the water, preparatory to resuming work on the lower levels of the mine.

Gould & Curry. — Repairing the main incline below the 10th station level is being pushed with all the vigor possible. The heat is intense, and but slow progress can be made at best. Nothing can be done toward the development of the 1700-ft level until the repairs are finished.

Mexican.—The quality of the ore in the north drift on the 1465-ft level is steadily improving. The ledge formation is also showing more compact and better as the drift advances. The winze on this level is down 94 ft, the quartz and ore in the bottom looking well.

Cosmopolitan.—Splendid ore is being taken from the face of the main tunnel, and the prospecting at other points is going ahead lively.

Savage.—The flow of water at the bottom of the main incline still continues too strong to permit of a resumption of the sinking. The main north drifts on both the 2100 and 2000-ft levels are being pressed ahead. No change in either to record.

Iowa.—Work progressing well, both in the cross-cut from the upper tunnel and the main west drift at the 420-ft station. In that drift the streaks of ore and quartz are becoming more concentrated and are getting on a much more favorable look.

Caledonia.—Sinking the new shaft is making excellent headway, the work being pressed with all possible vigor. The machinery is all working splendidly, and everything settling down in splendid shape for a good winter's work.

Sullivan.—The bottom of the shaft is still in the same very promising vein matter mentioned in last report, with no sign of west wall as yet. The surface grading and all other work is being pushed forward energetically.

Best and Belcher.—The rock in the face of the north drift, on the 1700-ft level, is in very hard blasting rock, so hard that but slow progress can be made, even with the aid of Burleigh drills driven by compressed air.

Crown Point.—The usual amount of ore is being extracted from the ore stopes on the 1500-ft level. Prospecting the 1600 and 1700-ft levels goes steadily ahead, without change or interuption of any kind whatever to report.

Hale & Norcross.—Prospecting the 2200-ft level is steadily progressing, with no new or very promising features to chronicle. Everything in and about the mine is in splendid working condition.

Rock Island.—The 600-ft station is completed, the pumps lowered and a drift started to cut and prospect the ore vein at that point. No changes to report of the prospecting operations on the 450 ft level.

Succor.—Both the west and north drift on the 550-ft level are steadily advancing without change of importance to report. The mill will be started up on Belcher ore in a day or two more.

Florida.—West drift going ahead. Water increases somewhat, but not enough to interfere with the work. Some very fine assays are obtained from the streaks and bunches of ore met with.

Sutro Tunnel.—Total length to-day, 11,170 feet. During the past week the rock encountered in the header has been somewhat harder and more easily managed.

Moore and Morgan.—A contract is being let to sink the shaft deeper. Rock showing both silver sulphurets and free gold has been found during the past week.

Washington Territory.

Mining Matters.—Walla Walla *Union*, Oct. 9: A correspondent writes as follows from Warrens, under date of 25th of September: With the approach of freezing weather our placer mining season is drawing to a close. The yield of gold from this camp has not been so great as heretofore, but the difference has not been so great as many would have us believe. Many of the long established claims are worked out or have ceased to pay, but on the other hand a number of new claims have been opened on outlying gulches, which have contributed something by way of compensation. On the whole, it is something in these degenerate days to have a placer mining camp somewhere near to hold its own. The only operations going on this season worthy of note in the quartz line, are those at the Rescue. During the winter and spring Mr. Leland had a small force of men putting the hoisting machinery in place and preparing to sink, and a shaft was commenced. After the snow had melted and the ground became dry the shaft was continued to a depth of over 70 feet, and drifts started each way on the ledge. To the west nothing was developed, and work was discontinued, but to the east, after running 20 feet or so, the drift came upon a seam of quartz of the rich description formerly taken out of the works above and worked by Gambel. This ore has continued to the present time of varying thickness but undoubted value. Within a few days past they have commenced stoping. The mill has undergone many repairs, but was presumed to be ready for operations a week ago. After crushing a few tons, however, some more changes were found necessary, but I am informed that crushing will go on again in a day or two. All those acquainted with the mine agree that they have several hundred tons of good rock for stoping actually in sight, as the saying is, and the prospects of the mine and company are therefore encouraging.

The War Ship of the Future.

The sinking of the ponderous British iroaclad *Vanguard*, by accidental collision with the *Iron Duke*, adds another to the long list of accidents which have destroyed or rendered useless the great floating fortresses which have lately become the pride of the British navy. These two ships were built after the same model. The *Vanguard* was a vessel of nearly 4,000 tons burden, built by the Lairds, at Birkenhead, and cost about $2,500,000. She was one of the fastest and strongest ships in the British navy, but one blow from the ram of her sister ship, whose bows she tried to cross, cut her open between two compartments, and so disabled her that she sank in an hour. The ease with which her destruction was accomplished shows how ineffectual is armor plating, as at present applied, to protect a vessel against the dangers to which it is most frequently subjected. Like Achilles, vulnerable in the heel, those ponderous iron batteries are vulnerable below the water line. The experiments lately conducted at Newport with torpedoes showed that these engines of destruction, formerly regarded by naval officers as ingenious but rather inoffensive toys for scientific landsmen to play with, are potent agents in skillful hands, and that no amount of armor plating will serve to protect the leviathans of the line from the vigorous attacks of these naval sword-fish. To meet these new conditions we shall probably have an increase of plating, so disposed as to protect the bottom, as well as the sides and deck; while plate must be piled on plate above if the naval architect is to hold his ground in the neck and neck race with the artillerist, who has so far managed to send his projectiles through whatever armor any ship now afloat has succeeded in carrying. In other words, the English naval constructors are going through an experience very similar to that which led to the abandonment of mail and armor for the protection of soldiers against the shafts and arrows of ancient warfare. As long as lances, arrows, swords and battle axes were employed, supplemented later by rude firearms of short range and little power, armor served a good purpose. With the improvement of the machinery of war, and especially the introduction of better fire-arms and more destructive field artillery, armor became worse than useless. It had grown heavier and heavier, but no man could have carried armor enough to make him invulnerable to bullets, and now the soldier is best equipped when equipped most lightly. If we are not much mistaken, the armor plating of vessels will soon be abandoned. Such ships, of small and steadily decreasing value in time of war, are a burden to a nation in time of peace. They are very costly, short lived under the most favorable circumstances, and liable to be rendered obsolete by the introduction of new guns and more formidable projectiles, as well as by adoption of new models. We think the English nation will grow tired of this kind of investment before long, and that if we possess our souls in peace for a few years longer, we shall have learned the folly of building great iron ships of war, without having to pay anything for the knowledge.

There are many considerations which lead to the belief that the war vessel of the future will be of very different character from the war vessel of the present time. Probably she will be of iron—possibly of steel—with a double skin, but without armor. She will be light, swift, heavily armed and capable of doing effective service as a ram. No nation will require a great fleet, for the reason that it will have no use for them. When troops are to be moved by sea, transports will be employed, sailing under convoy if protection against hostile vessels is needed. Great navies belong properly to the era of walled cities, fortified harbors and standing armies, and although they have outlived these evidences of early civilization, they have at the same time outlived their usefulness.—*Iron Age*.

Russian Way of Stopping Holes in Ships.—Russia is rapidly progressing in the practical industrial appliances as well as in the sciences and arts. In that country there has lately been invented, and successfully applied, a ready means of stopping holes made in ships by collision or otherwise. It consists of a plaster made of two rectangular sheets of canvas sewed together, bordered with rope, and containing a water-proof material. A sounding line has to be passed under the keel and brought up on the other side, then the plaster can be lowered to the hole and made fast. Several cases are cited in which this invention has been employed with advantage, and a large number of Russian ships are now furnished with such plasters. It is proposed that men be specially trained and ready for the manœuvring of the apparatus.

Interesting Object for Experiment.—In the Paris International Maritime Exhibition there is a small object deserving of notice. It is a platinum wire placed in a bottle and ignited by electricity from a bichromate battery. It is intended to be immersed in the sea, and the light emanating from it is said to attract an immense number of fishes. Experiments have been tried lately on the coast of the Cortes du Nord department with a fishing-boat, and have proved very satisfactory on a shoal of sardines. The glass must be green or black, otherwise the fish are frightened by the glare, and do not follow the submarine light.

An Old Georgia Silver Mine.

Twenty years ago, as the story runs, Mr. Pendley was living at Sugar Hill, Georgia, and was then engaged in gold mining with Moses Lott. Lott had heard of a very rich silver mine from John Lumpkin. Lumpkin had heard of it from a Baptist preacher, who lived near Carnesville; the preacher had heard it from a man who had died near him, and who, on his death-bed, had given the preacher a minute description of the mine and its surroundings. Lott told Pendley that the stranger on his death-bed said that he and other South Carolinians had come out among the Indians hunting gold and silver ore; that they crossed the Oconee at Hurricane shoals, proceeded along a well-known Indian trail to the Chattahoochee, went down it to the mouth of a large creek, and in hunting a place to cross, went up the creek some distance, where two of the Carolinians—the stranger being one—were captured by a company of Spaniards, were carried at night some four or five miles south of the head of the creek, and were put to work in a silver mine during each night, and just before day they took the silver ore upon their backs, went due south from the mine five miles to an island covered with an immense swamp growth, and in the middle of this island, in a rude shop, they worked ore and molded the metal into silver dollars; that when the Indians found them out they filled up the mine with timber and dirt, buried as much as a wagon load of silver dollars in the middle of the shop, burned down the shop, released the two South Carolinians and left; that one of the South Carolinians was lost, and that the dying man was on his way with the great secret, which he revealed to the preacher on his death-bed.

With this account Mr. Pendley set out in 1863 to find the mine answering to the description. It is situated two miles due north of Swanee creek, in Gwinnett county, and the island is on Beaver Ruin creek, five miles due south of the mine. On the island Mr. P. found cinders, Indian vessels and implements, and the hole in the ground which had been filled up by old Billy Chamblee, who cleared up the island, and who testified to having found the hole open. Mr. Pendley went to work on the old mine, and continued until his small capital was spent, and he suspended. When again his means enabled him to renew his labors, the war came on and forced him to defer it. In 1871 he resumed work again alone, followed the old tunnel by sinking shafts nearly two hundred feet, without finding anything but unmistakeable evidence of the old tunnel, which was filled with leaves, brush, oak post and timber. A few weeks ago he reached the end of the old tunnel, and found a vein of mineral ore one and a half feet thick and fifteen feet wide. Above it there is a layer of white clay; beneath it there is a hard yellow rock, and on each side there is a wall of very hard, blue sandstone. The ore consists of two layers, one bluish, the other reddish brown; is very soft—somewhat cohesive—and very heavy.—*Covington Enterprise*.

A large fortune made from valuable patents was that of the late I. M. Singer, who left property valued at $9,000,000 in the United States and $4,000,000 in Europe. It has often been observed that inventors are not apt to amass wealth. This statement, however, is wide of the truth if it means that inventors are more apt to die poor men than those who engage in other branches of business. We are very confident, continues the *Artisan*, that if a comparison were instituted between inventors and all those in this country who have engaged in mercantile business, stock speculation, or banking, it would be found that as many inventors have acquired wealth in proportion to their whole number as those engaged in any other branch of business. We might enumerate instance upon instance where very large fortunes have been made, as in the case of Mr. Singer. Should we do this, however, we might supply an argument to those who believe that patents create oppressive monopolies. We are willing to grant that when wealthy rings and cliques are enabled to control legislation, so as to obtain the renewal of patents through the aid of bribes which they could not obtain under the regular working of the patent laws, oppressive monopolies may be created and fostered; but this is to be attributed to the general corruption of officials, and it is not peculiar to the working of the patent system. Designing individuals who combine to control legislation require monopolies of privileges in other departments of business which are more oppressive than any monopoly that has yet existed having for its basis a patented invention.

Deviation in the Compass.—The deviation of the compass on iron ships has been for a long time an important subject of scientific investigation. It is now suggested that some of the sudden and heretofore unaccountable changes in the deviation of the compass on such ships are the result of an unequal and varying diffusion of heat over the iron hull. These changes are often unsuspected until they are alleged as the cause of a vessel getting out of its course and running ashore. There have been sudden slight changes—not exceeding five degrees—noticed on board iron ships on the American coasts, and these are attributed to changes in the hull, caused by the vessel passing from cold to warm water, or the reverse, as, for example, into and out of the Gulf stream, or to the effect of the sun's rays striking on one side and then changed to the other.

Mine Drainage.

A paper on "The Development of Mechanical Appliances for the Drainage of Mines," by Stephen Holman, gives a comparison between the prevailing system of drainage in Cornish mines by the large Cornish pumping engines and the direct acting steam pumps, taking the "Special" as the pioneer, the representative of that class. After his introductory remarks Mr. Holman said that the matter resolved itself into a threefold question of cost, convenience and durability of the working conditions, whether permanent or temporary. He believed that the drainage of mines would inevitably devolve upon the simple, powerful and effective "Special" class. He gave in illustration a few examples of deep single lift engines, which had been placed in mines in most cases in pairs. A pair at Suffield colliery, 24 inch steam cylinder, 7-inch pump cylinder and 48 strokes per minute, raised each 10,000 gallons of water per hour in a single lift of 525 feet. A pair at Wigan, 30 inch steam cylinder, with 10-inch pump, at 48 strokes raised each 20,000 gallons of water per hour 500 feet. Two at Newcastle, 32-inch cylinder, 7-inch pump, 72 strokes per minute, each raised 10,000 gallons of water per hour, in a single lift of 1,068 feet. These were approximate statements of duty at 100 feet of piston speed per minute. At least 2,000 of these pumps are now at work in various British and foreign mines. The system of direct acting pumping engines was even more important, however, as affecting the drainage of new mining undertakings. For this purpose the "Special" pump was peculiarly fitted by its compact and complete character. One very important feature was that the direct acting steam pump of this type could be put down in pairs, whilst Cornish engines could not. Hence, whenever a mishap occurred, causing the stoppage of the engine, the whole of the pumping ceased, which of course was not the case when the engines were in duplicate.

Honduras Interoceanic Railway.

We publish the following on the authority of the *South West*, a paper published at Madisonville, Kentucky:

"We have had the pleasure of reading the report of Charles Seymour, Esq., chief engineer of the Honduras Interoceanic Railway, from which we learn that its Pacific terminus on the bay of Fonseca is readily reached by the Pacific Mail steamships from San Francisco, and that the bay affords an unsurpassed harbor. The line will pass from south to north, commencing on the Pacific, running through Honduras to its terminus on the Atlantic. Puerto Caballos is the Atlantic terminus; it has a good harbor, and 57 miles of the line running south from this point is constructed and in running order, now being used principally in transporting mahogany, rosewood, and dye timber to the sea board, which are found in abundance along its route, as well as hides and ores from the interior. The country abounds in gold, silver, and copper, and is well adapted to raising cattle, growing coffee, sugar, oranges, and all tropical fruits. The country is healthy, and can be easily reached from New Orleans; the distance from that point to Port Caballos is eleven hundred miles. We understand Mr. Seymour's plan is to run a steam propellor twice a month each way between these points, by which means close communication is opened between that part of our great grain producing region and Port Caballos, thus affording facilities to contractors to obtain supplies from our teeming country, as well as a large amount of negro labor. We trust this railway will be built, as it will be of immense advantage to the commerce of our Atlantic and Pacific States, as well as between Asia and Europe. It has advantages over any other route, from its harbor.

Consumption of Paper.—If it be admitted that the amount of paper used in a country furnishes an indication of its intellectual condition, the statistics put forth by Dr. Albiuns Rudal, of Vienna, are of singular interest and importance. On an average, according to him, the Russian uses one pound of paper a year, and the Spaniard one and one-half pounds, the Mexican two pounds within the same period, while under the same conditions in Italy and Austria the individual consumption of paper is at the rate of three and one half pounds each. The South American uses five and one-half pounds per year, the Frenchman seven and one-half pounds, the German eight pounds, the North American ten and one quarter pounds, and the Englishman eleven and one-half pounds. Dr. Rudal calculates that the paper produced in the whole world—paper of all kinds, of hemp, of linen, of straw, of jute, of rice etc.—amounts to 1,800,000,000 pounds. Half of all this quantity is employed for printing purposes, a sixth for writing purposes, and the remaining part for divers uses. The whole may be thus categorized: For government purposes 200,000,000 pounds are used; for instruction, 180,000,000; for commerce, 240,000,000; for industrial manufactures, 180,000,000; for private correspondence, 100,000,000; and for printing, 900,000,000. For the production of these 1,800,000,000 pounds of paper, there are 3,960 manufactories, employing 90,000 men and 180,000 women. In addition, 100,000 persons are engaged in collecting rags. At the present moment the United States imports only 3,000,000 pounds, local paper making amounting to 374,000,000 pounds—*Engineer*.

A Curious Problem in Motion.

Many of our readers have doubtless seen an experiment in which a ball held by a thread between the finger and thumb, which are kept perfectly still, is gradually set in motion, as is claimed, by the *will* of the person holding it. In most cases those who try the experiment do not consciously communicate any motion to the ball, and they honestly believe that it is set swinging by mere volition, or perhaps by some electrical action. The Academy of Sciences at Paris has been lately investigating this and kindred problems, and we find in French journals an abstract of an interesting paper on the subject, addressed to that learned body by M. Chevreul.

A celebrated professor of Strasbourg, Dr. Gerboin, has ascribed the oscillations to electricity, and has written a book in which he calls it "a new kind of electrical action." This idea is not a new one, having been advanced more than a century ago. Stephen Grey, F. R. S., who died in 1736, was celebrated in his time for his experiments on conductors of electricity. He passed the last years of his life in studying the ring hanging from the silken thread, under the firm impression that he could thus prove that the force by which the planets are made to revolve round the sun was of an electric nature. In one of his experiments he supposes himself in a position enabling him to see the equatorial zone. An iron ball, about an inch and a half in diameter, and feebly electrified, is placed in the center of a circular disk of resin about eight inches across; a light body hanging from a fine thread six inches long or thereabouts, held in the hand over the ball, *describes a circular curve from west to east*; if the disk of resin be elliptical, the light body will describe an elliptical curve! Dr. Mortimer, Secretary of the Royal Society, was of Gray's opinion; but Wheeler, who had aided the latter in several of his researches, declared that the desire of the experimenter to see his theory confirmed was the real cause of these motions. The dispute was continued after Gray's death; Priestly says they could arrive at no conclusion in the Royal Society, but that he thought Wheeler was in the right. M. Chevreul proceeds to say that his own experiments now confirm Wheeler's opinion, and then lays down this principle: "That there are motions which our muscles impart to bodies without our being conscious of them, provided we think those motions possible; moreover, our eyes, *when open*, being disposed to follow them, hence the direction of the motion, which therefore takes place in consequence of our *thought*, which is not our *will*, and of an exterior accidental cause which operates on our sight."

The abstract of M. Chevreul's paper which we have seen was brief and in a popular journal, but his explanation as reported appears to be the correct one. The subject is curious and interesting, and we may refer to it again.

The New York City Fire Department.

This useful body now consists of 734 men, divided into sixty-seven companies, among which are forty-two steam fire-engine companies, seventeen hook and ladder companies, and six chemical engine companies, and a fire steamer for blowing steam into a fire. To be secure against accidental derangements, there are nine spare steam fire-engines, two hook and ladder trucks, and four tenders always ready for use. Besides this there are in the newly annexed wards in Westchester county, two steam fire-engine companies, two hook and ladder companies and four chemical engine companies; on Blackwell's island, one steam fire-engine, two hand engines and one chemical engine; on Ward's island the same, and on Randall's island and at the Catholic Protectory a hand engine each, with other apparatus.

The manner in which these bodies operate in the city is as follows: The city is divided into ten sections, with a battalion commander for each. Each captain of a company is responsible for the perfect working of the telegraph alarm boxes and fire hydrants in his district. Patrol duty is performed day and night, a few men being permanently at each company's quarters, who keep the water in the steam-boilers hot by means of a gas arrangement, and everything else always ready to start at once when an alarm is sounded by means of the telegraph, and in this way the surprising promptness is attained which is so often admired, and most of the fires suppressed in their incipient state.

The result is that while with the increase of population and property, the number of fires has been continually increasing, the total losses have during late years been greatly reduced; thus in 1871 there were 1,258 fires, with a loss of $2,127,000, while during the last year, ending June 1st, 1875, there were 1,518 fires, with a loss of $1,820,000. A corps of sappers and miners has lately been organized and trained in the use of explosives.

But the most creditable item in regard to this institution is its financial management; while the appropriation for this year was $1,316,000, not much more than half this sum had been used when two-thirds of the year had elapsed. When we consider the vast amount of labor, the addition of numerous new engines and liberal supplies, also the usefulness of this department, the amount of money it costs must be deemed to be very moderate and a wise and profitable investment. — *Manufacturer and Builder*.

Good Health.

Are New Houses Safe?

It is a very general opinion that a long time is needed for a newly built house to become thoroughly dry, and that it is not safe to live in one for several months (some say a year) after it is built. Popular opinions have generally some foundation, and I am anxious to know whether this opinion is correct, or how far it is correct.

I have shares in two associations formed to provide better and more wholesome dwellings, especially for the working classes, and I hope we have succeeded, for the death rate amongst our tenants is considerably below the average, partly owing, no doubt, to our tenants being generally of sober and steady habits, for we value peace and quietness, and so do they. We let our houses very soon after they are finished, and in reply to my inquiries I am told that the inmates of the newly built houses are quite as healthy as the others. We have taken unusual care to have every room well ventilated, which may account for the absence of apparent injury from damp, but I am not quite satisfied that we are acting prudently. I should like to be advised, if we are not, by those of wider experience.

The dampness of walls arises not only or chiefly from the water absorbed, but rather from that combined with the lime in the form of hydrate used for mortar and plaster. This combined water is displaced by carbonic acid, absolutely converting the hydrate of lime into carbonate, and it has been suggested that this change should be hastened, so that the houses may become dry more quickly by keeping the rooms filled with carbonic acid by burning coke or charcoal in them so as to fill the rooms with their fumes. This sounds feasible, but is there no danger of the conversion of the hydrate into carbonate being too rapid, and the result being a product more resembling friable chalk than hard limestone? What is done too quickly is not done well. Is this change done too quickly to be done well?

I am inclined to believe that the experience of our two associations proves that it is possible to avoid danger from the dampness of new houses by passing air through them rapidly enough to prevent its becoming saturated with moisture. Air which contains no watery vapor is neither pleasant nor wholesome. It should be about two-thirds saturated, and if this proportion be not much exceeded no injury can arise from such vapor only, and there seems no reason why, if it be derived from a damp well, it should be injurious if not in excess—*i. e.*, if the air be changed rapidly enough to prevent it becoming damp.—*Ex.*

Force and Stimulants.—The London *Lancet* remarks that at the present day our treatment has assumed a character too decidedly stimulant and not quite sufficiently nutritive. Stimulants ought to be regarded as auxiliaries to nutrition more than they are at present. Nutritive material, as milk, meat juice, eggs, and various forms of starch, ought to form a greater matter in the dietary of the sick than stimulants, whether nitrogenized or alcoholic; such materials, when assimilated, give supplies of force. Stimulants may assist in their assimilation, and do so; but in themselves stimulants only furnish limited supplies of force-bearing material. They are, however, a means by which the system may reach some of its physiological reserve fund. Such use may be advantageous or pernicious, according to circumstances; and an ill-regulated or excessive process of stimulation may give results as disastrous as a wise and intelligent resort to stimulants may be beneficial and preservative in its consequences.

Beef Extract for Invalids.—To half a pound of beef or fowl recently killed, and chopped fine, add one pint of cold boiled water, to which four drops of hydrochloric acid and one-eighth ounce common salt should also be added. After the mixture has stood an hour, throw it upon a hair sieve, or piece of muslin, allowing it to drain without pressure. The first portion passing is usually turbid, and must be returned to the sieve until it runs clear. When all the liquor has been drained off, gently pour one-fourth pint of water, in small lots at a time, upon the residual minced flesh, allowing it to run into the liquid collected. In this way will be obtained about three-fourths of a pint of cold extract of flesh, of a red color, and of a pleasant, soup-like taste. Dose, one teacupful at a time, cold. It must not be warmed, and should be prepared fresh every twelve hours, as heat will cause decomposition and the separation of a solid mass of coagulated albumen.

Striped Stockings.—Ladies who are in the habit of wearing striped stockings—a style which appears to be fast coming into fashion—should be careful about the coloring substance. A case was reported in London in which an external inflammation of the feet had been produced by wearing stockings striped with orange red. The subject was Mr. Hart Dyke, and the dye-stuff coralline.

Dr. Carpenter is inclined to believe that a purely vegetable diet, if it contains a due proportion of oleaginous matter, is capable of maintaining the physical powers of the body at their highest natural elevation, even under exposure to the extreme of cold.

Carbonic Acid in the Lungs.

This question is considered by a cotemporary as follows: Neither carbonic acid nor the other products of our respiration are injurious to us unless breathed in excessive proportion, for they are constantly present in our lungs and in the air that enters them. The air we expire is only a small part of that which our lungs contain, and a large part of that which leaves our lungs remains in the trachea and air passages to be mixed with and to warm the fresh air inspired. Though we cannot live long in air containing above three per cent. of carbonic acid, that in our lungs contains a far greater proportion of it mixed with the other products of respiration; and birds or beasts that sleep with their hills or noses covered, must inspire some small portion of the air they have previously expired, and it is no doubt good for them that they should do so, just as it is good for us that the air we inspire should mingle with that which, though it has left the lungs, remains in the air passages. Such facts distinctly show that the presence of carbonic acid in our lungs is not hurtful, for it is always there, and also that we can breathe again a part of the air we have once breathed, for we always do so.

What, then, is the reasonable explanation of the depression we feel and the injury we sometimes suffer from breathing air mingled with a little of that which has been breathed by ourselves in men even *in good health* some little time before? Is it not that the organic matter contained in the expired undergoes very rapid changes, and that, though it is not immediately, it very soon becomes injurious unless it be very widely diffused. It is by some believed that actual fever can be produced by overcrowding, filth and bad ventilation. Except by zymotic germs proceeding from a case of fever, it would, however, be rash in the extreme to rely on such a doctrine, for feverish disturbance is constantly being produced by want of fresh air alone, and not a few instances of typhus have, at least apparently, arisen from the same cause, combined with overcrowding, without previously existing disease. Of course, when disease is present, whether the hypothetical zymotic germs be a reality or not, free ventilation is pre-eminently needed, and experience has amply proved that that, together with scrupulous cleanliness, is the most effective preventive of disease, just as cleanliness rarely fails to keep away the itch and lice, the first of which probably, and the last certainly, derive their *immediate* origin from living organisms. Dirty people suffer much from personal vermin, and those only who breathe dirty air, including in that, air rendered foul by pulmonary and cutaneous perspiration, are in any great danger from fever.

Anæsthesia Two Centuries Ago.—The practice of anæsthesia in ancient surgery is referred to by Middleton, the old dramatist, 1657, thus:

"I'll imitate the pities of old surgeons
To this lost limb, who, ere they show their art,
Cast one asleep, then cut the diseased part."

Dr. Hager recommends the use of the following powder for excessive sweating of the feet: Burnt alum, five parts; salicylic acid, two and a half parts; wheat starch, fifteen parts; Venetian talc, fifty parts; mix and make a very fine powder.

Useful Information.

Peanut Oil.

The rapid extension of the cultivation of peanuts in North Carolina, Virginia, Tennessee, Georgia and South Carolina is due to the use now made of them for the oil they contain. According to official agricultural reports, previous to the year 1860 the whole crop aggregated only 150,000 bushels per annum, grown principally in North Carolina; last season's product reached 2,000,000 bushels, valued at $3,000,000. In a commercial point of view the oil is of much more importance than the nuts themselves. The oil is in large demand, and answers for many purposes as a substitute for olive and almond oils; it keeps a long time without becoming rancid. The amount of oil contained in the nut varies according to latitude and other favorable conditions and circumstances, and is proportionately large.

All the oil comes from the "meat," the husk being of no value. The oil is extracted by pressure, and the pressed cake is used both as food for cattle and as manure. Algiers also supplies the port of Marseilles with large quantities of these nuts, from which the oil is expressed, and probably destined to augment the supply of the olive oil for which that city is so great a market. The production of peanut oil in the United States dates back to the war, when it was used to a large extent for table purposes in the South, olive oil being almost unobtainable; it was also used quite generally at that time as a substitute for lard. The cake residuum was made serviceable also; after being roasted and ground it was used in place of coffee and chocolate, making a tolerable, if not a desirable beverage.

Straw matting is most readily washed with a cloth dampened with salt water. Indian meal sprinkled over it and thoroughly swept off will also clean it pretty thoroughly.

Explosive Prescriptions.

The following bits of "useful information" seem to show that our common toilet article of glycerine is a dangerous substance to deal with when compounded. Nitro-glycerine is not its only explosive compound:

The *Pharmaceutical Journal*, of Vienna, states that the following prescription was sent to a pharmacist: "Chromic acid, eight grains; glycerine, one drachm. For external use." The dispenser dissolved the acid with a little water in the phial by a slight shaking; the glycerine was then poured in, and the phial again shaken. Thereupon the compound exploded with a very loud report, and was projected with force to the ceiling of the shop. The phial, which did not break, became coated with a black pigment, and remained in the hand of the frightened dispenser. The case deserves attention from the fact that the ingredients were in such small quantities and the explosion so powerful.

Curious Action of Glycerine Upon Borax.

Following is another instance of a similar nature, as narrated by Mr. F. Long in the *British Medical Journal:* "I had occasion to make an alkaline lotion a short time ago, which consisted of borax, bicarbonate of soda, chlorate of potash, glycerine and water. After the ingredients were put in end the bottle filled with water, I added half an ounce of glycerine and corked the bottle. To my surprise, in a few seconds violent action began to take place, and I was obliged to remove the cork for fear of an explosion. I could not understand what had taken place, and could only think that there was some acidity in the glycerine. But such was not the case—it was perfectly neutral to test-paper; and the other chemicals, I believe, were perfectly pure. I then repeated the experiment in the following way, and a very interesting one it was, perfectly inexplicable to me, and of which I can gather no information from any work. I put into a test-tube about equal parts of powdered borax and bicarbonate of soda; I then added some glycerine, which of course sank through the solution of soda, and rested over the borax; chemical action immediately began, the glycerine immediately became dissipated, and the borax was dissolved. I have repeated the experiment several times, and have obtained the same result with the carbonate, although not to the same amount. The change is evidently at the expense of the glycerine; for if only a few drops be added the action soon stops, to be renewed with greater intensity if a larger quantity be then added. I am not a sufficient chemist to unravel the decomposition."

The Restoration of Strasbourg Cathedral.—A letter from Strasbourg to the *Industriel Alsacien*, of Mulhausen, says, "The repairing of the damages caused by the bombardment to the cathedral has been going on for three years, and is yet far from completion. The injury done is incalculable, the fragments of the bombs having penetrated to every part of the building. The restoration of the nave and the replacing of the whole roof occupied two years, and the last year has been spent in repairing the tower and the spire, the straightening of the part of which, from a height of 350 feet upwards, is one of the boldest architectural feats of our day. The architect estimates that more than a year will yet be required to restore the magnificent structure to its former perfection."

Transferring Pictures.—Pictures may be transferred to painted surfaces in the following manner: Cover the ground with an even coat of light colored carriage varnish, which should be allowed to set (nearly as dry as if for gilding). If the print to be transferred be colored, soak it in salt and water; if not colored, use water alone. Remove superfluous water by pressing between blotting pads, and then place the picture face down upon the varnish, pressing it smooth. When the varnish is dry, dampen the paper and rub it off with the finger. The picture will be found upon the varnish, and another coat of the latter should be added to bring out the effect. This process answers equally well for glass or metal surfaces.

A New Method of Marking Tools.—Much trouble can often be saved by marking tools with their owners' names, which can easily be done in the following manner: Coat the tools with a thin layer of wax or hard tallow, by first warming the steel and rubbing on the wax warm until it flows, and let it cool. When hard, mark the name through the wax with a graver, and apply nitric acid; after a few moments wash off the acid, and wipe with a soft rag, when the letters will be etched into the steel.

Purifying Gas.—The experiments which have been recently made at the joint expense of three of the principal gas companies of London, and conducted by Mr. Vernon Harcourt and Dr. Siemens, in order to ascertain the best means of eliminating sulphur impurities from gas, have failed to be immediately productive of any practical result, and have been discontinued. The experiments were estimated to cost between £500 and £600, but they have exceeded an outlay of £3,000.

To fix labels on tin, use French polish or a solution of shellac in naphtha or alcohol.

Domestic Economy.

Rye—How to Cook and Eat It.

Rye is not as much grown as of yore, yet it is a staple product in many localities, and the following receipts for rye cookery, contributed to a late number of *Science of Health* by Miss Julia Colman, will prove of interest and value to many readers;

Rye Gems.

Take ice cold water, as for wheat gems, and stir in good rye meal, entirely unbolted, sifting with one hand, stirring with the other, until they are of a consistency much thicker than that required for wheat. Experiment with a few at first, making some thicker than the others (the last about as thick as you can well stir them), so as to be sure to get the right consistency before making them for the table. Then bake them a little more than you would wheat, and serve warm or cold as you prefer. We like them warm.

Rye and Wheat Gems.

Those who do not fancy so much of the rye taste, may soften it a little by putting in one-third wheat and then making them into gems, precisely as for wheat or rye alone, making them not quite so thick as the latter.

Rye and Indian Gems.

These are made very much like the rye gems, only one-fourth of the meal should be corn meal, of medium fineness. It does very well without scalding, though in that case it should be baked very thoroughly. If scalded, it should be mixed so thick that the gems need to be smoothed with a wet spoon before putting them into the oven. Otherwise they will seem soft and mushy. If rather soft, let them stand some minutes after they are out of the oven before serving them. This will do them more good than trying to bake them in the oven.

Rye and Indian Loaf.

Take two quarts of coarse corn meal, wet it thoroughly with two quarts of boiling water, add two quarts of rye meal, mix intimately, make into a loaf three or four inches deep, or, if convenient, put into Boston brown bread pans, place on top of the stove, where it is barely hot enough to make it simmer, let it stand here until it cracks well over the surface, say an hour and a half or two hours. Then put into a hot oven, bake two or three hours, according to the size of the loaf, then cool the oven gradually, or take a loaf out and steam it an hour or two.

Rye Mush.

If the rye meal or rye Graham be coarse, sift it into boiling water with one hand, stirring with the other. If it be fine, pour the meal into boiling water and stir vigorously until thoroughly wetted and of the consistency you wish it when done. Then in either case, cover close and set it where it will cook slowly, from forty to sixty minutes or more. Dates may be added to this if desired, stoning them and stirring them in just before serving. Dress the plain mush with stewed currant.

Rye and Indian Mush.

Use two parts rather coarse corn meal and one part rye meal, stirring in the corn meal first and cooking a while if desired, then adding the rye meal, stirring very carefully, then cover close and cook slowly one hour or more.

Rye and Rice Mush.

Boil one pint of rice in three quarts of water for three minutes, then add coarse or fine rye Graham as above, and cook one hour.

Vienna Yeast.—The Vienna bread is reputed to be the best in the world. It is said to owe its superiority to the peculiar yeast employed, which is also used in the manufacture of the celebrated Vienna beer. This Viennese yeast, according to the London *Chemist and Druggist*, is prepared in the following way: Three kinds of grain, namely, Indian corn, barley, and rye (all sprouting), are powdered and mixed, and then macerated in water at a temperature of 65° to 75° C. In a few hours saccharification occurs. The liquor is then racked off and allowed to clear, and alcoholic fermentation is set up by the help of a minute quantity of yeast. As fermentation progresses the globules of yeast reproduce themselves by a species of budding, engendering at first very small globules, but these rapidly increase in size. Carbonic acid is disengaged during the process with so much rapidity that globules of yeast are thrown up by the gas, and remain floating on the surface, where they form a thick scum. This scum is carefully removed, and constitutes the best and purest yeast. When drained and compressed by a hydraulic press, it can be kept from eight to fifteen days, according to the season.

Harlequin Jelly.—With the extra refined gelatine, make a gallon of clear jelly; color with various fruit dyes. The juice extracted from spinach leaves will give a fine green; cochineal, red; the zest of orange, rubbed on crystal sugar, yellow. These, with various colors from fruit jellies, will afford a number of hues. Have a large mold, into which put the various colored jellies in an almost solid state, to prevent their mingling. When full, set the mold aside until perfectly set, then turn it out on a glass dish, when the various colors will be found tastefully blended and marbled. These variegated dishes are very ornamental to the table.

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W. B. EWER.....SENIOR EDITOR.

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San Francisco:

Saturday Morning, Oct. 23, 1875

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Award of Premiums at the Mechanics Fair.

The following ie a list of awards made hy the committees of the Mechanics' Institnte Fair, in addition to those given in our issue of last week:

SILVER MEDALS.

San Francisco Plating Works: For Plated Ware.
D Tisch: Best display of Foliage Plants.
Mrs A C Cook: Best Preserved Flowers, Oakland.
Pacific Copper Works: Soda Generator, first premium.
Geo H Tay & Co: Best California Made Stove Castings.
Bowen Bros: Best General Exhibit of Groceries.

DIPLOMAS.

C Gulttard: Best Chocolate, first premium.
Ghiradelli & Co: Coffee and Spices, first premium.
J Vogeley & Bros: Best Fancy Candies, first premium.
C C Burr & Co: Mustard and Spices.
California Italian Paste Company: Maccaroni Paste and Farina, first premium.
J Johnson: California Made Starch, first premium.
Aldeu Fruit Company: Dried Vegetables, first premium.
C Newman: For Patent Covered Demijohn.
Emily R Eastman: Largest exhibit of Painted Photographs.
John F Snow: Best display of Cleaued and Dyed Goods.
Dexter & Co: Bon Bons, first premium.
Painter & Co: Printers' Material, first premium.
John Newman and Bennett, Soda Fountains, first premium.
Henry Marsh: Brass Musical Instrument, first premium.
B Bendel: California Made Matches, first premium.
Chenery, Souther & Co: Green Ginger Brandy.
D Mecarini: Plaster-Work, first premium.
Miss E A Rockwell: Miniature Painted in Oil.
Savage & Son: Cast Iron Work.
Swan Brewery: Best exhibit of California Ale and Porter, first premium.
N Seibert: For Lubricator, first premium.
C O Farciot: Hanger.
Saulbach: Boiler Protector.
August Lisewski, aged 18 years: For Ingenuity in Making a Piano.

CERTIFICATES OF MERIT.

Mrs M Williams: Worsted Work.
Miss Mary Condon: Spatter Work.
Miss Hillpish: Colored Wax Flowers.
Mrs C E B Howe: Group of California Pioneers (Photograph.)
Natban Joseph: Exhibit of Cutlery.
E A Knowland: Feather Work.

A New Feature of the Comstock Lode.

At the meeting of the California Academy of Sciencee last Monday evening, the following interesting paper, entitled "Notes on a New Feature of the Comstock Lode," was read by Dr. G. F. Becker, of the Univereity of California:

It is well known to those who have had occasion to make themselves familiar with the Comstock lode, that throughout that portion of the vein which lies in Virginia City, the west or foot wall is a continuation of Mt. Davidson; aud consists, like the mass of that mountain, of syenite; while the east wall is a porphyry, more nearly described as a trachytic greenstone, or propy'ite. The direction of the fissure subsequeutly filled by the vein matter of the Comstock, was plainly determined hy the previously existing surface of contact between syenite and propylite, which naturally offered less resietance to rupture than the solid maes of either adjoining rock. This is clear from the fact that for over a thousand feet from the surface, only insignificent masses of either rock were found on the side of the vein opposite to that of which they are especially characteristic. So strong was the influence of the direction, both in strike and iu dip, given to the fissnre hy the presence of this comparatively weak surface of oontact in the rocky mass, that the fissure extending in hoth directions away from Mt. Davidson into solid propylite, unaccompanied hy syenite, retained the strike (nearly north aud south) and the dip (from 35° to 50°) of the Virginia portion, almost unaltered.

This very clearly defined influence of the contact snrface, was of itself good reason for snpposing that the fissure in Virginia must follow the dividing plain between syenite aud propylite to a very considerahle depth, and not improhahly to one heyond the reach of mining operations. Nevertheless, although the snbject has been very wisely left in abeyance hy the geologiste who have publicly discussed the Comstock, it cannot have escaped any of them that the fissure could not indefinitely follow this contact; for the propylite is recognized hy them as a volcanic rock which has overflowed the older syenite, and therefore, nnless we should make the highly improbable assnmption that the syenite, (which in Virginia is plutonic), the propylite and the vein matter eminated snccessively from a siugle fiesure in the earth's crnst, a lowest point in the contact between the underlying syenite and the overlying propylite must eventually occur, from which the fissure would naturally descend towarde the seat of the force by which it was caused. From the moet depressed point in the contact surface, the fissure would pass into the underlying, or syenite rock, and doubtless out of it further below, into whatever may nnderlie it in its tnrn.

From the point where the fissure leaves the contact between the two species of rock, its dip would in all probability be controlled hy circnmetances very differnt from those which decided it in the portion lying near the croppinge; for, from the point at which the fissure forming shock impinged upon the lower surface of the syenite, the fracture must have followed the direction of least resistance, or presumahly a straight line, and the shortest line from the point in which the subterranean force encountered the syenite, to the nppper surface of that formation; and a moment's thought will serve to show, that apart from local nnd altogether incalculable irregularities iu the lower snrface of the rock, this line could continue in even approximately the direction of the present dip, only in case the syenite not only formed a coue above the general level of the country, but filled n vast depression helow it as well. The passage of the lode into the syenite would therefore naturally be accompanied hy a change in dip, towards the perpendicular.

In May last I made observations, repeated aud extended in August, which seem to establish beyond question the hitherto unnoticed fact that the lower workings of tho miues in Virginia City have reached the point at which the fissure passes from the contact surface between the syenite of Mt. Davidson and the country porphyry, (propylite,) into the underlying syenite. The depth below the surface at which this change occnrs, is not very far from 1,500 feet.

This statement is hased upon the following obscrved facts: In the Chollar-Potosi mine, the north and south drift on the 1,150-ft level, ehowe a wall of syenite for a distance of sevenl hundred feet, which is considered in the mine to be the true east wall. The rock is very solid in charaoter, exhibiting none of the evidences of dynamical action commonly seen iu inclnded rock, or horses. The wall is accompanied by clay seams.

In the Hale & Norcross an unhroken mass of syenite lying east of tho vein is exposed, to a thickness of 110 feet, hy the cross-cut from tho station on the 2,100 foot level. The croes-cut from the 2,200 foot station bad advanced on August 20th to a distance of 100 feet from the shaft. For the whole of this distance the dr ft was in solid syenite, and the face showed no signs of the proximity of the vein. The hottom of the incline, 2,230 feet below the surface, as well as its whole lower portion for a distance of several hundred feet, is in unhroken syenite. The syenite is said to have heen struck as high as the 1,200 foot level. The dip of the vein is rapidly increasing in the lower levels of this mine, which accounts for the distance of the incline stations from the east, or hanging wall of the lode.

In the Savage the incline shaft has heen from at least as high as the 1,900 foot level to its present depth of 2,280 feet in solid syenite. From the 2,100 foot station, ahout 200 feet of syenite was paesed through hefore the vein was renched, and on the 2,200 foot a still greater thickness. This syenite is plainly the same hody struck in the Hale & Norcross, 600 feet distant, and in the Chollar-Potosi, 1,000 feet further south. The dip of the vein in the Snvage is rapidly increasing in the lower levels.

In the Gould & Curry the east wall is inaccessible, but a large body of syenite is found withiu the vein, and the main "horse" rock of the mine in the lower levels (1,500 and 1,600 feet,) is syenite. Although an inspection of the east country rock in this mine would he much more satisfactory than an inference, it seems to me fair to conclude that had the comparatively soft and hrittle propylite porphyry formed the east wall, the main inoluded rock would have been of that species.

In the Best & Belcher and the Consolidated Virginia, too, the east clay seams have not been pierced for fear of tapping a water hody, but the included rock on the 1,500 foot and on the 1,565 foot levels of the Consolidated Virginia, where not too much decomposed for recognition, is generally syenite.

In the California, the third oross-cut on the 1,500 foot level has been run into the east country, which proves to he syenite of the solidest description. This wall seems to be very nearly perpendicular.

In the Ophir, syenite has been struck at several points on the 1,465 foot level to the east of the vein, and near the south line has been penetrated to a depth of three hundred feet; on the 1,708 foot level an east wall of syenite has been opened up for some 600 feet in the direction of the vein, and hae been penetrated to the east to a distance of over 200 feet. The walls of the vein in the Ophir in the lowest levels are nearly perpendicular.

From the above it appears that for over a mile, the east wall of the lode on the lower levels, wherever struck, is eyenite; that in the mines hetween the Ophir and the Chollar-Potosi, where the east wall has not been reached, good grounds exist for inferring the existence of syenite to the east of the vein; that although the syenite hae been pierced in a number of places to a distance of several hundred feet, both horizontally and perpendionlarly, no other formation has been reached, nor any indication that its limits have been approached; on the contrary, this eastern syenite is apparently ae solid as Mt. Davidson itself. The tough and comparatively undecomposed condition of this syenite as contrasted with the porphyry, is deserving of epecial remark. It further appears that where the relations between the vein and the walls of the fissure have been most completely exposed, the occurrence of syenite on the east wall is accompanied by a very decided increase in the angle of dip.

I therefore conclude, that throughout the Virginia section, the point has been reached at which the Comstock enters the syenite.

The Gold Hill mines seem nowhere to have reached the syenite, as was to he expected, since from the conformation of the country, the syenite, if it underlies the porphyry in Gold Hill as well as in Virginia, will probahly be met with only at a much greater depth.

To establish the exact line of the paesage of the vein from the propylite into the syenite, would of course require a epecially authorized examination of the mines, since n majority of pointe in which the east wall has been struck are hidden from view, either hy the closure of drifts no longer essential to the working of the mines, or hy lagging in the shafts, etc.

Many important deductions, were this the place for them, might be hased npon a ohange in the conditions of the Comstock lode, which must he fraught with exceedingly important consequences to the greatest mining interest of the Pacific coast; hut I prefer to confine myself to submitting to you the fact of this remarkable, and at this time most unexpected alteration in tho character of the vein.

WORKMEN are busy grading the foundation for the large engine in Griffith's stone cutting works at Penryn. Part of the machinery is on the ground, and extensive additions are being made to the works.

MR. ELISHA RANSOM, of the firm of W. A. Holcomb & Co., grain merchants in this city, was shot and severely injured hy a burglar whom he discovered in his house, a few evenings since.

AT their last quarterly meeting the San Francisco Chamber of Commerce refused to do away with "collection day."

Two Chinese residents of Marysville were murdered by a drunken man on Wednesday last.

VERY damaging floods have occured in England within the past few days.

Notices of Recent Patents.

Among the patents recently obtained through Dewey & Co.'s SCIENTIFIC PRESS American and Foreign Patent Agency, the following are worthy of mention:

IMPROVEMENT IN ENDLESS ROPE TRACTION RAILWAYS.—A. S. Hallidie, San Francisco. This is an improvement in that class of railways in which an endless wire rope, moving in an underground tube, is used for propelling the car nlong the track. In this class of railwaye, a gripping device which is secured upon the car, has a shank passing down through a slot in the upper side of the tnhe, and to the lower end of which, inside of the tube, the gripping jaws are arranged to grip the rope. This invention relates, first, to an improved device for closing the elot in order to prevent it from becoming clogged by the lodgment of foreign substances in it, and to prevent the wheels of vehicles from dropping into it; and secondly, to an improved pulley for supporting and guiding the rope where it changes its direction at the top and bottom of an incline.

DEVICE FOR CUTTING PRINTERS' LEADS.—J. A. T. Overend. This is an improved machine for cutting the epacing leads nsed hy printers into lengths for the different kinds of work required; it consists in the employment of an angularly placed table upon which the leads are supported by a slight projection extending hack from the cutter on one side. Upon the opposite side is an adjnstable stop in line with the lead, and this determines ite length. The cutter is mounted upon a projecting lug, and operatee through a elot in the table, and as the leads are cut off they elide down the inclined face of the table, so ae to be out of the way. The face of the cutter lever, when it moves against the lug, is chambered, and this gives the advantage of a rim heating, which ensures perfect steadiness, and also n chamber for oil.

PAINT COMPOUND.—I. L. Merrell, San Francisco, California. This invention relates to an improved paint iugredient and compouud. The ingredient which the inventor adds to paint compounds is pulverized and finely ground soapstone (steatite.) This substance, when added to ordinary lead or othor mixed paint, will give it a heavy hody and greatly improve its durability, while it does not interfere with its flowing quality, while heing laid on with the brush. It also renders the paint, to a certain extent, fire-proof. The inventor prepares a special mixture for paint, in which the substance is used.

TYPE CASTING MACHINE.—J. A. T. Overend, San Francisco. The object of this invention is to provide a machine for casting movable type and then conveying them directly from the matrix and mold to another part of the mechanism, by which the type are hrokon from the stem, and rubhed or cleaned, and emoothed of any irregular projecting edges which may have been formed in casting. The whole operation being continuous and requiring no power but that required to drive the machine.

MUSIC LEAF TURNER AND HOLDER.—George L. Dampfel, Benicia, California. Thie is a very ingeuious piece of mechanism, to be employed in turning the leaves of hooks or loose music, while the performer is playing, without stopping or ueing the hands; there is also a device for holding such looee leaves in place while they are being turned. A detailed description of the invention would hardly be understood without the aid of an engraving.

IMPROVED FAUCET.—Wm. C. Bussey, San Francisco. The object of this invention is to provide a faucet for drawing liquids from harrels, casks and other vessels, through which the liquid can he drawn, and its flow regulated, without the employment of a rotating plug or epigot, thus not only providing a cheaply manfactnred faucet bnt one which will have no joint to wear and leak. The faucet can be made of either wood, metal, or other material.

A WASHINGTON dispatch etates that in the United States supreme court, case No. 673, United States appeals *vs.* Barbara Soto, *et al.*, appeal from the district court of the United States for the district of California, on motion of M. Bean, it was ordered by the court that the appenl in this cause be docketed and dismissed. No. 74 United States appeal *vs.* Jose Antonio Estudillo, appeal from the district court of the United States for the district of California, on motion of M. Blair, ordered by the court that the appeal in this cause he docketed and dismissed.

A NEW steamer of the Inman line has made the trip from New York to Queenetown in seven days, fifteen hours and forty-eight minutes, which ie alleged to be the shortest time port to port ever made across the Atlantic in either direction.

A LONNON telegram announces the death of Sir Charles Wheatstone, who ie claimed hy many to he the inventor of the electric telegraph, and Professor of Experimental Philosophy in King's College.

IT is reported that the Pacific Mail company have sold their wooden side-wheel steamers on the Japaneee waters for local trade. The amount realized is said to he $800,000.

Improvement in Saw Teeth and Matching Knives.

The accompanying engraving represents a segment of a saw plate, provided with the Randolph patent lip teeth, the solid tooth having one lip, and the inserted tooth two lips. It also represents two matching knives, to be used with cutter heads (the knife for cutting the groove, and one of the knives for cutting the tongue) in making flooring, ceiling, etc.

The main features in the construction of these teeth and these knives consist in constructing them with a cutting lip, or lips, and giving the whole a forward curve, so that they cut the lumber instead of tearing or scraping it, the cutting edges of the teeth, or knives, as the case may be, being in the same plane with the cutting edges of their respective lips, and radial, or nearly so, to the center of the saw plate or cutter head. The advantages claimed for this saw tooth over any other tooth in use, as demonstrated by actual tests made near this city, are:

First. A saw provided with these teeth requires but two-thirds the power to drive it that is required to drive the same saw provided with any other teeth in use, and as a consequence will carry one third more feed and will cut one-third more lumber with the same power in the same space of time.

Second. These teeth cut the lumber smoothly and therefore can cut a much less kerf than any other teeth in use, making at least seven boards where other teeth would make but six boards from the same timber; or, in other words, making from the same timber seven thousand feet of lumber, where any other teeth in use would make only six thousand feet.

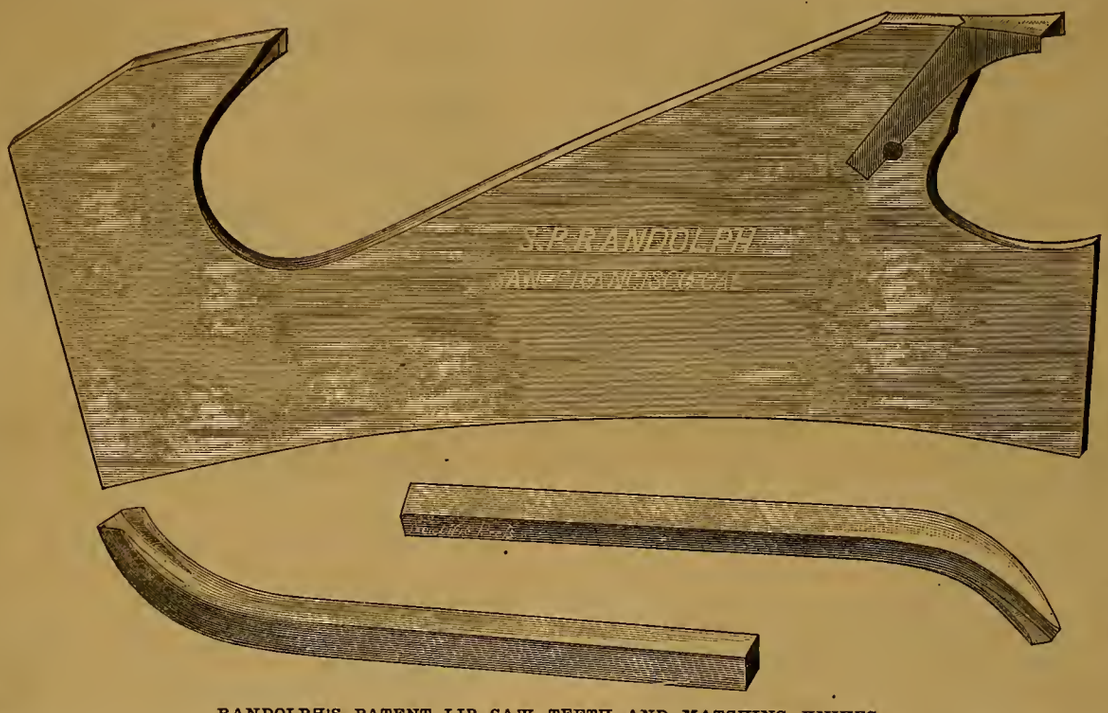
Third. The teeth require sharpening only once in four or five days, and if kept out of gravel, then only a little on the inside (never on the outside), with a small file, and need not be removed from the said plate till worn out, retaining their width without any perceptible depreciation, cutting a uniformly even kerf, and the lumber of even thickness without any change of the set-works.

The advantages claimed for the Randolph patent matching knives are: That after once set properly in the cutter heads, they need never be removed therefrom till worn out, requiring no sharpening except a very slight dressing on the inside once in about five or six days with a small file, retaining their full width until worn out. It is claimed by actual demonstration a set of these knives will run for three months without being removed from the cutter head, and that the flooring or ceiling made the first month will match that made the last month perfectly, a result which cannot be obtained with the ordinary matching cutters, because the wear upon them reduces their width, so that the width of the tongues and grooves is continually varying.

This knife was adopted and used with perfect success by Mr. E. Soule, corner 6th and Berry streets, San Francisco, in making the flooring for the Palace hotel in this city, after much difficulty with the knife in ordinary use from heating, the flooring being very hard oak.

The Randolph knife will run through the hardest knot, and will take off one and one-half inches from the edge of flooring with the greatest ease, and without splitting or fracturing the edge, even of cross-grained lumber, and without choking the machine.

The inventor, S. P. Randolph, can be found at present at the office of S. N. Putnam, No. 704 Montgomery street, San Francisco, where any further information can be obtained.



RANDOLPH'S PATENT LIP SAW TEETH AND MATCHING KNIVES.

Instead of using machinery in the vintiug of wine many of the Los Angeles mannfacturare employ (so the papers say) clean limbed, strong muscled Indians to tramp out the purple fluid from the luscious fruit.

A special telegram from Berlin says that the Turkish government has declared its willingness to give the great powers any guarantees, compatible with the nation's dignity, for the fulfilment of her financial programme.

The Monterey whaling companies have, during the last season, been the recipients of many large and oily favors, having captured upwards of 100 whales, and obtained over 2,000 barrels of oil.

General business in New York city is reported as being very much depressed.

Saving Gold from Sulphurets.

Messrs. Editors:—The remarks of Mr. Melville Attwood, republished in your last issue, are interesting, but his conclusions do not seem to accord with facts within my knowledge.

As I presume Mr. Attwood is not like the French philosopher, who, in a similar case, said, with a shrug, "so much the worse for the fact; I cannot 'elp eet;" I will state those facts, in the hope that he may be induced to throw some further light on a subject of great importance.

Some years ago, having to assist in working some very rich auriferous pyrites, I took a small sample of the matter, and, by pulverizing in an agate mortar, and very careful washing, tried to find out in what condition the gold existed. I was enabled to recognize the particles of gold, which were comparatively coarse, by their ductility under the pestle; but, though they were distinctly flattened, I utterly failed, by grinding, to develop the gold color, as they persistently retained the precise hue of the sulphurets till roasted, or treated with nitric acid, when the gold was distinctly visible to the unaided eye, nor could I induce it to unite with quicksilver until so treated.

On other occasions I have examined pyrites which, however finely pulverized, failed to show gold with the aid of a good lens, yet on being burned, or treated with acid, it was abundantly visible without the lens.

As to the Cometock ore, Mr. Attwood thinks that only two per cent. of the contained silver is in a mineralized state, by which I understand that all the rest is metallic. I am not prepared to dispute this, though, with all respect, I take the liberty to doubt it; but it is well known that the parties engaged in working those ores have been in the habit of guaranteeing only 65 per cent. of the assay, and the best results I have ever heard claimed for the common pan process did not exceed 75 per cent. of the value, a considerable portion of which was gold, which probably exists entirely in the metallic state in these ores; while I have been repeatedly assured, by those who ought to know, that not more than 50 per cent. of the silver is extracted on an average.

Now this ore is all ground fine, and according to Mr. Attwood's views it would seem that a better result should have been attained; for though he considers it an error to grind in the pans, instead of crushing finer in the batteries, I presume he does not attribute the failure to amalgamate to that circumstance. Neither can this failure be ascribed to the use of chemicals, for it is well known that chemicals in pans have been discarded altogether by some operators; not, however, because of any positive detrimental effect, but because of the doubt as to a beneficial effect; and the question is, I believe, still an open one as regards the use of bluestone and salt in pans of rapid motion, the simple fact being, as I have repeatedly pointed out in these columns, that the full effect of these substances cannot possibly be got under such conditions, for the reason that, if added at the time of charging the pans, the ore is in too coarse a state to be rapidly acted on by the chloride of copper; whilst if the ore is ground in the pan, either before or after the addition of these, or any useful agents, the finely divided iron which is separated by abrasion from the shoes and dies, and distributed through the pulp, soon decomposes the salts of copper, or combines with acid, and results simply in chloride of iron, which is of little, if any use. Any benefit which is obtained from the use of bluestone under such conditions must be due rather to the action of reduced copper, than to the action of copper chlorides on the ore.

Granting then, that the chemicals, as used in the pan process, amount to but little either way, the fact remains, that fine grinding and amalgamation fail to give satisfactory results. Does Mr Attwood suppose that it would make a material difference if the ore, instead of being rather coarsely crushed and then ground fine in the pans, were to be finely crushed and amalgamated without grinding (and without chemicals) in barrels? Even if the case were as Mr. Attwood supposes, it would still be very doubtful if any advantage could be thus gained, as it can be shown that results which leave little or nothing to be desired can be got by the use of chemicals, *properly applied*, without such very fine crushing as would be necessary without chemicals, and at less cost. In the Patchen process, the chemicals are applied to the ore as it comes from the battery, crushed, perhaps, a little finer than is usual, but not extremely fine, in a wooden or copper vessel, before the amalgamation in pans, and the results are stated to be over 90 per cent.

In 1868 I treated, in a small way, Comstock ores just as they came from the stamps, by amalgamation, with the aid of chemicals of the value of 50 cents to the ton, exclusive of salt, and obtained 90 per cent. of the silver and 80 per cent. of the gold, the value ranging from $22 per ton up to hundreds. If the chemicals are used directly in the pans, it is much better to use the dichloride of copper than bluestone and salt, as is fully shown by Dr. Linzweert,

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Men and teams are busy at work on the line of the proposed railway from Dumbarton Point to Alviso. About half the distance (six miles) has been graded over high ground. The remaining portion is across marsh land and will require ditching and dyking, and be performed mostly by Chinamen. About two miles of this work has to be done between Newark and the landing on the Bay, and about four miles just this side of Alviso.

The Santa Rosa *Democrat* says that the north part of that town is rapidly improving; building after building is going up, and others are in contemplation as soon as College avenue is opened. Wilson's Addition is now offered for sale in lots, and altogether real estate is in demand, and the prospects healthy for an advance in values the coming season.

The Hollister *Enterprise* reports that R. M. Shackelford is driving along the water contract for the works in that village, as fast as possible. Hands are at work excavating the foundation for the reservoir on the top of the hill. The well pipe and most of the other machinery are on the ground.

The Concentrating Works at Falun, Sweden.—Continued.

[Written for the Press by Chas. C. Rukeyer.]

The Pulverization of the Stamp Stuff and of the Jigging Wastes.

For the pulverization of that part of the pick stuff which contains the copper pyrites in fine seams, or finely disseminated, and for the further liberation of the valuable minerals in the jigging wastes, eight stamp batteries of four stamps each are used for the present.

The stamp stuff from the sorting tables is raised on the hoists, and the jigging products by means of the cup elevators, from the dressing floor into the garret, and are there transported by rail into the hoppers behind the stamps; these contain for each battery one compartment of 150 cubic feet capacity. From these hoppers the ore is fed mechanically into the mortars of the batteries.

The discharge from the stamps takes place with so-called backed water; part of the brass wire screens have holes of 1.5 millimeter, and part of 0.7 millimeter.

The whole pulp of batteries *d* 1 is collected into one sluice, which carries it over four small funnel boxes. Down to the discharge holes of these funnels run half-inch iron pipes, contracted at the lower mouth, which carry in water under high head, whereby the funnels are kept open; the fine sands and slimes are also thereby separated from the coarse sands discharged from the lower orifice of the funnels. This funnel discharge, consisting of fine grit and coarse sand, is raised by the cup elevators *d* 2 and *d* 3 into the classing drums *d* 4 and *d* 5, and the overflow of the funnels likewise by the elevators *d* 6 and *d* 7 into the V boxes for grading.

These classing drums, *d* 4 and *d* 5, are seven feet long, and conical, as those before described, but they are provided with two concentric mantlets of punched sheet copper. The largest diameter of the inner mantle is 4' 4", the smalles 3 ft. 6 in., and the perforations 1 mm., while the holes in the outer mantle are 0.7 mm. The distance between the mantles three and one-half inches.

The four inch steel shaft of the drum lies horizontal. The mean peripheral speed of the drum is 2.2, so that ten revolutions per minute result.

These drums produce three classes *jigstuff*, the reserve of the inner mantle, consisting of 1.5 mm. grit; the reserve of the outer mantle, of one mm. sand; and the screenings of the latter. of 0.7 mm. sand. Grit and sand run directly into six Harz. sand jiggers, *d* 8.

Each stamp pulverizes seventy to eighty pounds stamp stuff per hour, when 1.5 mm. screens are used; with screens of 0.7 mm. openings, the work of each stamp is only fifty-five to sixty-five pounds.

The consumption of battery water is per stamp and minute about 0 4 cubic feet, when the 1.5 mm. sieves are used, and 0.3 with the finer.

The thirty-two stamps and the six jiggers require the attendance of one man only, who executes besides the smaller repairs on the batteries.

The frames of the batteries are of cast iron, and rest on cast iron bed plates, being bolted to them, and down to the foundation. The stems of the stamps are of two and three-fourth inch steel, square section, and are eight feet long. They are driven directly into the cast iron shoes. These latter have a recess five and one-half inches deep in their upper end, lined with wooden wedges, between which the taper end of the stem is driven. The face of the shoes is square, because filling up the space in the mortar more than the round form. The wooden guides of each stem can be set up independently of the others in a very simple and convenient manner, which is certainly a good point.

The weight of the fully armed stamp is 380 pounds, Swedish. They make fifty-seven to sixty drops of eight to ten inches per minute.

The cast iron cams are triple, and are faced with exchangeable one-half inch steel plates.

A further detailed description of the stamp batteries is omitted, as being not of sufficient interest here. Although of good and simple construction, having many excellent points in the details, especially as compared with other European stamp batteries, still they are not,

(Continued on Page 268.)

DEWEY & CO.

American & Foreign Patent Agents.

OFFICE, 224 SANSOME STREET, S. F.

PATENTS obtained promptly; Caveats filed expeditiously; Patent reissnes taken ont; Assignments made and recorded in legal form; Copies of Patents and Assignments procured; Examinations of Patents made here and at Washington; Examinations made of Assignments recorded in Washington; Examinations ordered and reported by Telegraph; Rejected cases taken np and Patents obtained; Interferences Prosecuted; Opinions rendered regarding the validity of Patents and Assignments; every legitimate branch of Patent Agency Bnsiness promptly and thoroughly conducted.

Our intimate knowledge of the varions inventions of this coast, and long practice in patent business, enable ns to abundantly satisfy our patrons; and our success and business are constantly increasing.

The shrewdest and most experienced Inventors are found among our most steadfast friends and patrons, who fully appreciate our advantages in bringing valnable inventions to the notice of the public through the columns of our widely circulated, first-class journals—thereby facilitating their introdnction, sale and popularity.

Foreign Patents.

In addition to American Patents, we secure with the assistance of co-operative agents, claims in all foreign countries which grant Patents, inclnding Great Britain, France, Belginm, Prnssia, Anstria, Victoria, Pern, Rnssia, Spain, British India, Saxony, British Colnmbia, Canada, Norway, Sweden, Mexico, Victoria, Brazil, Bavaria, Holland, Denmark, Italy, Portugal, Cnba, Roman States, Wurtemberg, New Zealand, New South Wales, Queensland, Tasmania, Brazil, New Grenada, Chili, Argentine Republic, AND EVERY COUNTRY IN THE WORLD where Patents are obtainable.

No models are required in European countries, hut the drawings and specifications shonld be prepared with thoroughness, by able persons who are familiar with the requirements and changes of foreign patent laws—agents who are reliable and permanently established.

Onr schedule prices for obtaining foreign patents, in all cases, will always be as low, and in some iostances lower, than those of any other responsible agency.

We *can and do* get foreign patents for inventors in the Pacific States from two to six months (according to the location of the conntry SOONER than any other agents.

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We invite the acquaintance of all parties connected with inventions and patent right bnsiness, believing that the mutnal conference of legitimate bnsiness and professional men is mntnal gain. Parties in donbt in regard to their rights as assignees of patents, or purchasers of patented articles, can often receive advise of importance to them from a short call at our office.

Remittances of money, made by individual inventors to the Government, sometimes miscarry, and it has repeatedly happened that applicants have not only lost their money hut their inventions also, from this cause and consequent delay. We hold onrselves responsible for all fees entrnsted to onr agency

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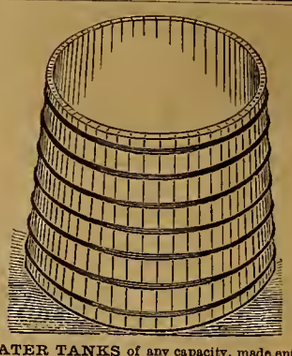

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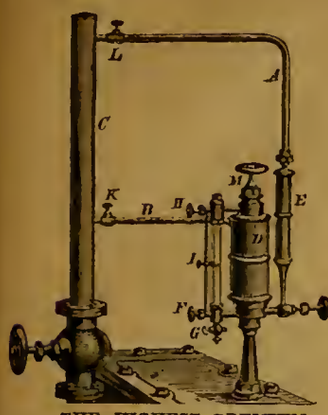

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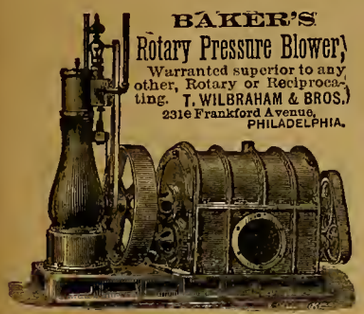

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(Continued from Page 265.)

as a whole, likely to be imitsted in this country.

Tbe self-feeders for the bstteries are similar to those used for the feeding ot the rubbisb wash drum and tor the Cornish rollers, as above described. The percussion trough is six feet long and seven inches wide, the inclination 20°. The upper end is hung with rods to the hopper, the lower rests nn a roller. Instead of being pushed hack hy a csm, as above, the tappet of the stamp strikes npon an upright rod, which acting on a simple angle lever, sffects the backward movement ot the feed trough; tbis movement does not exoeed one-tonrih ct an incb. A componnd rnbber buffer propels the trough back into its normal position. On the arm ot the angle lever on whicb the npright rod rests, is an adjnstment, to compensate for tbe wear of tbe shoe and die.

These self-teeders hsve not once failed to serve during the eighteen months in which the stamps have been in use. They are not new, a similar construction having been in use tor quite a long time in Austrian concentrating works. The main difference is in tbe use of the rubber buffer, for the forward propulsion nf the trough, with which, bowever, tbe effect is more pertect, as it permits a regulation of the feed at any moment, hy a simple adjustment of the tension of the buffer.

The Tulloch's teeder here used ie neither as simple nor as perfectly adjuetable as the self-feeder at Falnn; its portable form, however, makes it better adapted to the batteries as here constructed.

Cast steel sboes and dies bave snbsequently been introduced, whereby the interruptions beoame less frequent, and the oost for repairs diminiehed, while at the same tims the effect is materially hightened, hecause tbe faces nf such shoes and dies remain quite regular for a long tims.

VI. The Sieving or Jigging.

For ths eortiug ot the rnbbish, classed with tbe sieve drums, and ot the gravel, grit and coarse sands, produced in the work ot the rock breakers, the rollers and the stamps, twenty-five jigging machines are need. These are set up in a row, as near as possible to the classing drums, so that the jigstuff, as above mentioned, is delivered directly iu part, partly by mecbanioal contrivances, into the sieves of the jiggers.

Fourteen of these jiggere are entirely of iron, as they are made by the mining machiuery wnlks nf the Humboldt company in Deutz, near Cologne. The meohanism for the movement of the pietous in these machines is such as to produce a slow upwsrd, and a rapid downward motion, and consists for the gravel machines of a orank and slide lever movement, whereas in the jiggers tor the finer stuff tbe piston rod is raised by a cam, and is propelled downward by a ruhber bnffer. The tension of the latter and tbe lift of the oam is regulated with ecrews. Each machine is provided with a tight and loose pulley. Tbe boxes of the jiggers are made nf strnng ebeet iron, and the frames into whioh the sieves ars laid, are of oast iron.

All of these jiggers are fitted up to be automatic and work contiuuously, in oontormity with all the other machinery in the works

Besides these iron jiggers, tbere are eleven in operation whose boxes are made of two-inch wooden staves, lined inside with one-inch boards. Four ot these are tor tbe treatment of tbe coarse sande and grit. These also have a slow npward and an accelerated downward motion ot the piston. Tbe mechanism here also consiete ot two shafts, one of them carrying on a short arm in the middle the piston rod; tbe other the pulley shaft. Each shaft carries at one end a lever, and these are connected with each other by a short rod. The action here is the same as in the orank and elide lever motion, but the mechanism ie simpler.

For the adjustment of tho stroke ot the piston, the arm to whicb the latter is attached is also provided with a elide pin.

Seven wooden jiggers and two iron oues are erranged to discharge through an ore bed; that is, the conoentrated stuff passes through a strata of ore, resting on the eievee, into the bottom compartment of the machine. The motion is here given to the pistons by eccentrios, acting directly on to the piston rods.

For the eorting of the classed jigstuffs from the rubbish washing works, the eeven jiggere, *a* 10 to *a* 16, are need. The store boxes, which receive the reserves ot the classing drums, stand so high that the sluices mediating the transportation of the material into the sieves have the requisite fall.

Below tbe floor of the etore boxes runs a wrought iron shaft, carrying for each clase of jigstuff a cell wheel one foot in diametor. On the extreme end ot the shaft is a toothed wheel, which ie put in motion by the engaging of a pawl in connection witb rod and lever, causing tbe contente of the cells to discharge into the transportation eluices, and turther on into tbeir respective sievee. The transportation in the gutters or eluices is effected with the aid of water, and to facilitate it, the gutters have an elliptio torm, and are lined inside with sheet iron; or they bave an elliptic bottom ot caet iron, whicb can be exchanged when worn out.

Three of the jiggers serve for two sorts ot gravel each; while one sort is heing fed into the eieve, the other accumulatee in the etore box. The four machines following, work ouly one sort each, so that tor tbese the corresponding etore boxes and teeding meohanisms come into requisition, only in oase of repairs on one or the othsr of the jiggers.

Each jigger yields two products or sorts, namely, the *jig ore* for the smelting works, with five tn ten per cent. copper, and the skimmings, with one to two per cent. copper, which are subjected to fine polverizstion in the stsmp batteries. These skimmings or jigging wsstes are discharged at each stroke of tbe piston, over the whole width nf the overflow of the sieve box, and run, together with tbe water, into the basin ot elevator *a* 17, and are there lifted into a reservoir in the garret. Out of this reservoir they drop into cars plsced beneath, and are thence transported into the hoppers hehind tbe stsmp batteries.

To rid the skimmings of water as mnch as possible, tbe cnps of tbe elevator are perforated with three mm. holes. The elevator has a slow motion, only about 0.13 feet per secoud, so that tbe cup tskes 3.8 minutes to perform its upward journey. The cups being filled to only about one-eigbth their capscity, permits the draining ot the water the more easily. Moreover, the bottom ot tbe store box into which the cups disoharge, is provided with a grate, between whicb the water can take its passsge back into the elevator basin.

Barren ssnds or deads can rarely be separated in jigging, because the skimmings almost invariably contain finely disseminated copper pyrites.

Since with the arrangement just desoribed, only trifling hand labor is required, the seven jiggers are attended to by one man.

For the sorting of the material produced by the rock breakers, and olaseed in the apparatus *b* 5 and *b* 6, the seven jiggers, *b* 9 to *b* 15, are in use. Their arrangement and operation corresponds witb that above described.

Tbese yield, like those, rioh oree for the smelter, with about six to fourteen per oent. copper, and skimmings or wastes, with 1.5 to 2.5 per cent. copper for fine pulverization under stamps; tor this purpose the latter are lifted by the elevator, *b* 16, into the store box in the garret.

The attendance ot these eeven jiggers also requiree the services of but one man.

The sorting of the material resulting trom tbe classification of the product from the Cornish rollers, is pertormed by tbe five jiggers following, c 9 to c 13, the arrangement for feeding and discharge being the same as just above described.

Each of tbe first tbree of these machines serves for working two sizes, the two following for one size only. They yield, as the others, two products or sorts, namely: jig ore, with six to fourteen per cent. copper, tor the smelter, and tbe skimmiugs, with 1.5 to 2.5 per oent oopper tor fine pulverizstion. These letter are raised by the elevator *a* 14 into tbe garret, and there dnmped into railroad care.

The fiftb of these jiggers, c 13, serves for the sorting of the screenings of the seventh olaseing drum, consieting ot 0.7 mm. sand, whicb is separated from the reet of the pulp by a smell funnel, and flowe directly into the jigger. It yielde "small ore" tor the smelter, with five to nine per cent. copper, and "good waste," witb one to 1.5 per cent. oopper, which is litted, together with the pu'p from the stamp batteriee into the boxes tor grading, and thence given to their respective machines for further separation.

The above five machines ars also attended by one man ouly.

The eortiug ot the material separated from the battery pulp, in the manner above described and olassed in the sieve drums *d* 4 and *d* 5, ie done in the following six Harz. ssnd jiggers, *d* 8 to *d* 13, whose construction hae heen intimated above, and whiob vary from the usual construction ouly in tbat they hsve only one sieve each.

The classed etuff consists, as already mentioned, ot 1.5 mm. grit, aud one mm. and 0.7 mm. eend.

E ch class has its own maohine, or, there are three of these for each classing drum, the arrangement being suob, tbat the corresponding class trom eaoh drum can be carried into one eieve. The discbarge of the funnels at the batteries can likewiee be given to either of the two elevatore, *d* 2 or *d* 3, in case one ot these, or one of tbe drums, bas to be repaired, etc.

The jigstuff is delivered from the drums directly into the sieves. The machines yield "small ore," with five to nine per cent. copper, which passes through tbe ore bed on the sieve, and ie diecbarged contlnnously out of a one-fourth inch hole in the bottom of the machine; and overflow sands, with 0.8 to 1.5 per cent. copper. The overflow ot one to 1.5 mm. eize, is raised by the elevator *d* 14, haok into the stamp battery tor further disintegration, while tbe finer, consisting of 0.7 mm. sand, runs into tbe elevator basin, *d* 6 or *d* 7, to be raised with the rest of the pulp into the V boxes for grading and further separation.

These eix machinee are attended to by the workman iu charge of the batteriee.

[To be Continued.]

Appreciation Abroad.—We copy the following from the *Mining and Monetary Gazette*, of London, Eng.: "We deemed it advisable, as affording valuable information to our readers, to publish in recent issues of *The Gazette*, the full text of the "United States Mining Laws and Instructions, by the Commissioner of General Laud Office," taken from our talented contemporary, The Mining and Scientific Press, of San Francisco. The documents have now heeu issued in a handsomely-hound volume by Messrs. Dewey & Co., the publishers of onr transatlantic contemporary, and it will he found very nseful to those already interested in American mines, and to others who may be tempted to embark in that enterprise in the States."

Woodward's Gardens embraces an Aquarum, Museum, Art Gallery, Conservatories, Tropical Houses, Menagerie, Seal Ponds and Skating Rink.

Academy of Sciences.

The regular semi-monthly meeting of the California Academy of Sciences was held on Monday eveuing last, Dr. Henry Gibbons, Sr., in the chair.

Dr. G. F. Becker read a paper entitled "Notes on a new Feature of the Comstock Lode," which we give in another column.

Dr. Hermann Behr read a short paper on

The Phylloxera.

He said, among other things, that tbis terrible vine-destroying insect very much resembles tbe common mosquito in its general appearance. It first attracted the attention of scientists in England in 1863, making its appearance among the vines grown in hot-honses. The history ot this destructive insect is somewhat hypothetical. In the language nt science the phylloxers is one of the "aphidians," and is propagated exclusively by parthogenesis, that is, the insects all belong to one sex. Each temale, after depositing her eggs, dies. The number of eggs deposited diminisb with each generation. According to the best anthorities, each individual insect lays npon an average no more than four eggs. From these eggs develops a new form ot phylloxera, the winged female, whioh swarms and deposits a brood of wingless males and females, the malee coming from small eggs, the females from larger ones. These small ineecte, destitute of organs capable of inflicting direot injury to vegetation, are nevertheless exceedingly dengerous, for they are the indirect agente of wide-spread devastation. If it were not for the winged variety, tbe phylloxera, with its imperfect organe ot locomotion, would speedily die out with the vines which turnisb it with food and shelter. From the utilitarian point of view of the vine-grower, the one important thing to be done is to destroy the winged variety—the "flyers"—whicb are the moet dangerous and at the same time the most accessible to offensive warfare. The wingless form is partially protected by its subterranean mode of lite, and by a powertul vitality that resists the effecte ot all ordinary poieone. But to approach the practical and ntilitarian side of the eubject, whioh most nearly concerns the grape-growers of tbe State. Like the moth and the mosquito, the phylloxera is tond of light. It ie attracted irresietibly by the glare of conflagration. Dr. Behr infere from tbie dietinctive tendency of the insect that the best praoticel mode ot guarding against its ravagee is to kindle bonfiree in the vineysrde ravished by them, thus luring them to immolation by fire.

Snail Shells.

Mr. R. E. C. Stearne read a paper on the "Vitelity of Land Shells." He sbowed a living specimen of a snail shell, one of many collected by Profeesor Davidson in 1873. After a sleep of over two years, the presenoe of ohickweed and other succulent vegetablee revived the torpid creatures, and they awoke from tbeir lethargic repose. One in the Britieh Musenm lived four years; and another case of a six-year term of lite is reported. It will be noticed that these animals come from rainless regione, where the tood supply of land molluske is precarious. Doubtleee by a procese ot evolution they were adapted to their habitat. Long hibernation gives them vitelity, and we bave another illustration of the compeneate work of nature. Mr. Stearns aleo submitted for publication desoriptione of two new shells. We will give Mr. Stearne' paper in tull in our next issue.

Mr. Henry Edwards submitted for publication, No 15 of his series of papers on "Pacific Coast Lepidoptera," being a description ot a new species of *catocula*, from San Diego.

Mr. J. F. Jerome presented specimens of candle nut. Mr. C. D. Gibbes described thie as *Aleurites triloba*, a tree of the family *Euphorbaceæ*, which growe to the hight of twenty or tbirty teet. The trnit is about two inches in diameter, the inner nut a very hard shell, within which the meat is preserved for yeere. It ie good to eat, but rather rich. The nil is easily expressed and is imported into England for candle-making. As a drying oil it ranke among the best. This is called by the natives of the Sandwich island the "Kukui tree." The Hawaiians string the kernele of the nuts on slender strips of bamboo and ligbt them as candlee. They burn well, with a peculiar but pleasant odor.

Our Agents.

Our Friends can do mnch in aid of our paper and the cause of practical knowledge and science, by assisting Agents in their labors of canvassing, by lending their influence and encouraging favors. We intend to send none but worthy men.

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Patents & Inventions.

A Weekly List of U. S. Patents Issued to Pacific Coast Inventors.

From Official Reports for the Mining and Scientific Press, Dewey & Co., Publishers and U. S. and Foreign Patent Agents.]

By Special Dispatch, Dated Washington D. C., Oct. 19th, 1875.

For Week Ending October 5th, 1875.*

Mortising Chissl.—Arthur Robert Watterson, S. F., Cal.

Chimney Stack.—Theodore C. Nativel, San Jose, Cal.

Shingle Machine.—Willism P. Valentine, S. F., Cal.

TRADEMARKS.

For Coolers and Refrigerators.—E. K. Howes & Co., S. F., Cal.

For Tobacco ann Cigars.—Tho Consolidated Tobacoo Co., S. F., Cal.

*The patents are not ready for delivery by the Patent Office nntil some 14 days after the date of issne.

Note.—Copies of U. S. and Foreign Patents furnished by Dewey & Co., in the shortest time possible (by telegraph or otherwise) at the lowest rates. All patent business for Pacific coast inventors transacted with perfect security and in the shortest possible time.

METALS.

[WHOLESALE.]

Wednesday m., October 20, 1875.

American Pig Iron, ₱ ton	38 00	@	36 00
Scotch Pig Iron, ₱ ton	35 00	@	37 00
White Pig, ₱ ton	— —	@	33 00
Oregon Pig, ₱ ton	— —	@	40 00
Refined Bar, bad assortment, ₱ ℔	— —	@	— 3½
Refined Bar, good assortment, ₱ ℔	— —	@	— 4
Boiler, No. 1 to 4	— —	@	— 5½
Plate, No. 5 to 8	— —	@	— 5½
Sheet, No. 10 to 14	— —	@	— 5½
Sheet, No. 16 to 20	— 5¼	@	— —
Sheet, No. 22 to 24	— 6	@	— —
Sheet, No. 26 to 28	— 6½	@	— —
Horse Shoes, per keg	7 50	@	8 00
Nail Rod	— 10	@	— —
Norway Iron	— 9	@	— —
Rolled Iron	— 6	@	— —
Other Irons for Blacksmiths, Miners, etc.	— —	@	— 4½
Copper—			
Braziers'	— 35	@	— —
Copper Tin'd	— 37½	@	— —
O'Niel's Pat	— 37½	@	— 40
Sheathing, ₱ ℔	— 24	@	— 40
Sheathing, Yellow	— —	@	— 25
Sheathing, Old Yellow	— —	@	— 12½
Composition Nails	— 24	@	— —
Composition Bolts	— 24	@	— —
Steel—English Cast, ₱ ℔	— 20	@	— 25
Anderson & Woods American Cast	— —	@	— 16½
Drill	— —	@	— 16½
Flat Bar	— 18	@	— 22
Plow Steel	— 9	@	— 10
Tin Plates—			
10x14 I C Charcoal	10 50	@	11 00
10x14 I X Charcoal	12 50	@	13 00
Roofing Plate I C Charcoal	10 00	@	10 50
Banca Tin	— 26	@	— —
Australian	— 18	@	— 20
Zinc—By the Cask	— —	@	— 11
Zinc, Sheet 7x3 ft, No 7 to 10 ₱ ℔	— —	@	— 11
do do 7x3 ft, No 11 to 14	— —	@	— 11½
do do 8x4 ft, No 8 to 10	— —	@	— 11½
do do 8x4 ft, No 11 to 14	— —	@	— 12
Nails Assorted sizes	3 60	@	3 75
Quicksilver, per ₱ ℔	— 80	@	— 85

LEATHER.

[WHOLESALE.]

Wednesday m., October 20, 1875.

City Tanned Leather, ₱ ℔	22@28
Santa Cruz Leather, ₱ ℔	22@28
Country Leather, ₱ ℔	22@28
Stockton Leather, ₱ ℔	25@28
Jodot, 8 Kil., per doz	$50 00@ 54 00
Jodot, 11 to 13 Kil., per doz	68 00@ 72 00
Jodot 14 to 18 Kil., per doz	82 00@94 00
Jodot, second choice, 11 to 16 Kil. ₱ doz	57 00@ 61 00
Cornellian, 12 to 18 Ko	57 00@ 67 00
Cornellian Females, 12 to 13	63 00@ 67 00
Cornellian Females, 14 to 16 Kil	71 00@ 76 50
Simon Ullmo Females, 12 to 13, Kil	60 00@ 63 00
Simon Ullmo Females, 14 to 15, Kil	70 00@ 72 00
Simon Ullmo Females, 16 to 17, Kil	73 00@75 00
Simon, 18 Kil., ₱ doz	81 00@ 83 00
Simon, 20 Kil. ₱ doz	65 00@ 67 00
Simon, 24 Kil. ₱ doz	72 00@ 74 00
Robert Calf, 7 and 9 Kil	35 00@ 40 00
French Kips, ₱ ℔	1 00@ 1 35
California Kip, ₱ doz	40 00@ 6 00
French Sheep, all colors, ₱ doz	8 00@ 18 00
Eastern Calf for Backs, ₱ ft	1 00@ 1 25
Sheep Roans for Topping, all colors, ₱ doz	8 00@ 13 00
Sheep Roans for Linings, ₱ doz	5 50@ 10 50
California Russett Sheep Linings	1 75@ 4 50
Best Jodot Calf Boot Legs, ₱ pair	5 00@ 5 25
Good French Calf Boot Legs, ₱ pair	4 00@ 4 75
French Calf Boot Legs, ₱ pair	4 00@ —
Harness Leather, ₱ ℔	24@ 32½
Fair Bridle Leather, ₱ doz	48 00@ 72 —
Skirting Leather, ₱ ℔	33@ 37½
Welt Leather, ₱ doz	30 00@ 50 00
Calf Leather, ₱ foot	17@ ⅜
Wax Sids Leather, ₱ foot	17@ —

LUMBER.

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Rough refuse, ₱ M	14 00	Fencing, ₱ M	22 50
Rough clear, ₱ M	30 00	Flooring and Step, ₱ M	32 50
Rough clear refuse, M	20 00	Flooring, narrow, ₱ M	35 00
Rustic, ₱ M	32 50	Flooring, 2d quality, M	25 00
Rustic, refuse, ₱ M	24 00	Laths, ₱ M	3 50
Surfaced, ₱ M	30 00	Furring, ₱ lineal ft	— —
Surfaced refuse, ₱ M	20 00	REDWOOD—Retail.	
Flooring, ₱ M	28 00	Rough, ₱ M	22 50
Flooring, refuse, ₱ M	20 00	Rough refuse, ₱ M	18 00
Beaded flooring, ₱ M	30 00	Rough Pickets, ₱ M	18 00
Beaded floor, refuse, M	25 00	Rough Pickets, p'd, M	20 00
Half-inch Siding, M	22 50	Fancy Pickets, ₱ M	30 00
Half-inch siding, ref, M	16 00	Siding, ₱ M	25 00
Half-inch, Surfaced, M	25 00	Surfaced and Beaded	37 50
Half-inch Surf. ref., M	18 00	Long Flooring	35 00
Half-inch Battens, M	22 50	Do do refuse, ₱ M	25 00
Pickets, rough, ₱ M	13 00	Half-inch surfaced, M	32 50
Pickets, rough, p'ntd	16 00	Rustic, No. 1, ₱ M	40 00
Pickets, fancy, p'ntd	25 00	Battens, ₱ lineal foot	½
Shingles, ₱ M	3 00	Shingles ₱ M	— —

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[Corrected Weekly by Charles Sutro & Co.]

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Cloverdale Mining Company — Location of principal place of business, San Francisco, California. Location of works, Cinnabar District, Sonoma County, California.

Notice is hereby given, that at a special meeting of the Stockholders, held on the fifteenth day of October, 1875, an assessment, (No. 3) of two hundred dollars per share was levied upon the capital stock of the corporation, payable immediately, in United States gold coin, to the Secretary, at the office of the company, No. 305 Clay street, San Francisco, California.

Any stock upon which this assessment shall remain unpaid on the 15th day of November, 1875, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Thursday, the 15th day of December, 1875, to pay the delinquent assessment, together with costs of advertising and expenses of sale. ED. B PARTRIDGE, Secretary.

Office, No. 305 Clay street, San Francisco, California.

Keystone Quartz Mining Company—Principal place of business, San Francisco, California. Location of works, Butte Township, Sierra county, California.

Notice is hereby given, that at a meeting of the Board of Directors, held on the 22d day of September, 1875 an assessment (No. 5) of fifty (50) cents per share was levied upon the capital stock of the corporation, payable immediately, in United States gold and silver coin, to the Secretary, at the office of the company, northwest corner Pine and Sansome streets, San Francisco, Cal.

Any stock upon which this assessment shall remain unpaid on the 8th day of November, 1875, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Monday, the 29th day of November, 1875, to pay the delinquent assessment, together with costs of advertising and expenses of sale.

LOUIS VESARIA, Secretary.

Office, northwest corner Pine and Sansome streets, San Francisco, California.

Hope Quicksilver Mining Company—Location of principal place of business, San Francisco, California. Location of works, Cinnabar Mining District, Sonoma County, State of California.

Notice is hereby given, that at a regular meeting of the Board of Directors, held on the 2d day of August, 1875, an assessment (No. 2) of Five cents per share was levied upon the capital stock of the corporation, payable immediately, in United States gold coin, to the Secretary, at the office of the company Room 2, No. 403 California street, San Francisco, Cal.

Any stock upon which this assessment shall remain unpaid on the 8th day of September, 1875, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Thursday, the 30th day of September, 1875, to pay the delinquent assessment, together with costs of advertising and expenses of sale.

JACOB HARDY, Secretary.

Office, Room 2, No. 403 California street, San Francisco California.

POSTPONEMENT.—The date of the delinquency of the above assessment is postponed to the 8th day of October, and the date of delinquent sales to November 1st, 1875. By order of the Trustees. J. HARDY, Secretary.

September 8, 1875.

SECOND POSTPONEMENT.—The date of the delinquency of the above assessment is postponed to November 9, 1875, and the day of delinquent sales to December 1, 1875. By order of the Board of Trustees.

JACOB HARDY, Secretary.

San Francisco, October 8, 1875.

Mount Auburn Gold Quartz Mining Company. Location of principal place of business, San Francisco, Cal.

Notice.—There are delinquent upon the following described stock, on account of assessment, levied on the 25th day of August, 1875, the several amounts set opposite the names of the respective shareholders, as follows:

Names.	No. Certificate.	No. Shares.	Amount.
Frank McCopplu	35	10	$ 2 50
Isabella O Prince	5	100	25 00
Isabella O Prince	1	100	25 00
Isabella O Prince	10	50	12 50
Isabella O Prince	11	50	12 50
Isabella O Prince	12	50	12 50
Isabella O Prince	13	50	12 50
M Klinkstrom	16	100	25 00
J Trigg	17	5	1 25
Henry Eitel	18	10	2 50
Henry Eitel	41	10	2 50
M A Cary	19	25	6 25
M A Cary	28	10	2 50
E J Hutchinson	20	25	6 25
E J Hutchinson	21	25	6 25
Nicholas Larhig	55	100	25 00
Nicholas Larhig	22	10	2 50
Nicholas Larhig	23	10	2 50
Nicholas Larhig	25	10	2 50
Nicholas Larhig	26	10	2 50
Robert Kirk	30	75	18 75
Robert Kirk	31	100	25 00
Robert Kirk	32	100	25 00
Robert Kirk	33	100	25 00
Charles Baum	29	300	75 00
James Curley	30	20	5 00
James Curley	31	20	5 00
James Curley	32	20	5 00
James Curley	33	20	5 00
James Curley	34	20	5 00
John Rouke	35	20	5 00
John Rouke	36	20	5 00
John Rouke	37	20	5 00
John Rouke	38	20	5 00
John Rouke	39	20	5 00
S D Melville	42	100	25 00
S D Melville	48	100	25 00
S D Melville	29	125	31 25
P N Carroll	43	50	12 50
P N Carroll	44	50	12 50
E H Coe	69	100	25 00
P H Canavsu	45	1000	250 00
Jacob Bacou	49	50	12 50
P Kedrollvausky	45	50	12 50
N Kavigiu	47	50	12 50
Ohas J Hohler	50	200	50 00
Mrs Dr Howard	8	100	25 00
Mrs Dr Howard	9	100	25 00
Mrs Dr Howard	10	100	25 00
Mrs Dr Howard	11	100	25 00
Mrs E B Rider	12	100	25 00
Mrs E B Rider	13	100	25 00
Catharine Carney	14	100	25 00
Mrs Mary Relay	60	25	6 25
Heywood & Hendley	61	100	25 00
Elbridge Durhrow, Trustee	53	15	3 75
Elbridge Durbrow, Trustee	54	35	8 75
Mrs Cosgrove	18	25	6 25
Joseph Jourden	57	50	12 50
Johu Nugeut	58	10	2 50
Oco T Kuox	51	25	5 25
M M Harkness	36	990	247 50
M M Harkness	63	50	12 50
Solomon Johnsou	15	100	25 00
Solomou Johnsou	16	100	25 00
Solomou Johuson	23	500	125 00
Solomou Johnson	24	100	25 00
Solomon Johnson	25	100	25 00
John C Jamisou	53	5	1 25
M M Hill, Trustee	37	500	125 00

And in accordance with law, and an order of the Board of Directors, made on the 25th day of August, 1875, so many shares of each parcel of said stock as may be necessary, will be sold at public auction, at the auction house of John Middleton & Son, 310 Montgomery street, on the 28th day of October, 1875, at the hour of 10 o'clock A. M., of said day, to pay said delinquent assessments thereon, together with costs of advertising and expenses of sale.

O. A. JAMES, Secretary.

Office, No. 402 Montgomery street, Room 0, San Francisco, California.

Pacific Wool Growing Company—Location of principal place of business, San Francisco, Cal. Location of works, Santa Barbara county, Cal.

Notice is hereby given, that at a meeting of the Board of Directors, held on the 25th day of September, 1875, an assessment (No. 2) of four dollars per share was levied upon the capital stock of the corporation, payable immediately, in United States gold coin, to the Secretary, at the office of the company, room 28 Stevenson Building, No. 331 Montgomery street, San Francisco, Cal.

Any stock upon which this assessment shall remain unpaid on the 27th day of October, 1875, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Saturday, the 20th day of November, 1875, to pay the delinquent assessment, together with costs of advertising and expenses of sale. By order of the board of Directors.

O. D. SQUIRE, Secretary.

Office, room 28 Stevenson Building, 331 Montgomery street, San Francisco, California.

Yosemite Mining Company—Location of works, Humboldt County, Nevada.

Notice.—There are delinquent upon the following described stock, on account of assessment (No.) levied on the 29th day of July, 1875, the several amounts set opposite the names of the respective shareholders, as follows:

Names.	No. Certificate.	No. Shares.	Amount.
A H Atwater	Not Issued	5	$ 1 25
D H Crowe	Not Issued	100	25 00
W H Hedges	49	5	1 25
W H Hedges	60	15	3 75
N M Hedges	61	35	8 75
E H Levy	Not Issued	10	2 50
Jas Mannlug	119	20	5 00
S Roseuthal	137	10	2 50
S Roseuthal	118	10	2 50

And in accordance with law, and an order of the Board of Directors, made on the 29th day of July, 1875, so many shares of each parcel of such stock as may be necessary, will be sold at public auction, by R. D. W. Davis & Co., No. 219 Sansome street, San Francisco, on Saturday, the 23d day of October, 1875, at the hour of two o'clock P. M., of said day, to pay said delinquent assessment thereon, together with costs of advertising and expenses of the sale.

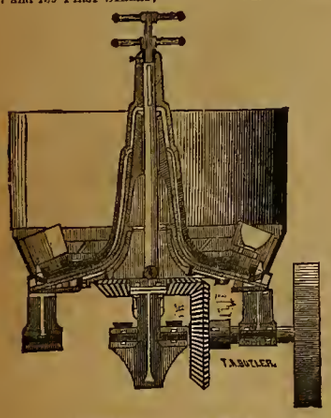
S. O. PUTNAM, Secretary pro tem,

Office, 210 Battery street, S. F.

Iron and Machine Works.

Occidental Foundry,

137 and 139 First Street, - - San Francisco



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IRON CASTINGS of all descriptions at short notice. Sole manufacturers of the **Hepburn Roller Pan** and **Callahan Grate Bars**, suitable for Burning Screenings.

NOTICE.—Particular attention paid to making Superior Shoes and Dies. 20v26.3m

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Iron and Locomotive Works,

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CAPITAL.....$1,000,000.

LOCATION OF WORKS:

Corner of Beale and Howard Streets,

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Manufacturers of Steam Engines, Quartz and Flour Mill Machinery, Steam Boilers (Marine, Locomotive and Stationary), Marine Engines (High and Low Pressure). All kinds of light and heavy Castings at lowest prices. Cams and Tappets, with chilled faces, guaranteed 40 per cent. more durable than ordinary iron.

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Wm. Norris, Wm. H. Taylor, J. B. Haggin,
James D. Walker.

WM. H. TAYLOR.....President
JOSEPH MOORE...Vice-President and Superintendent
LEWIS R. MEAD.....Secretary
24v17-qy

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MANUFACTURERS OF

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Quartz, Flour and Saw Mills,

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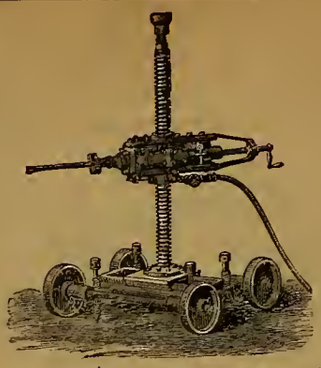

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PNEUMATIC DRILLING MACHINES,

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AND SPECIALLY DESIGNED TO MEET THE REQUIREMENTS OF MINERS ON THE PACIFIC COAST

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All kinds of Castings of Iron and Brass,

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THE ONLY SAFE BLASTING POWDER IN USE.

GIANT POWDER, NO. 1,

For hard and wet Rock, Iron, Copper, etc., and Submarine Blasting.

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For medium and seamy Rock, Lime, Marble, Sulphur, Coal, Pipe Clay and Gravel Bank Blasting, Wood, etc.

Its EXCLUSIVE use saves from 30 to 60 per cent. in expenses, besides doing the work in half the time required for black powder.

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Established for the Manufacture of

RAILROAD AND OTHER IRON

—AND—

Every Variety of Shafting,

Embracing ALL SIZES of

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HAMMERED IRON

Of every description and size.

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☞ The highest price paid for Scrap Iron.

SHEET IRON PIPE.

THE

Risdon Iron and Locomotive Works

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Are prepared to make SHEET IRON AND ASPHALTUM PIPE, of any size and for any pressure, and contract to lay the same where wanted, guaranteeing a perfect working pipe with the least amount of material.

Standard sizes of railroad Car Wheels, with special patterns for Mining Cars. These small wheels are made of the best Car Wheel Iron, properly chilled, and can be fitted up with the improved axle and box—introduced by this company, and guaranteed to outlast any other wheels made in this State.

☞ All kinds of Machinery made and repaired.

24v22-8m JOSEPH MOORE, Superintendent.

IRA P. RANKIN. Established 1850. A. P. BRAYTON

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Geo. W. Fogg, Supt.

MACHINERY AND CASTINGS

OF EVERY DESCRIPTION.

Heavy Forging Boilers, Stationary and Marine.

JOBBING AND REPAIRING WORK OF EVERY KIND. SPECIAL ATTENTION GIVEN TO MINING AND HOISTING MACHINERY.

Sole Manufacturers and Agents of

PRALL'S PATENT STEAM PUMP.

GODDARD & CO., Props.

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MANUFACTURERS OF ALL KINDS OF

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Steam Engines and all kinds of Mill and Mining Machinery.

Also manufacture and keep constantly on hand a supply of our

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Persons engaged in the following business can have their Signs Painted at contract prices, for goods or articles in which they trade, viz:

Merchant Tailors,	Gents' Furnish'g G'ds,
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Over 7,500 in Successful Use in the United States.

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Will Feed Wet or Dry Ore Equally Well.

Will Increase the Quantity from One to Two Tons Per Day.

Are Durable, Compact and Cheap.

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Improved Cast and Forged Steel Shoes and Dies for Quartz Mills:

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Price Reduced to 16 Cents Per Pound.

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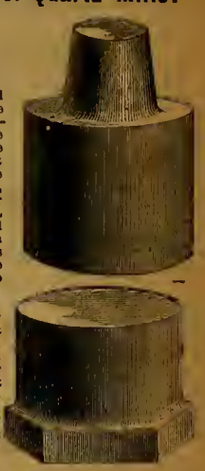

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SUCCESSORS TO EAGLE WORKS M'F'G. CO.
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AGENTS FOR BLAKE STONE BREAKER
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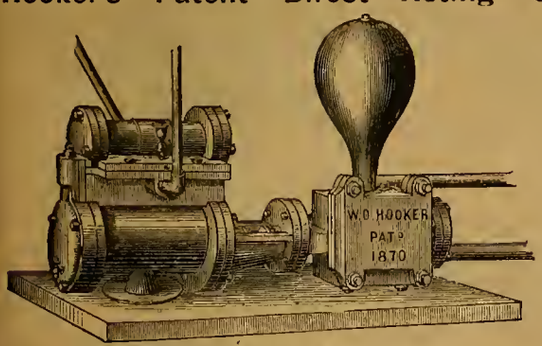
Hooker's Patent Direct Acting Steam Pump.



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SIMPLE, CHEAP AND DURABLE.

Adapted for all purposes for which Steam Pumps are used.

The Best Pump in Use.

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N. B.—Also manufacturer of Hooker's Deep Well and Double-Acting Force Pump. Received the Silver Medal awarded at the last Mechanics' Fair in San Francisco. 18v27-2am3m

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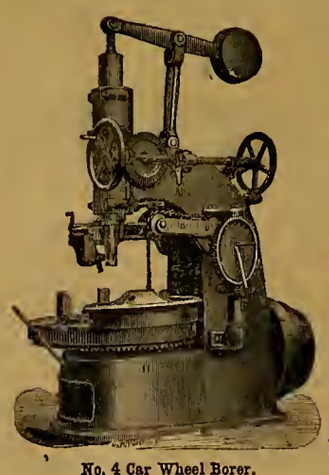

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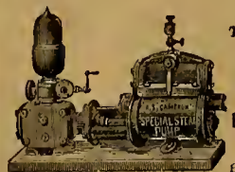
THE SIMPLEST, CHEAPEST, AND BEST PUMP IN USE FOR ALL KINDS OF WORK.



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PICKERING'S PATENT Engine Regulator, Stop Motion and Speed Adjuster,

HAS NO EQUAL FOR ALL KINDS OF ENGINES

Every Governor Warranted.

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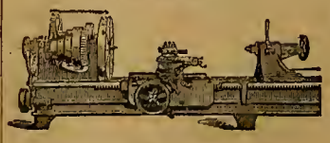

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Those Tools are not surpassed by any other makers.

Send for Price List.

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HARRISON'S
LIGHT, VERTICAL BURR MILLS
BAKER & BACON, MILLERS AND LUMBER DEALERS, SOUTH VERNON, VT., write July 15th:
"We have been running two of your LIGHT VERTICAL CORN MILLS for the past 6 months with remarkable results, and have ground over 80,000 bushels of corn into No. 1 meal in that time, running the grist-mill nights only, as we run our saw-mill in the day time. We have often ground in the 20-inch Mill (which weighs about 500 lbs.), 1,000 lbs. of corn in twenty minutes, or 54 bushels in one hour. Our usual night's work is about 24,300 lbs., or 434 bushels. To do this we have to run at a speed of 1,200 turns per minute, and use about a 20-horse power. You may refer parties to us for further information, and when we have tested your HEAVY VERTICAL MILL, we shall take great pleasure in giving the results."
SEND FOR ILLUSTRATED CATALOGUE AND PRICE LIST.
EDWARD HARRISON, MANUFACTURER OF
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HOISTING AND MINING ENGINES.

We have all sizes of COOK, RYMES & CO.'s Celebrated Hoisting Engines. These Engines are well known from Alaska to Mexico, and need no recommendation from us. They are made of the best material, and have been lately greatly improved with large drums and link motions.

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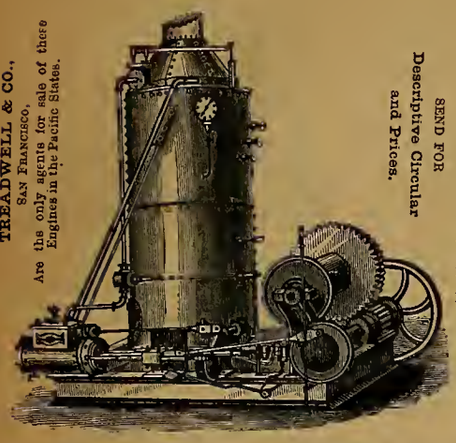

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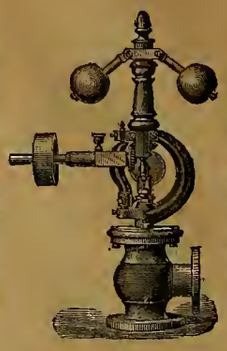

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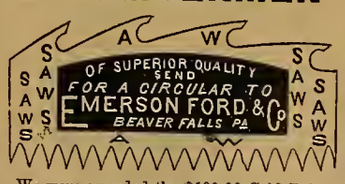

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MINING AND SCIENTIFIC PRESS.

An Illustrated Journal of Mining, Popular Science and General News.

BY DEWEY & CO., Patent Solicitors.

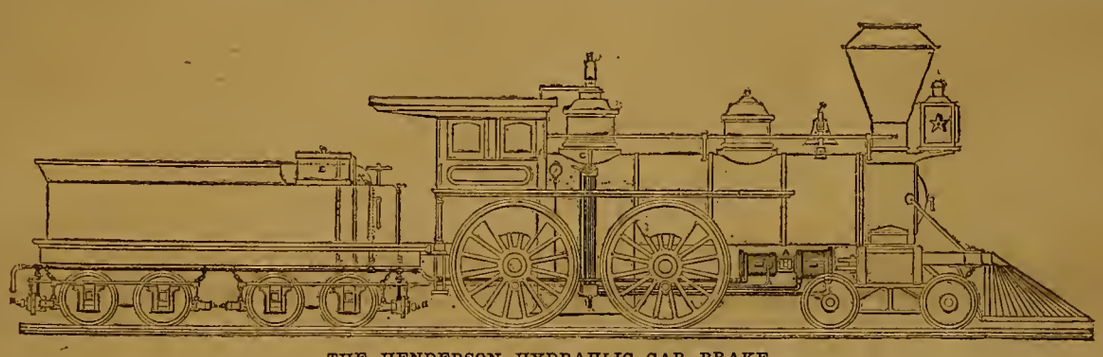
SAN FRANCISCO, SATURDAY, OCTOBER 30, 1875.

VOLUME XXXI Number 18.

The Henderson Hydraulic Car Brake.

As the subject of powor brakes has lately heeu prominently brought forward in the pnblic journals we have thonght it proper to draw nttention to a new brake which is made by the Honderson hydranlic car brake company, 119 South Fourth stroot, Philadelphia, Pa. We give an illustration herewith, from which the principle of its operation can he seen.

This brake is so simple in its construction and operation that it is almost impossible to give any detailed description of it further than to state that the power is derived by a very small portion of the steam from the boiler used in a pressnre engine, consisting of a small hydranlic press operated by a donble acting steam cylinder, the valve of which is workod, by the haud of the engineer. There is a piston in each cylinder; steam actuates the one, forcing the fluid from the other, creating hydranlic pressure within pressnre boxes, one of which is attached to one break beem on each trnok. An air cushion is provided above the press piston to prevent striking the head when coming back light.



THE HENDERSON HYDRAULIC CAR BRAKE.

The press receives water from a tank, which may he the engine tank or a special tank provided for the purpose, through a pipe furnished with a check valve opening towards the press cylinder, in snch a manner that the fluid cannot return to the tank. The supply is arranged to feed autometically; any supply or leakago past the press piston is at once returned to the supply tank in a small return pipe. For low temperetnres' a mixture of equal parts of glycerine and water is used in lieu of water, which is safe to 24° Farenheit below zero. The pressure boxes are of cast iron, simply bolted together as they come from the foundry, embracing a dish-shaped flexible disphregm of vulcanized india rubber. The body casting is of a similar form bnt somewhat deeper; a ram is fitted to the hollow of the diephragm, its reduced diameter passing throngh a projecting guide, furnished with a hydraulic packing. Two iron rods connect the end of the ram to the opposite break beam.

When pressure is applied, the body casting presses in one direction, and puts its breke on, and the rams going outwards draw the opposite brekes on—the movements of the rems being from one half an inch to one inch. When the pressure is relieved by the retraction of the press piston, the atmosphere reacts on the area of the rams and forces them back, assisted by the tendency of the diaphragms themselves to recover their normal condition. Double iron pipes are used nnder the tender and cars. A branch, governed by a 3-way cork conuects again with a tank above, by which the engineer can blow around the whole double line of pipes, to clear them of air before starting.

Flexible hose between the cers is nsed, furnished with hydraulic couplings, which, it is obvious, must he light, both with and without internal pressure, and to couple and uncouple without waste; peculiarities possessed by this coupling alone, which also has a cork joint and safety disconnecting chain attachment, preventing the coupling from blowing apart. These, with the steam valve and a few fittings, comprise all the machinery of the brake.

In the drawing, the pressure engine is shown under the forward part of the shell of the boiler; if preferred, it may be placed vertically on the side of the fire box, or under the tender. In the engraving, *A*, is the pressure engine; *B*, the pressure box; *C*, the breke valve, and *E*, the fluid tank.

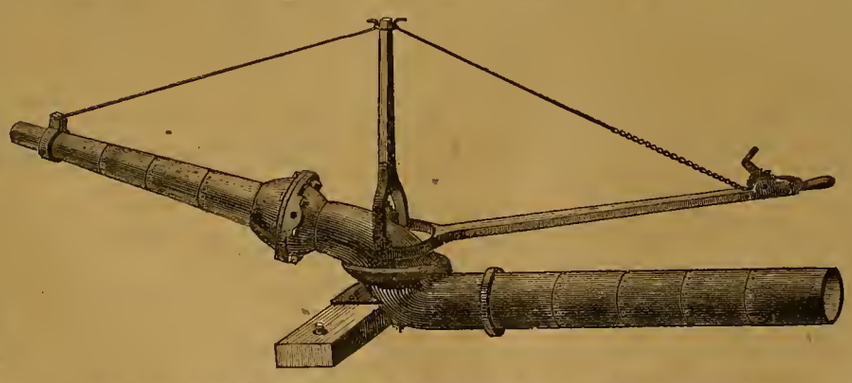
The points of merit claimed for the brake are as follows: 1st. Doing away with the use of complicated pumping machinery. 2d. Dispensing with the use of cylinders under the cers, and with their necessary pistons, piston packing, stnffing boxes, recoil springs, levers and joints, chains and rods for operating the brakes, and all the lost motion produced thereby. 3d. Doing away with all lubrication of brake cylinders, there being no parts that require oiling, and no parts that can he affected by dust. 4th. Ready for instant action, when steam is up, without special preparation, as pumping up for pressure, the boiler being the reservoir of power. 5th. The brakes are applied by the boiler pressure, are released by atmospheric pressure, and in no way interfere with the working of the hand brakes. 6th. The brakes are applied simultaneously from both ends of the train, reducing the time of application, and there is no jarring or jolting. 7th. Its simplicity—no delicate or complicated machinery is nsed in its construction; being chiefly unfinished casting—the cost of maintenance is trifling. 8th. Its economy—steam being only used at the moment of applying the brakes, and directly to that purpose. 9th. Its cheapness.

In addition to these advantages it has been discovered by actual experiment that, owing to the peculier arrangement of the double system of pipes used, either line can be cut loose anywhere between any of the cars without effecting the operation of the brake as a whole, or interfering with the action of a single brake-shoe. On the other hand, any individual truck can be shut off, or the whole may be shut off, with any selected exception. The use of the double system of pipes also causes the brakes to he applied from the rear end of the train, simultaneously with those at the front end, gaining in time in the promptness with which all the brakes are applied, an important advantage, when a single instant of time may avert disaster.

Improved Hydraulic Nozzle.

The accompanying engraving represents the well known Little Giant hydraulic mining nozzle with a new lever and crank attachment, as manufactured by R. Hoskin, of Dutch Flat. All hydraulic miners will recognize at a glance the utility of this arrangement, without any detailed description being necessary. The improvement reduces the power required to move the pipe horizontally, fully fifty per cent.

When piping at ordinary elevations the pipeman may stand either at the lever or the nozzle; when piping at extremes of elevation or depression, he uses the lever, and is enabled to keep it in a position in which he can apply his power to the greatest advantage. A simpler arrangement could scarcely be devised, or one which would be more practical and useful. It often occurred in the old arrangement that when the pipe was elevated and it had to be turned, the pipe-men was compelled to bring it to a horizontal position, turn it, and then elevate it again, sometimes washing into ground he did not want to wash into, simply because he could not turn the nozzle when in its elevated position.



LITTLE GIANT NOZZLE, WITH IMPROVED LEVER AND CRANK ATTACHMENT.

By means of the apparatus devised by Mr. Hoskins this difficulty is done away with, and the Little Giant made much easier to handle. By turning the crank he brings the nozzle at the proper elevation, and the lever in such a position as to be easily handled. By bringing the lever low down he can exert the full force of his strength upon it in the right direction, which could not be done were the lever as high as the pipe-men's head or shoulders. Although simple, this device is an important one to the hydraulic miner, and greatly adds to the usefulness of the Little Giant nozzle. Full particulars will be furnished on application to the manufacturer.

The Wholesale Clothing Trade.

During the coming seasons of the year, when new styles and description of goods constitute the wear or mode, in anticipation of a sound, reliable trade in clothing, the manufacturers of our larger cities, in some instances, are continuing operations on an increased scale, both in making up and in the shipment of the goods to the dealers. Recent improvements in the material and form of clothing, well as the manner in which the work of this nature can be turned out, have chiefly effected the good results which have been attained. The wholesale clothing trade of some of the business houses of San Francisco is of a progressive nature, the continuous extension of the boundaries of sale, the perfection of cut, and the remarkably low figure at which the goods can be disposed of to the trade, making it an indispensable interest for the comfort, convenience and benefit of the people in all classes of society.

Prominent among the leading wholesale clothing houses of this city, is the firm of Messrs. J. Baum & Co., importers and manufacturers of custom made men's youths' and boys' clothing, furnishing goods, etc. The house was established as early as 1854 by Mr. J. Baum, the present senior member, and conducted with the express purpose of supplying to the trade a superior class of clothing. The establishment where the goods are manufactured is located in New York, the business house in this city being devoted exclusively to sales departments and shipments of goods to the different sections of the State of California and contiguous country.

Messrs. J. Baum & Co. lately removed to new quarters, Nos. 521 and 523 Market street, this city, a three-story, iron front building, having a frontage of 52 feet by 155 feet deep. The business departments are so arranged as to enable the business to be conducted on the most expeditious plans, and an elevator facilitates the reception and shipment of the goods. The first floor is devoted to men's and boys' clothing, the second to fine clothing; furnishing goods contained in stock on the third and upper floor.

The several extensive floors are supported by iron columns which range in a row in the middle of the building. The ceilings are made of planed boards, and being painted white, the color of the walls, the general appearance of the place is enhanced, and the difficulty of selection of goods on the part of purchasers obviated by a general diffusion of light which prevails throughout the building. The establishment in question has a reputation of many years' standing, during which time the members, individually, J. Baum, H. Shrier and M. Shrier, have become extensively known.

The Board of Regents of the State University had a meeting on the 21st instant, and adopted a resolution authorizing the president of the university to arrange with the Mechanics' Institute for a course of lectures to be held in San Francisco during the coming winter, and in the same manner as heretofore.

The Donnelly air shaft on the Belcher, finished to 1300-foot level, is not only a work of vast benefit to the mine, but also reflects great credit on Mr. Henry Donnelly, foreman of the mine, the originator and superintendent of its construction.

Father Neri's Scientific Lectures.—The re-opening of Father Neri's popular science lectures at St. Ignatius' college, in this city, will commence on November 4th. The concluding lectures will take place on the evening of November 18th and December 9th. The lectures to be delivered are the three remaining of the unfinished course of six, and for them the best and most brilliant experiments have been reserved. We are assured that tickets bought at the beginning of the course will be good for admission as well as the new ones. The title of the lectures is "Electricity and its Practical Applications."

Two locomotives for the narrow gauge railroad at Saucelito have arrived from the Baldwin works at Philadelphia.

CORRESPONDENCE.

What Constitutes a "Mineral Vein" Within the Meaning of the Law?

MESSRS. EDITORS:—On no subject affecting the industrial pursuits of the country has Congress been called upon for action, that is of more vital importance to the nation than that of mining. None that, from a consideration of the amount of capital invested, or likely to be invested therein, and a successful or unsuccessful issue of enterprise, demanded a more careful digestion of all laws relating to its pursuit. That Congress has vastly underrated the magnitude of the subject must be evident to all intelligent miners who have given the laws of Congress of 1872 relating thereto even a passing examination. Among its many imperfections, although perhaps not the greatest, and calculated to render confusion worse confounded, is the provision, "That no lode claim can be recorded until after the discovery of a lode or vein within the limits of the ground claimed." Now, the *res gestae* of that requirement is, what constitutes a vein or lode within the meaning of the law? and upon this question litigation will arise involving interests of great consequence to the parties litigant. It is possible that the Legislature intended to impose upon the district recorders the duty of examination or of requiring proof of the fact; this they do not, but are satisfied by pocketing their fee. An ardent prospector who finds a showing of auriferous pyrites of iron in a quartz vein, or a trap or granite dyke or other auriferous rock, will fly to the recorder and place it upon record. He has then tied up an area of two hundred yards wide by five hundred in length. If he can find a particle of gold, or ore of any kind, he claims the right of record. He may abandon it as hastily as he seized it, as thousands have done, but should some more enterprising individual make a really valuable discovery within his limits, he is prompt in asserting his rights (?) under the law. Some go so far as to maintain that all quartz veins are metalliferous, and would so testify in adjudications! A satisfactory decision of what constitutes a mineral vein would be more difficult of attainment in cases of veins carrying smelting ores. Here we have more commonly than in other lodes a cleavage or flucan, and an earthy or brecciated matter with clay accompanying it. These, many will maintain, are sufficient evidences of a mineral vein, as indeed many excellent mines are entirely barren of ore in places, only showing these indications of a mine. Yet it is undeniable that such indications have been followed at great cost without finding what can properly be called, in justice to others, a mineral vein. Again, the reader, if a practical miner, will call to mind many instances of "gash" veins, wherein for a few feet ore may be found perhaps in paying quantities, but entirely gives out on a little exploration. Under the law it requires but slight evidence to entitle a man to record, and he may thus tie up an unlimited amount of ground, barring others and inflicting serious injury upon the country. Every one may be fully assured that such locators, and their name is legion, are acting the "dog in the manger;" yet there is no remedy, and although they have done the merest modicum of labor to answer the requirements of the law, they can dictate their own terms to those who would make valuable developments on their domain. It will be asked, *cui bono*, in complaining when the law is established and rights have accrued under it. The answer is, it is hoped that it may induce more careful legislation in the future. The greatest absurdity of the law, and to which the foregoing remarks particularly point, is the conferring so great a width of superficies on the locator, when in reality the location is made or should be made, for the purpose of securing only one lode; then lode or no lode could not affect them. Such ownership carries with it all necessary privileges of surface ground for the convenient working of the mine. This erroneous provision of a very incongruous law is doing great harm, and it is, I believe, the general opinion that Congress has performed in reference to mining legislation a great amount of inexcusable botch-work.

WILLIAM TEAL.

Bingham, Utah, Oct. 6th, 1875.

SHALL WE EVER TRAVEL FASTER?—Speaking of the late celebration in England of the fiftieth anniversary of the inauguration of railways, a St. Louis paper gathers some interesting statistics. The Stockton and Darlington railway, built by George Stephenson and Edward Pease, the first steam railway in the world, was opened September 27th, 1825. In 1830 the first American railway was built, in Massachusetts. In 1873, England had 16,082 miles of railway, and $294,160,140 invested in railway property, and the United States, 70,651 miles of track, and $3,784,543,034 invested. But Stephenson's engine, constructed in 1829, was run at the rate of thirty-seven miles per hour, the exact time made by the fast-mail train from Philadelphia to St. Louis. Has speed in railway traveling reached its limit?

On the Vitality of Certain Land Mollusks.

[Read before the California Academy of Sciences by ROBERT E. C. STEARNS.]

I submit for the inspection of the Academy a living specimen of *Bulimus pallidior*, Sby., one of nine given to me by Prof. Geo. Davidson, who collected them at San Jose del Cabo, Lower California, in March, 1873.

These snails were kept in a box undisturbed until June 23d, 1875, when I took them out and, after examining them, placed them in a glass jar with some chick-weed and other tender vegetable matter, and a small quantity of tepid water, so as to make a warm humid atmosphere. This hospitable treatment induced them to wake up and move about after their long fast and sleep of two years, two months and sixteen days. Subsequently all died but this, which seems to be in pretty good health, though not very active.

It may be remembered that I mentioned to the Academy at a meeting in March, 1867, an instance of vitality in the snail (*Helix Veatchii*) from Cerros island, even more remarkable, the latter having lived without food from 1859, the year when it was collected, to March 1865, a period of six years.

The famous specimen in the British museum which is cited in the books, *Helix desertorum*, had lived within a few days of four years, fastened to a tablet in one of the cases, when discovered to be alive.

Helix desertorum, as the specific name implies, is found in arid and sterile areas, in the continents of Africa and Asia, and has, as will be perceived, a wide distribution. From the former continent, I have specimens from Egypt, and it also ranges through Arabia in the latter.

The *Bulimus* from the mainland of the peninsula of Lower California and *Helix Veatchii* from Cerros island, off the coast on the ocean side of the same, come from within the same physical environment, being only comparatively a limited distance apart.

Your attention is directed to the fact that the three species herein mentioned belong to geographical areas, which receive only a minimum rainfall, or in simple language, nearly rainless regions.

Within such areas vegetation is exceedingly limited even in favorable seasons, and the presence and growth of the annual plants is of course dependant upon the rainfall; this last occurring infrequently makes the food supply of land mollusks and other phytophagons or vegetable eating animals exceedingly precarious.

It is highly probable that a careful investigation in this direction will lead us to the conclusion that the land mollusks which inhabit these arid areas have, through selection, adaptation and evolution become especially fitted for the contingencies of their habitat, and possess a greater degree of vitality or ability to live without food than related forms in what may be considered more favorable regions, and through and by reason of their long sleep or hibernation, with its inactivity and consequent immunity from any waste or exhaustion of animal strength, are enabled to maintain their hold upon life when animals more highly organized would inevitably perish; and we are furnished with an illustration in the instances cited, how nature works compensatively, when we institute a comparison with the opposite conditions of activity, and the food required to sustain it.

The Generation and Characteristics of Smoke.

Mr. C. W. Williams says: So much has been said and credited on the subject of the burning and combustion, and even consumption, of smoke; and it has been so often asked, what is smoke? that the subject must needs receive some attention, and we therefore produce the following interesting facts for the benefit of our readers:

Before the characteristics of combustible gases were known, it was natural that all colored vapors, rising from heated bodies, should be called smoke. So soon, however, as the proportion of the several gases were correctly ascertained, through the researches of Davy and Dalton, the misapplication of the term became unpardonable on the part of those who profess to be public instructors on the subject.

The gas from which smoke proceeds, in a furnace or retort, is carbureted hydrogen. The constituents of this gas have been already described; each atom consisting of two atoms of hydrogen and one of carbon. This latter we are warranted in assuming to be a solid, contained and concealed from view, by or within the gaseous volume of the hydrogen, since carbon has never yet been produced in the form of a gas, nor hydrogen in that of a solid. It is only when their chemical union, in the form of the coal gas, is broken up, that the carbon becomes visible and tangible. Now this circumstance alone furnishes an unerring test of the difference between gas and smoke; a distinction which, we shall see, is capable of physical proof.

When we see a dark yellow vapor rising from heated coal, as at the mouth of a retort, or from a furnace, or domestic fire, after fresh coal has been thrown on, this color is not occasioned by the presence of carbon, but is caused by the sulphur, tar or earthy impurities which might happen to be in the coal. All these are subsequently separated from the carbureted hydrogen in the purifying process—the gas remaining transparent—so minute are the several atoms of the carbon, and so diffused are they when in connection with the hydrogen. That the solid carbon is there, notwithstanding this transparency, is proved by its subsequent liberation; as when a polished body is thrust into a flame of a candle or gas jet, and brought out with a deposit of the carbon on it. Carbon, in fact, when in chemical union with gaseous matter, is always invisible and intangible.

The separate characteristics of the gas and the smoke will be made clear from the following:

A tin vessel was prepared, in which was placed some small coal, resin and tar, to produce a quick and large development of gas. The lid was removed, and an iron, made red hot, was introduced, and the vessel was again close covered. A small tube was then inserted into the side of the vessel, to be blown into, as with a blowpipe, to expel the gas in a stream through a nozzle on the opposite side of the vessel from the blowpipe. That the carbon in this gas is inaccessible, is proved by presenting a sheet of paper to the stream, and, although it may be slightly stained, if there be much tar present, no carbon, however, will be deposited. On this stream of gas (many inches long) being lighted, a lurid flame will be produced, but which, becoming cooled down before it can be sufficiently mixed with the air, produces a large volume of true smoke. Here, then, is exhibited the gas, the flame and the smoke, at the same moment, and in succession, just as they are produced in the furnace—the gas being converted into flame, and the flame into smoke.

Now let us examine the characteristics of each. The carbon in the gas, as already mentioned, is inaccessible, being concealed by or within the atoms of hydrogen respectively, and cannot be separated, or deposited on the paper. On being lighted the hydrogen combines with the oxygen of the air, forming steam, which flies off, as already described. The result is, the liberation of the atoms of carbon, either to be converted into carbonic acid (if the heat can be continued) or deposited in the form of the fine lampblack powder, as we see it collected on the wick of the tallow candle. This may be tested by presenting the white paper to it, when a large quantity of this black carbon will be deposited on it. We here see the double error of mistaking smoke for gas, and then assuming that the former can be burned.

It may be well here to notice an error with which we are generally impressed, namely, that the cloudy volume of smoke, as we see it, issuing from a chimney, and filling a large space in the atmosphere, is formed of carbonaceous matter.

With equal propriety we might say, if we put a few drops of ink into a glass of clear water, and thus give it a blackened color, that the whole would become a mass of ink. This black cloud is merely the great mass of steam, or watery vapor, formed in the furnace, as already described, but colored by the carbon; and when we consider that no less than half a ton weight of water (in the expanded form of steam) is produced from every ton weight of bituminous coal consumed, we can easily account for the enormous volume and mass of this blackened vapor called smoke, as it appears to our vision, and the palpable error of supposing that this cloud of incombustible matter was capable of being consumed, or converted to the purpose of heat.

Were it not for this mass of steam the carbon would soon fall, as a cloud of black dust; but, being intimately and atomically mixed with the large volume of steam from the furnace, it is carried along by the atmosphere, only differing in color, like the cloud of steam we see issuing from the chimney of a locomotive when in action.

The Eureka and Palisade Railroad.

Advices from Eureka, Nevada, dated Oct. 22, say: The Eureka and Palisade railroad was completed to this place to-day. A large concourse of people were assembled on the depot grounds to witness the coming of the iron horse, which at 4:30 came in sight with the construction train. A general display of bunting was made throughout the town in honor of the event, and a warm welcome given the railroad by the citizens. At five o'clock a salute was fired at the depot grounds, and music by the bands enlivened the scene.

As the track-layers, locomotive and cars came in sight, the citizens organized an impromptu meeting on the platform of the depot, and George W. Baker was elected chairman. Congratulatory addresses were made by Hon. George W. Cassiday, Hon. Thos. Wren, Major John Dennis, and other citizens. The utmost good feeling prevailed, and the advent of the iron horse in our midst shows to all the faith our capitalists have in the permanency of our mines.

The road just completed is ninety miles long, and has been built mainly by Edgar F. and D. O. Mills, through whose indefatigable efforts Eureka is now in direct communication with the principal cities of the Pacific coast and the Eastern States. The entire cost of the road is over $1,000,000, all of which has been expended without any aid or subsidy from the county or State.

The Cry for Capital.

William Teal, our occasional correspondent, who gives a letter in another column of this issue, writes the following sensible letter to the Colorado *Mining Review:*

The cry for more capital for the development and working of mines has become so universal and importunate, it is well to consider at this time whether or not much of this clamor is not only unnecessary, but absolutely injurious to the best interests of the country, as well as to individuals. A common fault among Americans, and one to be much regretted, is that they must do things on a grand scale, or in other words, "they despise the day of small things." As soon as a mine shows a reasonable amount of evidence of productive value, its owners are agog, ransacking the world for money to build a mill or smelter that shall eclipse their neighbors; very often to affect this object they alienate a controlling interest in a really valuable property and place themselves helplessly in the power of sharpers who may or may not, according to their own will, deprive them of their remaining interests. Now, a man who has a gold bearing quartz lode that will yield an average of ten or twelve dollars a ton, or an argentiferous lode that will yield thirty dollars a ton, can place himself on the straight road to fortune, in rather a seemingly slow manner at first, but "slow and sure will win the race" to a certainty. A little one-mule arrastra, by selecting the best of the ore, will give a large margin over day wages. That soon by economy might be succeeded by a four-stamp mill, and so on *ad infinitum*, and this by keeping within the bounds of his own resources. But he had better not indulge in driving fast horses, and smoking fine Havanas before he gets up to a twelve-stamp mill.

A better style of arrastra, and costing but little more, it one has free water power, is the Spanish water power arrastra. This is run by a horizontal wheel under the bed or motor, and if properly constructed will work from two to three tons of ore of average hardness in twenty-four hours. These have been run for centuries in Mexico with great success, and in the saving of gold, nothing will ever be invented to excel them.

But most readers will say, how about smelting ore? We cannot avoid great outlay in building smelters! Yes, much of the present outlay may be avoided, and with the business on a pretty fair scale, too. The Mexicans, Spanish, and it is said by the Spaniards that the Romans used what they call the water blast. It may be possible that this has been tried in Colorado; I have never heard of its being tried in any part of the country. I have seen it used, and have used it myself successfully, and so can vouch for its efficiency. Ure's Dictionary of the Arts and Sciences, I think, contains a full description of its construction and use. But the one built by myself was according to the following description: First, a perpendicular chimney twenty-five feet high, a foot or so space inside, then a horizontal passage fifteen feet long connects with this at the bottom, with an outlet barely large enough for the water to escape; from this passage a small pipe runs to each cupola. Into the chimney about fifty miners' inches of water is discharged from a flume. The amount of air carried by the water made a strong blast, and copper and argentiferous galena ores are smelted successfully by it. One might suppose the vapor carried from the water would be a detriment, but such does not seem to be the case. The total expense for labor and otherwise did not exceed $1,000. Men who are willing to creep before they can run, may adopt simple appliances which will surely lead to better things.

Many notable instances of success from such small beginnings in mining pursuits might be mentioned, that have occurred within my knowledge in California, whereas great calculations and expenditures on equally valuable mines have been very often disastrous. Thousands of miners throughout the country are crying capital, who might go to work and grind out their capital much more expeditiously than they can procure it from any other source. That this course must be adopted is quite evident on a slight consideration. Demand for capital in mining has reached so extensive an area that if met it would absorb all the wealth of the nation. It is imperative that we must lower our ambition a little and be content to go more slowly. Indeed these small beginnings will be safer, surer, and more beneficial in their lasting influences. Men may say that the Mexicans are a slow people; that is very true, but we are a fast people, perhaps a little too much that way. With our impoverishment we can operate with their simple appliances and accomplish vastly more than they do.

FOR CARPENTERS.—The Omaha *Bee* says: "A flooring match took place last week between two carpenters, Tuttle and Simmons, at Clark & Kinney's new building, in Omaha. Tuttle laid nine squares (a square is ten feet square) and fifty-six and seven-eighths feet, and Simmons nine squares and forty feet, in one day." We knew a carpenter here once who laid eleven squares of flooring in one day, and was floored himself at night by a quart of whisky.

IT is calculated that there are 50,000 locomotives now in use all the world over, the United States numbering 14,200, England 10,900, Germany 5,900, France 4,900, Russia 4,600, Austria 2,400, Hungary 500, Italy 1,200.

MECHANICAL PROGRESS.

Frameless Houses.

While many changes have been made in interior decoration and convenience within the last few years, house building itself has not materially departed from the "balloon frame" method for a long time. Recently, a method of construction that dispenses with framing, boarding, lathing, and plastering, has been invented, and is already attracting some attention. By this method, the substructure up to the sill is prepared as for an ordinary wooden house. The sill is then placed, and firmly bolted down to the masonry. Solid wooden staves, 2½x4 inches, and of different lengths, are then prepared, and in each is cut a groove 1x1½ inch the whole length on each side. One inch holes are then bored through the sides at intervals of eighteen inches. These, with a number of iron rods, bolts, nuts, and tongues, make the entire materials for the house, except the ornamental work that may be put on without or within. Three staves, equal in length to the intended hight of the house, or the first story, if it is a high one, are set up outside of the sill, and firmly bolted to it. Between each piece is placed the iron tongue, reaching the whole length, and between the three are placed iron rods through the horizontal holes. Three more staves, each with its iron tongue, are then set up, and more rods are inserted, while those passing through the six staves are screwed up tight.

In this manner the entire exterior wall is set up. The tongues close the cracks tight, and the rods (arranged to break joints) hold everything firm and solid. For doors and windows, openings are left, to be closed and finished afterward in any style desired. The first floor, made of the same materials, is laid in the same way, and tension rods, secured to the walls, are placed below to give support and strength. The partitions are set up in the same manner, and over these the second floor is laid as before. The roof (of any pitch) is laid down in the same way, except that each stave is channeled, and each crack is covered with a half round cap to shed the rain. To secure the roof from spreading, tension rods are placed under the pitch, and fastened together by tie rods. Balconies, piazzas, and porches, made in any desired style, may be added, and all the ornamental work, base and weather boards, etc., be fastened directly to the wall. The iron work is designed to be galvanized, and all the bolts and nuts are countersunk. When tension rods are used under the floors, they may be bronzed, painted, or otherwise ornamented, or may be treated as part of the gas fixtures. By this method of construction it is seen that there is no lathing or plastering, no dead spaces in the wall for fire or rats to creep unseen in, no opportunities for the builder to hide poor work. All the material is visible, and the walls are alike outside and in. The exterior may be painted, and the interior oiled, varnished, or papered. The natural wood—spruce, pine, etc.—makes a good interior finish, and for seaside cottages, railway stations, and small churches, varnishing would be sufficient.

A building of this character can be erected in forty days after the substructure and cellar are ready—thirty days for getting out the materials, and thirty days for setting up. In cost, a saving of thirty-three per cent. is claimed over a frame building of the same size. For sea-side and summer houses, railroad stations, churches, etc., this method of building presents points of interest and value.—*Scribner.*

Heating Feed Water for Steam Boilers.—The *Railroad Gazette* has an article on "Heaters for Locomotives," with a full demonstration of supposing the temperature of feed water at 40 deg. Fah., the percentage of economy due to an increase of temperature of each 10 deg. (over the 40 deg.) derived from the heater is 0.85 of 1 per cent. If the heater could raise the temperature of feed water from 40 deg. to 200 deg., the total gain would be only 15.25 per cent. 10 to 15 per cent. of the fuel, and work in handling it, and especially 10 to 15 per cent. increase of power may be too great a gain to be overlooked: but when the cost and maintenance of the heaters, the liability to get out of order, the impairment of the exhaust, etc., is considered, "it is evident that a feed-water heater, instead of being economical, may be the reverse." These deductions apply to all boilers and engines, as well as to locomotives, although some of the conditions of application of heaters to stationary boilers are much more favorable for the use of heaters. It must be noticed, however, that under no circumstances can the percentage of advantage be greater numerically than is stated above.

To Drill into Hard Steel.—Make your drill oval in form, instead of the usual pointed shape, and temper as hard as it will bear without breaking; then roughen the surface where you desire to drill with a little diluted muriatic acid, and, instead of oil, use turpentine or kerosene, in which a little gum camphor has been dissolved, with your drill. In operating, keep the pressure on your drill firm and steady; and if the bottom of the hole should chance to become burnished, so that the drill will not act, as sometimes happens, again roughen with diluted acid as before; then clean out the hole carefully, and proceed again.

Burning Coal Dust.

The arrangements for manufacturing coal dust into fuel are now a practical reality. A new machine for pressing coal dust into fuel was recently put into operation at the Harrisburg machine shops, and a ton of solid coal was made in six minutes. The machine is said to be simple and universally practicable. Five new machines are now being made for this purpose. The Reading railroad company are about using this coal dust fuel in their locomotives. At Norwalk, Conn., there is a paper mill run exclusively by steam produced by burning coal dust, the refuse from coal yards, at a cost of less than $2.50 per day. Previous to using coal dust the cost of running by ordinary coal was $8.50 per day, and they have less trouble in keeping up steam under present arrangements than was encountered before making the change.

A New Hot Air Engine.—Another novelty in motors driven by hot air was exhibited in motion at the late fair of the New York Mechanics' Institute. It is described in the *Scientific American* as follows: It consists of two cylinders, one for power, under which the fire is built, the other simply for compression. The latter has a water jacket, and both cylinders have pistons, or more properly, plungers. The piston of the compression cylinder passes through packing at the top of the same, but below fits loosely in the bore, so that the air compressed is at liberty to pass up around the piston, and to enter a connecting passage, which leads it into the power cylinder, where it is heated and expanded, and so lifts the piston. As the two pistons are set on cranks 180 deg. apart, the down stroke of the power piston corresponds to the up stroke of the compression piston, so that the air, which just before has been expended, is now returned to be recompressed and again used. Thus the air is merely shifted from one cylinder to the other, and its cooling or heating is quickly accomplished through its being exposed to the action of the cold water or the fire in thin annular sheets. The machine (one horse power), we are told, burns very little fuel, one scuttleful answering for an entire day. The expenditure of oil is also very small. This seems to be a very simple apparatus, and one well adapted for a large number of light uses. It is almost entirely free from the disagreeable noise usually incident to caloric engines.

New System of Plastering.—Builders, owners, and tenants of city houses will doubtless view with interest a new system of plastering, which is claimed to prevent the sudden and disastrous downfall of ceilings, so frequently occasioned by defects in the water pipes and consequent leakage or overflow. The invention consists of replacing the scratch coat and brown coat used in ordinary work by the combination of fibro-ligneous sheets with a cement composed of lime, sand, and plaster. The sheets are of a fabric resembling coarse bagging, which is secured to the lathing, and the cement is supplied in the ordinary way. A hard finish coating completes the work.

Street Car Motors.—In Glasgow, Scotland, a new car, propelled wholly by compressed air, has withstood the prescribed tests, and is pronounced a success. There is now in full operation in New Orleans, a car using stored-up steam, replenishing the supply at stations along the route. The Glasgow car likewise has stations of supply, as have several in this country recently patented. It takes two minutes to fill. The car runs fourteen hundred yards at a maximum speed of twelve miles per hour. A large number of inventors are studying how to meet this great public want. Nearly every large city in the Union numbers one or more experimenters in the direction of engineering for street cars.

Belting in England.—The *Textile Manufacturer*, an English cotemporary, says that in some English districts belting is quite taking the place of gearing for driving purposes. In the neighborhood of Halifax alone, we learn, there are at the present moment about half a dozen mills being refitted. This change of fashion is giving quite an impetus to the manufacture of leather driving bands, and several firms, who hitherto have not attached much importance to that branch of their trade, have become quite alive to what is being done.

How to Calculate Centrifugal Force.—A correspondent asks of the *Scientific American*, "What will be the centrifugal force in pounds of ten iron balls weighing one pound each, attached to a wheel two feet in diameter and running at a velocity of 3,000 revolutions per minute?" That paper replies as follows: The centrifugal force in pounds is found by multiplying the weight of the body in pounds by the square of the number of revolutions per minute, and by the radius of the wheel in feet, and by dividing the product by 2,935.

An Electrical Engine.—A gentleman interested in navigation on the Hudson river is building a 500-horse power electrical engine, with which, it is said, he proposes to supersede steam on his line of boats.

Berlin Iron.—The fluidity of the Berlin iron, from which the finest and sharpest, although not strongest, castings are made, is attributed to the presence of arsenic in the iron.

SCIENTIFIC PROGRESS.

A New Mode of Measuring the Intensity of Light.

Various instruments for measuring the comparative intensity of light have been devised, but hitherto they have been all substantially on the same principle. Dr. Werner Siemens, however, has recently devised something entirely new, and which is much less liable to error than any device hitherto employed. His device depends upon the remarkable property which selenium has in one of its allotropic forms for conducting electricity better in light than in darkness. This conductivity increases in exact proportion to the degree of illumination present and the measure of the former thence is the measure of the latter. Hence, as electric conductivity can be accurately measured, so by this instrument can the intensity of light be accurately ascertained. In all other photometers the comparative degree of light can only be guessed at by comparison of the intensity of different shadows.

Selenium is closely allied in its natural history and physical and chemical properties to sulphur, with which it usually occurs. Like sulphur it exists in three distinct modifications or allotropic states. This element was first discovered as a reddish deposit in the leaden chambers employed in the manufacture of sulphuric acid from sulphur. When this deposit is melted and suddenly cooled it takes the form and appearance of a brilliant black solid, like black glass. If cooled slowly the same deposit becomes a dark gray, brittle, crystalline substance, with a metallic luster like lead. In its vitreous glass-like form it does not conduct electricity; but in its crystalline form it does away with the remarkable peculiarity above referred to of an increased conductivity, with an increase of the light to which it is exposed.

This has been found to be permanent; that is, no permanent alteration of conductive power ensued from exposure to light, and the selenium returns to its original condition of conductivity upon removal of the ray. Heat, also, is effective in influencing the conductive power, and the effect of the heat decreases as the temperature increases by some ratio not stated. The apparatus employed by Dr. Siemens, and which constitutes his photometer, he describes as follows:

At the bottom of a small tube, which can be rotated, is some of the crystalline selenium placed between two small, flat spirals of wire. The ends of the two spiral wires are connected with each other through a Daniell cell and the wire of a galvanometer. The needle is thus deflected. If I remove the cover of the tube, and admit the light of a gas-flame, whose strength I would measure, to the selenium disk, the conductivity of the disk increases proportionally to the intensity of the light; so the deflection of the needle becomes greater. If I now turn the tube so that it is directed to a normal candle, instead of the flame to be measured, and regulate the distance of this normal candle so that the deflection of the needle becomes and remains the same when the selenium is alternately illuminated by the flame to be measured and the normal candle, the light action is the same from both, and the intensities of the lights are accordingly in inverse proportion to their distance from the selenium plate.

Assuming the permanency of this property of selenium and the instantaneity of the recurrence of the change of conductivity, it would appear that we have at last an accurate register of comparative intensity, measurably, if not entirely divested from the effect of color, (which has impaired the visual methods,) and if the effect of heat can be diminished (or reduced to estimable comparative value); a perfect photometer, likely to supercede all other devices of this kind.

This discovery is too important not to command attention, and the further development will be looked for with the greatest interest.

Arctic Geology.—But little is known of the geological conditions of the Arctic regions, and it was first announced as a great oversight that the late British Arctic expedition carried no officers competent to investigate the great questions which are so intimately connected with rock-making in that part of the globe. It has since been announced, however, that Captain Feilden, the naturalist of the expedition, has in addition to studies in zoology, given considerable attention to palæontology, and especially to miocene remains. He has received instruction in the field work of the British survey, and we may now hope that the field of science which at the present junction may prove the most fruitful of all in northern regions, may in the end receive some competent attention.

Coloring of Birds' Eggs.—Mr. Sorby finds that the coloring of birds' eggs is due to the variable mixture of seven well marked coloring matters. The principal red coloring matter is connected with the hæmo-globin of blood, and the two blues are probably related to bile pigments. There appears to be no simple connection between the production of these egg-pigments and the general organization of the birds.

Webb's Famous Swim Scientifically Considered.

The *British Medical Journal* remarks: The unprecedented exploit of Captain Webb stands almost unrivalled as an instance of human prowess and endurance. It places Captain Boyton's achievement completely in the shade as an exploit, though its practical utility to the species may be much less. It is not merely that Captain Webb is a daring and accomplished swimmer, of unusual powers of endurance as regards sustained muscular efforts; the great question is, "by what arrangement or modification of his heat producing and heat-conserving processes did he manage to sustain his 22 hours' immersion?"

It is notorious that J. B. Johnson's attempt to swim the channel two years ago ended in complete failure after an hour's immersion; and yet J. B. Johnson is no ordinary swimmer, but a stalwart fellow, possessing good powers of endurance. There must exist in Captain Webb's case strong contractile power in the vessels of the skin, by which his body-heat was conserved, and his stores of force thus rendered available for muscular effort. Combustion within the body produces heat and mechanical effort, and when the powers are taxed to produce heat, or the temperature falls, muscular effort fails partially or absolutely. But, though weary, he fulfilled his task; and if his immersion be followed by no pyrexia (fever), then Captain Webb's heat-regulating powers must be regarded as of no ordinary character.

How far and to what extent the porpoise-oil prevented heat-loss, and so aided in the result, is a factor that can only be appraised when others have tried it, and seen how far it will enable them to undergo the heat-loss of prolonged immersion. That it will have an effect is certain, as in cold regions it is usual to grease the body thoroughly in order to retain its heat. But, admitting all this, there would still appear to be peculiarities in the vaso-motor nerves, which make the difference, and which have made Captain Webb's achievement *un fait accompli.*

The Acid of the Gastric Juice.—Whether the acidity of the gastric juice be due to lactic or hydrochloric acid is still an open question. The former view rests on the authority of Prout, Graham, Schmidt and others, while the latter is maintained by Bernard. Rabuteen has investigated the point afresh, employing a new method which he describes in the *Comptes Rendus.* He obtains the juice from the stomach of a dog which has been allowed to fast for twenty-four hours, and has then been fed on bits of tendon. To the liquid, after filtration, pure quinia is added so long as it will dissolve. It is then dried *in vacuo,* and the residue treated, first with amylic alcohol, then with chloroform or benzine; the latter agents being able to dissolve many salts of quinia, while refusing to take up the mineral chlorides. On evaporation, the solvent leaves a pure hydrochlorate of quinia. Other analyses showed the absence of any trace of lactic acid. Quantitative determinations yielded 2.5 parts of hydrochloric acid in 1,000 of gastric juice.

Counting the Blood Corpuscles.—A Monthyon prize has been given to M. Malassez for researches on blood. He has contrived an instrument said to be superior to those previously used for ascertaining the number of red corpuscles in a given space. It consists of a capillary tube, into which blood and artificial serum are introduced, and which is graduated so that the contents of a given length are known. The mean number of red corpuscles in human blood is 4,000,000 in each cubic millimeter. A greater number is found in small arteries than in large, and in veins than in arteries, and most in veins that have lost part of their serum by exosmose. They are fewer in cases of cancer and tuberculose. Lead poisoning also lessens their number.

The Oil Diagometer.—Professor Palmieri has discovered a new instrument which he calls a diagometer, and which is constructed for the rapid examination of oils and textures by electricity. What the apparatus will do, Professor Palmieri details thus: First, it will show the quality of olive oil; second, it will distinguish olive oil from seed oil; third, it will indicate whether olive oil, although of the best appearance, has been mixed with seed oil; fourth, it will show the quality of seed oils; fifth, finally, it will indicate the presence of cotton in silken or woolen textures.

The New Fossil Bird.—Professor Marsh has recently made a critical scientific examination of the fossil bird, discovered during his researches at the West, and which presents the phenomenal development of well formed teeth. The professor concludes that the creature was an intermediate form between the bird and the reptile, and that its discovery supplies one of the missing links in the Darwinian theory.

The Progress of Science.—An illustration of what has been done by Great Britain for the advancement of science and art may be found in the appropriations made for the public museums and art galleries in the United Kingdom, the amount paid in 1874 being $1,033,485.

Of the 64 elementary substances known to exist, 20 are quite rare and of but little or no practical value.

Sales at S. F. Stock Exchange.

FRIDAY, A. M., OCT. 22.

75 Baltimore Con. 2½
630 Best & Belcher. ..62½@63
100 ....do..... b 62
247 Belcher..... 20@18
300 Bullion..... 55@57½
195 Chollar..... 15@17
200 Confidence..... 23@22½
115 Con Virginia..... 30@35
65 Caledonia..... 20@19
2355 California ..... 63½@65
10 ....do..... b 10...65
1465 C Point..... 27@28½
50 Con G Hill..... 5
335 Dayton..... 5½@5
460 Exchequer..... 15@14½
10 Eclipse..... b
1130 Gould & Curry..22½@23
110 Hale & Norcross..42½@42
570 Imperial..... 10½@10¾
120 Justice..... 32½@32¾
1250 Julia..... 15½@15¾
50 ....do..... 15½
190 Kentuck..... 14@13¾
20 Knickerbocker..... 1½
545 Lady Bryan..... 1½@1¾
610 Mexican..... 21½@21¾
3010 Ophir..... 39@37½
70 ....do..... b 10...58
50 ....do..... b 5...57½
10 ....do..... b 30...58½
105 Overman..... 30
305 Savage..... 90@89
190 Sierra Nevada..14½@14¾
35 S Hill..... 8¼
10 Seg Belcher..... 3
110 Utah..... 3@3½
445 Union..... 9@9¼
625 Yellow Jacket..82½@85

AFTERNOON SESSION.

250 Adams Hill 50c
160 Advance..... 3
330 Andes..... 3¾@3⅞
50 Belmont..... 1½
360 Monopolitan..... 30@30½
435 California..... 64@63½
1125 Crown Point ....28½@29
30 Con Virginia..... 350
80 Eureka Con..... 15@15½
125 Florida..... 50@45
1260 Gila..... 2¾@2⅞
285 Gould & Curry....22@21½
315 Golden Chariot..... 1
150 Hussey..... 1
415 Hale & Nor..... 44@46
160 Jefferson..... 4½
852 Julia..... 13½@14
70 Justice..... 32½
150 Mt Con..... 2
115 Kosuth..... 2¾
420 Leopard..... 10½@11
110 Leviathan..... 1
85 Lady Wash..... 1
195 Meadow Valley..3¾@3½
770 Mansfield..... 19@20
100 Modoc..... 5
60 Mahogany 1
50 Mt Diablo..... 2
12 Mides..... 3½@4
190 Mexican..... 21½@21½
20 ....do..... b 10...21½
275 New York..... 2¾@2⅞
100 N Carson 16
150 O G Hill..... 12@12½
1780 Ophir..... 38½@39
20 ....do..... b 30...39½
20 ....do..... b 10...38
70 Overman..... 30
125 Occidental..... 3¾@3⅞
300 Poorman 75c
20 Raymond & Ely..... 28
200 Rock Island..... 2@2½
30 Savage..... 90
1460 Woodville..... 3½@3⅝
200 Wells-Fargo..... 35c
60 Y Jacket..... 85@86

SATURDAY, A. M., OCT. 23.

125 Alpha..... 20
145 Andes..... 3¾
30 Am Flat..... 2
100 Amazon..... 1
175 Baltimore Con..2¾@2½
250 Belcher..... 19½@20
30 Bullion..... 56@56½
60 Best & Bel..... 51½@53
150 ....do..... b 5..51½@52
100 ....do..... s 30..51¾
50 Challenge..... 5½
65 Chollar..... 16@15
555 C Point..... 26@27
30 Confidence..... 22½@22
114 Con Virginia..... 32@320
10 ....do..... s 30..32½
5 ....do..... b 5...32
790 California..... 64@63½
100 ....do..... b 5...63¾
100 ....do..... b 2...63¾
115 Caledonia ..... 18½@19½
225 Exchequer..... 15½
25 Europa 2½
100 Florida..... 1
565 Gould & Curry..20½@20¾
50 Hale & Nor..... 44@43
610 Imperial..... 10¾@10½
140 Justice..... 32¾@32
410 Julia..... 12@12¾
310 Kentuck..... 13@14¾
310 Kossuth..... 2¾@2⅞
250 Lady Bryan..... 1½
80 Lady Wash..... 2½@2⅝
100 Leo..... 1½
2320 Mexican..... 20@20¾
200 Mides..... 3½@3¾
100 M Star..... 4
285 Meadow Valley..... 3½
100 New York..... 2½
50 N Carson..... 15c
3340 Ophir..... 39@38½
100 ....do..... s 10...55½
100 Occidental..... 3¾
370 Overman..... 31½@4
15 Ray & Ely..... 27½
55 Savage..... 88@87
440 Sierra Nevada..14½@14
50 Seg Belcher..... 70½
155 Union Con..... 9¾@9⅝
2260 Woodville..... 2½@3
50 Wells-Fargo..... 40c
190 Yellow Jacket..81@83
60 ....do..... s 30...83

MONDAY, A. M., OCT. 25

80 Alpha..... 19½
190 Bullion..... 54½@56½
1750 Best & Bel..... 46@48
50 ....do..... b 30...48½
50 ....do..... s 30...48½
150 ....do..... b 5...48
90 Belcher..... 19½@19
150 Cal Con..... 2½
330 Crown Point..... 26@27
165 Chollar..... 17@16
80 Caledonia..... 18@18½
580 Confidence..... 22½@22
112 Con Virginia..... 31½@32
10 ....do..... b 5...320
1030 California ..... 63@64½
540 Empire..... 5¾@6
225 Exchequer..... 15¾@16
50 Eclipse..... 2½
1240 Gould & C..... 19@19½
25 Hale & Nor..... 40@39½
560 Imperial..... 10¾@10½
165 Justice..... 32½@32¾
115 Julia..... 13½@13
100 Kentuck..... 14
350 Lady Bryan..... 1½
1160 Mexican..... 19¾@19½
255 New York..... 2¾@2⅞
1560 Ophir..... 51½@52½
240 Overman..... 32@31
40 ....do..... b 5...31½
20 Occidental..... 3
100 Phil Sher..... 2
220 Sierra Nevada..... 14
135 Savage..... 83@85
160 Sil Hill..... 7½
1295 Union Con..... 9¾@9⅝
1461 Woodville..... 2½@3
120 Y Jacket..... 8½

AFTERNOON SESSION.

200 Advance..... 3
100 Amazon 1
305 Andes..... 3¾@3⅞
50 Belmont..... 1½
800 B & Bel..... 50@49¾
500 ....do..... b 5...50
630 Best & Belcher..52½@53
100 ....do..... b 52...52
30 ....do..... b 5...320
555 California..... 63¼@63½
150 Crown Point..... 26½@27
165 Confidence..... 22½@23
95 Empire..... 5½
100 Eureka Con..... 14½@14
50 Florida..... 3½
160 Gila..... 2¾@3
210 Golden Chariot..... 1
1 K & Curry..... 20@19½
100 ....do..... b 5...20
635 California..... 60¾@61
120 Cal Gulla..... 18½
65 Con Virginia..... 30@31¾
1015 Crown Point..... 23@24¾
55 Exchequer..... 13
50 Empire Mill..... 5½
740 G & Curry..... 18¾@19¾
10 Hale & Nor..... 42½
270 Imperial..... 10@9¾
275 Justice..... 32@31½
50 Kentuck..... 13@12¾
920 L dy Bryan..... 1¾@1¾
35 Lady Wash..... 2¾@3
1580 Mexican..... 20@20¾
415 Mexican..... 20@20
2785 Ophir..... 58@59
50 Overman..... 48
165 Occidental..... 4@3¾
100 Prospect..... 1
100 S Hill..... 8½@8¾
10 Seg Belcher..... 3
120 Savage..... 84
20 ....do..... s 30...84
100 Succor..... 1½
140 Sierra Nevada..14@14½
740 Union Con..... 8½@9¼
1420 Woodville..... 2½@2¾
160 Wells-Fargo 36c
150 Yellow Jacket..... 85@74

TUESDAY, A. M., OCT. 26.

95 Alpha..... 17½@18
1256 Best & Belcher..... 40@36
100 ....do..... b 5...36½
350 ....do..... b 30...36
235 Belcher..... 17@16½
40 Bullion..... 46
150 Chollar..... 16@38
400 Crown Point..... 23½@25
140 Gould & Curry..... 20@20
300 Jefferson..... 4¾
340 Justice..... 32
570 Julia..... 13½@14
1000 Kentuck..... 13
2335 California..... 52½@53
10 Mexican..... 20@20½
110 Empire Mill..... 5½@5
105 Exchequer..... 14¾@14½
835 Gould & Curry..... 15@14
120 ....do..... 15
60 Poorman..... 87½@41
30 Raymond & Ely..... 29
50 Rye Patch..... 75c
18 Savage..... 85c
500 South Charlo!..... 10c

The Mining Stock Market.

This has been anotber eventful week in tbo mining stock market. The series of disasters wbicb bave been visited upon mining stocks of late has ended in this iest calamity, the destruction by fire of the hoisting works of two of the most prominent mines and hurning of the mill aad batteriee of the Coneolidated Virginia and California. Thore are no two minee upon tbe Cometock that have occnpied such important relations to other minee as Ophir and Coneolidated Virginia. Tbe former wae developing into a firet-clase property, wbile it hae alwaya been a favorite for speculation, and tbrongb its shaft tbe Mexican and Union Consolidated were being prospected. The Coneolidated Virginia bae attained a world-wide celebrity for its wonderful hullion production and ite immense bonanza, and hae become perbape the most celebrated mine in tbe world. Witb new hoisting works, additional milling facilities and improved macbinery, tbo output has been increased of late and it was expected this month to tarn out two million dollars in ballion. The destruction of the worke, bowever, will retard mattere at tbe mine, aad it may even pase over the nenal montbly dividend of $10 per share, and uee the money for the purchase of new machinery. Tbe effect of tbe newe of tbe fire npon stocks was to deprese tbose et tbe Virginia end from twenty-five to tbirty-threeper cent., with the Gold Hill stock seiso affected, yet not sufficient to cause any alarm to their holders. California and Consolidated Virginia baye been favorite stocks for investments—the large dividends of tbe latter enticing many into the fold that formorly adjured stocks, while the drifts and winzes of the former bavo exposed such rich and large bodies of ore as to make it tbe richest known mine in tbe world, and on this account it was widely scattered, and held by capitialiste as well as by merchants and all classes of people in large quantitiee, npon whom this depreciation will fall beavily. Opbir, which sold on Monday at $52, sold for $38; Con. Virginia, $320, declined to $210, and California from $62 to $52¼—tbese were tbe lowest figuree reacbed in the morning hoard. Before tbe hoards entered into session it was reported that tbe San Frencisco board would bold no session, end that some of their membere were in negotiation witb members of the Pacific board to adjourn over, hut that the latter would entertain no such proposition. The San Franeisco board, at its convening, beld a private meeting, and the question of adjournment wae disoussed and decided in favor of tbe continuation of business.

When tbe boards met and the liet wae called, a terrific elanghtor was made. Whatever price wae offered was immediately accepted, the seller feeling asenred that he had made a good bargain. This state of affairs continned for some time after the morning sessione were ended, and when tbe rally came it was not so great a reaction as wae expected. The afternoon salee showed a better feeling, and this prevailed nntil late, when the news came that the Ophir shaft was on fire, wbich hed the effeot to immediately depress Opbir down to $34, and sent the Mexican and Union Consolidated tumbling after it to a proportionate degree. The last news may he said to have had the sevorest action of any npon the market, and had not nigbt closed tbe scenee there is no telling wbat figure tbis stock would have reacbed, eo great was the excitement. Tbe terrihle fire of 1869 in the Yellow Jacket, Crown Point and Kentuck mines, and the amount of damage done, bas not been forgotten, and tbie wae frequently citod by people when diecussiag the eituation.

Tbe rumors that the Ophir and Coneolidated Virginia shafte were on fire, and perbaps that of the Gould & Curry too, helped to hreak the market, and tbere wae a perfect panic. Many supposed that the brokere conld not stand the second onset, coming so soon after tbe financial panic, wben the Bank of California eusponded. Ae yet, however, no failures baye been announced, although the fail bas, no douht, seriously crippled many small operators. Tbe market bas slightly recovered in tone, hut prices are still very mucb depressed. If tbe two injured mines beve to sbnt down temporarily, as eome suppose, it will bave a further depreseing effect. Somo of the sbrewd onee took all the stock they could get at panic prices, knowing that they would realize good profite when tbe excitement wes over. Verily tbe stock deslers bave berd times of it lately, and they were just boping for hriek times when this disaster occurred. It sbowe, however, bow intimately the interests of San Francisco are connected with thoee of the mines, when an occnrrence of this kind influences it to such an extent. Tbose who are desirone of learning tbe details of tbe fell in stocks are referred to tbe nenal tables in another column.

200 Mansfield..... 22c
200 M Star..... 4
1645 Mexican..... 17@17½
20 N Belle..... 2
50 O G Hill..... 2
135 Overman..... 46@44
2565 Ophir..... 38¾@40
50 Prussian..... 2

SALES OF LAST WEEK AND THIS COMPARED.

THURSDAY, A. M., OCT. 21.

180 Andes..... 3¾@3⅞
485 Best & Belcher.. 49@49½
265 Belcher..... 18@18½
80 Bullion..... 54@55
90 Baltimore Con..... 2½@2¾
50 Chollar..... 17@73
100 Confidence ..... 23@24
635 California..... 60¾@61
120 Cal Gulla..... 18½
65 Con Virginia..... 30½@31¾
1015 Crown Point..... 23@24¾
55 Exchequer..... 13
50 Empire Mill..... 5½
740 G & Curry..... 18¾@19¾
10 Hale & Nor..... 42½
270 Imperial..... 10@9¾
275 Justice..... 32@31½
50 Kentuck..... 13@12¾
920 L dy Bryan..... 1¾@1¾
35 Lady Wash..... 2¾@3
1580 Mexican..... 20@20¾
415 Mexican..... 20@20
2785 Ophir..... 58@59
50 Overman..... 48
165 Occidental..... 4@3¾
100 Prospect..... 1
100 S Hill..... 8½@8¾
10 Seg Belcher..... 3
120 Savage..... 84
20 ....do..... s 30...84
100 Succor..... 1½
140 Sierra Nevada..14@14½
740 Union Con..... 8½@9¼
1420 Woodville..... 2½@2¾
160 Wells-Fargo 36c
150 Yellow Jacket..... 85@74

AFTERNOON SESSION.

100 Adams' Hill..... 42½c
160 Belmont..... 1½
2000 California ..... 61½@61¾
Con Virginia..318¾@320
540 Eureka Con..... 14¾@15
135 Golden Chariot..... 1
80 Gila..... 2¾@3
140 Gould & Curry..... 20@20
300 Jefferson..... 4¾
340 Justice..... 32
570 Julia..... 13½@14
300 K K Con..... 3¾@4
925 Leopard..... 11½@12
20 Meadow Valley..... 3¾
1400 Mexican..... 20@20½
70 Overman..... 50@50¾
Phoenix..... 17c
60 Poorman..... 87½@41
30 Raymond & Ely..... 29
50 Rye Patch..... 75c
18 Savage..... 85c
500 South Charlo!..... 10c

THURSDAY A. M., OCT. 28.

145 Alpha..... 17
650 Baltimore Con..... 2¾
170 Bullion..... 43@46
1170 Belcher..... 17½@18
1110 Best & Belcher ..37@38½
400 ....do..... b 30...38@40
2585 California..... 52½@53
100 ....do..... b 5...52
467 Con Virginia..... 245@250
20 ....do..... b 5...245
605 Crown Point..... 21@21½
200 ....do..... b 20...28
395 Chollar..... 69@68½
90 Confidence ..... 20@19½
180 Caledonia ..... 15@16½
10 Challenge..... 5
90 Dayton..... 5½
30 Empire Mill..... 5
100 Exchequer..... 4
520 Gould & Curry..... 15¾@16
135 Hale & Norcross..... 40
445 Imperial..... 10@10¼
395 Justice..... 29@29½
1095 Julia..... 15½@17½
480 Kentuck..... 14@13¾
280 Lady Bryan..... 1¾@2
1000 Mexican..... 20@20½
50 ....do..... b 5...16½
50 ....do..... b 5...16½
23.0 Ophir..... 38¼@38
215 Overman..... 41@45
120 Savage..... 84
105 Seg Belcher..... 73@74
125 S Hill..... 7½@7¾
725 Union Con..... 7½@7¾
50 Utah..... 2¾
140 Yellow Jacket..... 76@74

AFTERNOON SESSION.

130 Advance..... 3½@3¾
530 Andes..... 3¾@3⅞
550 Be mont..... 1½
700 Best & Belchor..37½ a38
1130 Cosmopolitan.....30@32c
1000 California..... 53¾@54
300 Con Virginia..... 250@248
400 Eureka Con ..... 13@12
50 Eldorado S..... 1
280 Florida..... 3@2
1000 Gila..... 2¾@3⅛
140 Gould & Curry.16½@16¾
160 Jackson..... 1½@1¾
15 Jefferson..... 4½
150 K K Con..... 3½
470 Kossuth ..... 2¾@3
300 Lecpard..... 10½@10½
1690 Leviathan..... 1¾@1¾
70 Meadow Valley..... 3@2¾
100 Mides..... 4
100 Mansfield..... 22@20
200 M Star..... 4
480 New York..... 1¾@1⅞
100 Occidental..... 3¾@3⅝
150 O G Hill..... 13@13½
1425 Opbir..... 38¾@39
217 Overman..... 47a50
50 Pacific.. ..... 50c
65 Poorman..... 87½c
260 Panther..... 25c
115 Raymond & Ely..21½@22
50 Rye Patch..... 1
520 Rock Island..... 2
500 Wells Fargo 37½c
4730 Woodville..... 2½@3¼

MINING SHAREHOLDERS' DIRECTORY.

Compiled every Thursday from Advertisements in the Mining and Scientific Press and other S. F. Journals.]

ASSESSMENTS.—STOCKS ON THE LIST OF THE BOARDS.

Company.	Location.	No.	Amt. Levied.	Delinq'nt. Sale.	Secretary. Place of Business.
Alta S M Co	Washoe	2	50 Aug 23	Oct 15 Nov 5	Wm H Watson 302 Montgomery st
Amazon Cons M Co	Nevada	1	10 Sept 20	Oct 22 Nov 12	R P Hosmer 330 Pine st
Andes S M Co	Washoe	5	25 Sept 10	Oct 18 Nov 8	M Landers 507 Montgomery st
Baltic Cons M Co	Washoe	2	10 Oct 9	Nov 13 Nov 30	Theo C Klhbo 419 California st
Baltimore Cons M Co	Washoe	10	1 00 Oct 7	Nov 10 Nov 30	G A Sankey 381 Montgomery st
Belmont M Co	Nevada	6	50 Oct 6	Nov 9 Dec 6	Frank Swift 419 California st
Buckeye G & S M Co	Nevada	15	25 Sept 13	Oct 16 Nov 5	G A Sankey 331 Montgomery st
Buckeye Water & H M Co	Cal	1	50 Oct 1	Nov 5 Nov 21	W H Lowden 240 Montgomery st
Cherly Creek M & M Co	Cherry Creek	5	25 Oct 21	Nov 29 Dec 27	D F Verdenal 409 California st
Chollar-Potosi M Co	Washoe	8	5 00 Oct 14	Nov 17 Dec 7	W E Dean 419 California st
Dayton G & S M Co	Nevada	4	1 00 Sept 15	Oct 19 Nov 8	W E Dean 419 California st
El Dorado S Cons M Co	Nevada	7	1 00 Oct 13	Nov 16 Dec 7	Wm Willis 419 California st
Empire M Co	Idaho	11	50 Oct 23	Nov 29 Dec 20	W Willis 419 California st
Gold Mountain G M Co	Cal	6	25 Sept 10	Oct 20 Nov 10	J P Cavallier 513 California st
Gould & Curry S M Co	Washoe	24	1 00 Oct 26	Nov 27 Dec 18	A K Durbrow 309 Montgomery st
Gracow G & S M Co	Nevada	1	10 Sept 20	Oct 30 Nov 22	R P Hosmer 330 Pine st
Ida Ellmore M Co	Idaho	19	10 Oct 16	Nov 19 Dec 10	W Willis 419 California st
Illinois Central M Co	Idaho	4	50 Oct 12	Nov 16 Dec 7	R H Brown 402 Montgomery st
Iowa M Co	Washoe	4	5 Sept 16	Oct 18 Nov 12	A D Carpenter 605 Clay st
Justice M Co	($5 on old stock and $1 on new)	16	6 00 Sept 15	Oct 18 Nov 14	Jas S Kennedy Merchants' Ex
Knickerbocker M Co	Nevada	13	1 00 Sept 7	Oct 16 Nov 5	J H Sayre Stevenson's Build'g
Keesuth M Co	Nevada	5	75 Oct 4	Nov 9 Nov 30	E F Stone 419 California st
Leo M Co	Washoe	4	50 Sept 6	Oct 8 Nov 5	W R Townsend 335 Pine st
Mansfield G M Co	Cal	4	1 00 Oct 9	Nov 17 Dec 4	J M Bullington 311 California st
Meadow Valley M Co	Ely District	3	1 00 Sept 20	Oct 28 Nov 24	C W Colburn 418 California st
Mint G & S M Co	Washoe	11	20 Sept 7	Nov 2 Nov 24	B A Jennings 401 California st
Newark S M Co	Nevada	11	50 Sept 14	Oct 19 Nov 9	Wm Willis 419 California st
North Bloomfield Gravel M Co	Cal	40	1 00 Oct 21	Dec 3 Dec 20	T Derby 320 California st
North Cons Virginia M Co	Washoe	1	5 Oct 6	Nov 16 Dec 1	Joseph Maguire 419 California st
Overman S M Co	Washoe	9	3 00 Sept 12	Oct 16 Nov 6	Geo D Edwards 414 California st
Pierce G M Co	California	3	3 00 Sept 8	Oct 16 Nov 8	Chas E Elliott 419 California st
Rock Island G & S M Co	Washoe	9	50 Oct 7	Nov 10 Dec 3	J W Clark 418 California st
Savage M Co	Washoe	20	5 00 Oct 8	Nov 10 Nov 29	E B Holmes 419 California st
Sierra Nevada S M Co	Washoe	42	1 00 Oct 1	Nov 5 Nov 25	R Wegener 414 California st
Silver Hill M Co	Washoe	3	1 00 Oct 1	Nov 4 Nov 23	W E Dean 419 California st
Snocor Mill & M Co	Washoe	12	50 Aug 18	Oct 11 Nov 1	Wm H Watson 302 Montgomery st
Sunrise S M Co	Cal		50 Sept 14	Oct 16 Nov 8	T H Wingard 318 California st
Tuzer M Co	Arizona	1	50 Sept 17	Oct 22 Nov 15	W Willis 419 California st
Troy Cons M Co	Washoe		20 Oct 22	Nov 26 Dec 17	S C Herbert 535 Clay st
Union Cons S M Co	Washoe	8	50 Oct 11	Nov 15 Dec 6	J M Buffington 311 California st
Utah S M Co	Washoe	11	2 00 Oct 14	Nov 22 Dec 10	W E Dean 419 California st
Utah S M Co	Washoe	11	2 00 Oct 19	Nov 22 Dec 10	W E Dean 419 California st
Washington & Creole G & S M Co	Nev	15	75 Sept 27	Oct 30 Nov 20	F D Cleary 401 California st
Wells Fargo M Co	Washoe	3	50 Sept 14	Oct 16 Nov 8	O H Bogart 402 Montgomery st
Yellow Jacket S M Co	Washoe	21	5 00 Sept 20	Oct 23 Nov 24	G W Hopkins Gold Hill Nevada

OTHER COMPANIES—NOT ON THE LISTS OF THE BOARDS.

Carrie Hale H M & W Co	Cal	2	10	Sept 18	Nov 1	Nov 20 F W Van Reynegom 531 California st
Cerbat Cons G & S M Co	Arizona	2	10	Oct 5	Nov 8	Nov 27 T E Jewell 507 Montgomery st
Cons P e M Co	Peavine District	9	25	Oct 13	Nov 13	Dec 13 J H Borland Reno, Nevada
Coquille Black Sand G M Co	Oregon	1	1 00	June 8	Oct 13	Nov 18 F P Reynolds 111½ Leidesdorff st
Eagle Silver M & M Co	Nevada	2	50	Sept 11	Oct 20	Nov 10 H L Byrne 333 Kearny st
East Branch M Co	Cal	2	20	Oct 4	Nov 5	Nov 23 A Martin 420 Washington st
Edith Q M Co	Cal	5	20	Sept 14	Oct 30	Nov 20 Wm Stuart 113 Leidesdorff st
El Dorado W & D G M Co	Cal	11	20 00	Sept 21	Oct 22	Nov 8 Hugh Elias 416 Montgomery st
Enterprise Cons M Co	Cal	5	25	Sept 29	Nov 1	Nov 20 F J Hermann 418 Kearny st
Exhibitor Q M Co	Cal	3	5	Oct 8	Nov 10	Dec 2 A Von Pfister Merchants' Ex
Florence M Co	Cal	3	15	Sept 17	Oct 25	Nov 17 Scot Sutton 220 Montgomery st
Geneva Cons M Co	Cherry Creek		20	Oct 11	Nov 15	Dec 6 I T Millikon 302 Montgomery st
Gold Run M Co	Cal	13	25	Sept 27	Oct 30	Nov 26 C C Palmer 41 Market st
Howard Hill G M Co	Cal	5	25	Sept 27	Nov 3	Nov 21 F J Hermann 418 Kearny st
Justice Cons M Co	Nevada	3	25	Sept 20	Nov 1	Nov 24 Chas S Neal 419 California st
Kelsey G & S M Co	Cal	14	5	Sept 27	Nov 6	Nov 24 J H Sayre 331 Montgomery st
Morae & Evans G M Co	California	2	10	Sept 6	Oct 15	Nov 12 Daniel Ruck 331 Montgomery st
North Carson S M Co	Nevada	2	10	Sept 7	Oct 14	Nov 5 W A Van Bokkelen 419 California st
Oceanic Quicksilver M Co	Cal	2	50	Oct 22	Nov 23	Dec 13 C G Funk 438 California st
Orleans M Co	Cal	8	2 00	Oct 27	Nov 30	Dec 18 Geo P Thurston 315 California st
Pioneer Cons M Co	Nevada	4	10	Sept 14	Oct 19	Nov 9 Wendell Easton 419 California st
Peytona G & S M Co	Nevada		5 00	Oct 25	Nov 30	Dec 18 T J Owens 215 Sansome st
San Francisco Copper M Co	Nevada	2	10	Aug 4	Sept 6	Sept 30 R De Clairmont Front & Jackson st
Union Gravel M Co	Cal	12	1 00	Oct 21	Dec 6	Dec 20 T Derby 320 California st
Ward Ellis S M Co	Nevada	4	10	Oct 22	Nov 29	Dec 18 J M Buffington 311 California st

MEETINGS TO BE HELD.

Name of Co.	Location.	Secretary.	Office in S. F.	Meeting.	Date.
Chicago G & S M Co	Washoe	F P Reynolds	111½ Leidesdorff st	Annual	Nov 18
Howard Hill G M Co	Cal	F J Hermann	418 Kearny st	Annual	Nov 3
Northerly Five Cent Hill G M Co	Cal	J M Buffington	311 California st	Annual	Nov 25
St Patrick G M Co	Cal	D F Verdenal	419 California st	Annual	Nov 13
Gutro Mining Co	Nevada	W H Reynolds	434 California st	Special	Nov 11

LATEST DIVIDENDS (within three months)—MINING INCORPORATIONS.

Name of Co.	Location.	Secretary.	Office in S. F.	Amount.	Payable.
Black Bear Quartz	Cal	W L Oliver		25	Sept 13
Cons Virginia M Co	Washoe	Chas F Fish	401 California st	10 00	Oct 7
Empire G M Co	Sierra Co Cal	C Collischon		5 00	Aug 17
Empire M Co	Nevada Co Cal	D A Jennings	401 California st	50	Sept 15
Eureka Consolidated M Co	Nev	W W Traylor	419 California st	1 00	Aug 5
Excelsior M & M Co		Frank Swift	419 California st	1 00	April 10
Gila S M Co	Nevada	W Anz Knapp	116 Leidesdorff st	25	Aug 15
In lian Queen M & M Co		A K Durbrow		50	Oct 11
Jefferson S M Co		C A Sankey	331 Montgomery st	50	May 15
Leopard M Co		R H Brown		50	July 15
Lyon Mill & Mining Co	Washoe	E F Sione	Hayward's Bldg	50	Aug 13
Manhattan S M Co	Nevada	Chas S Neal	419 California st	1 00	June 15
Northern Belle M & M Co		W Willis	419 California st	1 00	Oct 15
Oneida M Co		L Kaplan	Merchants' Ex	50	Aug 24

MINING SUMMARY.

California.

AMADOR.

LINCOLN MINE.—*Ledger*, Oct. 23: This mine snspended operation some two weeks hack, and it wae tbongbt prohahle that active mining would not be rosumed before the commencement of the wet seaeon. On Monday last, bowever, a force of twelvo men were put to work taking out rock and repairing the shaft. Itie not likely tbat this number will he decreased. We understand that the mill will run on ten stamps whenever tbe limited eupply of water will enahle it to so.

ONEIDA MINE.—Amidst tbe paralysis of milling operations, in conecquence of lack of water, it is gratifying to be able to note that tbe Oneida company are working eixty stamps—the full capacity of their mill. They are running entirely by steam, and bave heen so rnnniog for more than a week.

EL DORADO.

AIDING BUSINESS.—*Republican*, Oct. 21: It ie expected that the ditch company will disbarse in the neighborhood of $60,000 here tbis month, and tbat in consequence we sball all he in easy circumstances, financially, ae nearly all of as ere intereeted more or less in theee payments. Tbis payment will hridge over the usual dullness experienced at this seaeon of the year, to a large extent.

FRESNO.

RICH QUARTZ.—Merced *Express*, Oct. 23: Cargyle & Co's mine, eituated ten miles north of Jones' storo and two miles eaet of Fine Gold gulch, Freeno county, is reported to he turniag out some as rich rock as any mine in tbis whole region of country. Tbe main sbaft is down 400 ft, and tbe vein at tbe bottom of tbe sbaft is four feet wide. Mr. T. B. Cargyle, of Plainsburg, who is the principal owner in the mios, informs us tbat the rock now coming from it will pay $500 per ton. If Mr. C. is oorrect, and tbe mine bolds out at tbie rate, it ie destined

to be the best mine on the Pacific Slope, not even excepting the great bonanza mines of Nevada.

LAKE.

QUICKSILVER.—Middletown correspondence of the *Bee*, Oct. 23: The Great Western is running three of Green's furnaces. At the Wall street one of Green's forty ton furnaces, with Winterburn's improvement, is being erected, and the Kearsage company have made arrangements to erect one of Neat's furnaces, such as used at the St. John's mine near Vallejo. The latter two companies will be in full blast by the first of December. The American mine is taking out about thirty flasks of quicksilver per month in their retorts. The Edith mine has just started up their new furnace and it is working quite satisfactory now. The owners of the Columbia and James mines are respectively prospecting their claims, and by another spring we anticipate lively times hereabouts.

NEVADA.

THE KENTUCKY.—*Foothill Tidings*, Oct. 23: Every foot westward in the drift on the 300-ft level of this mine, shows an improvement in the character of the rock and the general appearance of the ledge. Kentucky is destined to be one of the big paying mines of Grass Valley.

WOODPECKER ravine, just in the edge of our town, was a very rich surface diggings region and it is thought there must be a splendid quartz ledge in the adjacent hill. The Phœnix company are quietly exploring in that direction and with very encouraging prospects.

THE Smartsville company, whose new strike was chronicled last week, are creating quite an excitement down there. In quality and quantity the yield of their mine is said to exceed anything seen in those parts for many years.

THE ditch which will convey water from South Yuba to Bluo Tent, is expected to be finished early next week. It will be thirty miles long, and cost in the neighborhood of 20,000. It was commenced one year ago last spring, and has been pushed ahead as rapidly as possible.

A WORTHY object is that of the Accident club recently formed among the workmen at New York Hill mine of this place; it being to give certain amount of relief to its members, when disabled from work in the employ of the New York Hill mining company. Each member pays to the club, monthly, the sum of $1, and when disabled from work draws a benefit of $10 a week besides his medical attendance.

LAKE IDAHO.—The Idaho continues to be in a steady paying way, declaring regular monthly dividends.

CINCINNATI.—The Cincinnati is in an encouraging condition, and the owners, who are experienced miners, have no doubt about the ultimate success of the mine.

OMAHA.—The Omaha is having a crushing through at the Larimer mill, and the crushing will turn out well, according to the appearances of the plates and other amalgamating appliances at the mill.

NEW YORK HILL.—New York Hill continues to send to the surface very rich ore; so rich that it is boxed up and placed in a bank vault. The mill is meanwhile running on ore that will average well. The richest ore is from the low-level of the mine—the 500-ft. Ledge good thick.

PERSEVERANCE.—The Prospect company is working a ledge between Forest springs and Nelson ranch, called the Perseverance. The company are now timbering up the old tunnel and will soon be ready to take out quartz. Rock from this ledge has paid from $16 to $36 per ton. Perrin's mill has been engaged for crushing the Prospect company's quartz.

FRANKLIN.—The ore heretofore taken out of the mine paid $6,000 to 45 loads. The works are now down some 20 ft below where the rich ore was taken out, and the ledge looks as well as ever. A water wheel, or other machinery for pumping, will have to be put up before the miners can sink any deeper.

PITTSBURGH.—The Pittsburgh mine is looking unusually well. This mine is near Deadman's flat, southwest from Grass Valley, and is the Pittsburgh situated near Nevada City. The other day there was a crushing of 19 loads of quartz which gave about $900 in gold, or about $48 to the load. The sulphurets will raise the yield still more, because the sulphurets from the Pittsburgh are always rich.

EMPIRE.—The Empire mine, the oldest one now in the district which is being worked, still goes on full-handed and with good results. We are not able to-day to give full figures from the mine because we could not catch either the superintendent, Mr. David Watt, nor the foreman, Mr. James Bennalleck.

THE EBYEN PROCESS.—There are a great many here, which are rebellions in their character. These are awaiting the result of Mr. Ebyen's experimente with his new works. In many many days it will be known to all whether the new process can do what is expected of it. We believe that it will be a complete success and that the process of the reduction of gold bearing quartz will be completely revolutionized by it. We, however, are not speaking by authority, but say what we do say because appearances suggest the opinion. Speaking of the Dryer process reminds us to mention that it has been brought here from San Salvador, Central America, to be worked by that pro-

SIERRA.

NEW MILL.—*Mountain Democrat*, Oct. 16: A new mill, of 20 stamps, at the Independence mine, commenced crushing rock last week. The old mill has 16 stamps, making 36 in all. Jo. Carney is boss of the two mills, and under his able direction the ore will be made to yield large dividends to the stockholders. Geo. Black and A. Hart are working here now.

ALASKA.—The old Alaska mine, situated at Pike city, and now owned by Spencer & Brown, will, Mr. Spencer informs us, be in working order by the 1st of November. The mine paid well in days gone by, but was worked to such a depth that it would require heavier machinery than the company felt able to put in. The present owners are fitting up the works in the most substantial manner, and having fully explored the ledge know just what they have before them.

TUOLUMNE.

THE OMEGA.—*Independent*, Oct. 23: Superintendent Watt is driving ahead in the Omega Table Mountain gravel claim. The whole length of the tunnel is 781 ft. He has raised 34 ft by an incline to a rim or shore that divides the west channel of the mountain near the Alpha line and expects to strike into this channel at any moment. After intercepting this channel he will run a gangway 279 ft to the Alpha works, where Superintendent Collins left off, the Alpha company cleaning up at this point as high as 33 ounces. This is claimed by many to be the old original Caldwall channel with its pipe clay and black gold. Watt says if the water holds out for air blast purposes he will show some of the rhino very soon.

THE SPRING GULCH.—Superintendent Wm. Sharwood informs us that the Spring Gulch mine shows a vein of six ft. For the past twelve months they have been running through a slate horee the distance of 100 ft. They are working three men and a boy to the shaft and taking out rock enough to keep ten stamps going, at a distance of 200 feet from the tunnel level where they are at present drifting. All through this six ft vein sulphurets and free gold are visible and will mill about $25 per ton. This is one of the proofs that our mines require depth to be of any permanent value. The property is owned by Sharwood, Johns, Bawden & Co.

DITCHES.—Water in the Tuolumne hydraulic mining company's ditch is still running down hill, and will continue to furnish a supply for mining and city purposes until the last of November.

THE supply of water in the Tuolumne County water [company's ditches has about ceased, and will not be able to get the miners at work until the rain comes.

Nevada.

WASHOE DISTRICT.

OPHIR.—Gold Hill *News*, Oct. 21: Daily yield, 350 tons of ore. The ore breaste are all looking splendidly, and continue an uninterrupted yield of good ore, keeping mills crushing to their full capacity. The upraise above the 1200-ft level, is still looking splendid and holds out a fair promise of a strong upward continuation of the ore body. The main eastheast drift, on the 1100-ft level, is rapidly advancing, the ground in the face steadily growing softer with more and better indications of a near approach to the ledge.

JULIA.—The south drift on the 1000-ft level is steadily advancing, the face in soft porphyry mixed with streaks of clay. The prospect of encountering a body of quartz is much more favorable. The face of the main southwest drift on the 1400-ft level is rapidly advancing, having passed during the past week, through several small veins of quartz and ore averaging from ten inches to four ft in thickness, all of a very favorable character. The face of the drift is now almost entirely in quartz, and it cannot be long before the solid portion of the ore vein will be reached. The excavating for the 1500-ft station is about completed.

WOODVILLE CONSOLIDATED.—Cutting out of the pump stations at the 210 and 426-ft levels is rapidly approaching completion. The heavy stone foundations for the new and powerful pumping engine is well under way and is being pushed to completion as rapidly as possible. A large force of men are employed, and everything is being done to forward the work that apparently can.

CALIFORNIA.—The bottom of the winze below the 1550-ft level is still in rich ore. The face of the north drift on the same level is also in good ore. The winze being sunk in cross-cut No. 5 below the 1500-ft level is down 15 feet, the bottom still in rich ore. The face of the main north drift on the 1500-ft level is still in ore of a fair milling quality, although not of as rich a quality as that heretofore encountered. The opraise from cross-cut No 2 on the 1400-ft level has been connected with the 1300-ft level, greatly aiding the ventilation in that portion of the mine.

CONSOLIDATED VIRGINIA.—Daily yield, 650 tons of ore, keeping the mills running up to their full crushing capacity. The ore breasts continue to look finely and yield well. A large amount of winter supplies, in the shape of wood, timbers, etc., are being laid in, to provide against the slow and expensive transportation of such things in the winter season. Sinking the C. and C. shaft is making rapid progress. It is now down 730 ft, the bottom in good sinking ground. The new hoisting engines are about completed, ready to start up. The main hoisting works building is completed.

BELCHER.—Daily yield, 180 tons of ore. The ore breasts are looking finely, and the yield can be easily increased to 350 or 400 tons per day whenever the crushing capacity of the mills will warrant it. The mine can easily net from $40,000 to $70,000 per month for a year or more to come. The water is drained from the main incline below the 1600-ft level, and the incline is being repaired in places where the water had caused a slacking of the rock and swelling of the timbers.

NEW YORK CONSOLIDATED.—The splendid and powerful new works are now in full operation, raising the water from the shaft at a very lively rate. It is already reduced to the second station or 200-ft level, and 200 ft more remains to be taken out in order to reach the bottom of the shaft. This will take about two weeks, and when done sinking will be actively resumed under the most favorable auspices.

CHOLLAR-POTOSI.—Sinking the new combination shaft is making rapid progress, the rock in the bottom blasting out finely. At the old shaft the usual amount of ore per day—50 tons—is being extracted from the old upper workings, and the three main south drifts on the 1150, 1250 and 1350-ft levels, are being steadily advanced.

SIERRA NEVADA.—Sinking the new shaft is going on steadily forward at the usual rapid rate. The main west drift on the 1000-ft level is being steadily advanced. The new drills and other machinery is all working splendidly.

LADY BRYAN.—Sinking the main shaft is making steady progress. The face of the west cross-cut, from the south drift, on the 380-ft level, is showing considerable improvement. The southwest drift, from the old shaft, on the 170-ft level, has been again started up, and being pushed farther to the southward.

OVERMAN.—The water has been drained down to the 1100-ft station, which is now about sufficiently clear to permit of a resumption of work on that level.

EUROPA.—The west drift at the 320-ft level is in a distance of 95 ft, the face in very encouraging ledge matter. During the first part of the week a fine seam of clay 3 ft in thickness was encountered. This clay has the regular Comstock dip to the east and begins to look as though the drift was gradually nearing the ledge.

COSMOPOLITAN.—A raise is being made to connect the 2 tunnels for ventilation purposes, and some very good ore is found in this raise, it being in the regular vein itself.

IOWA.—The main west drift at the 450-ft station is evidently approaching the main ledge, the stringers of quartz and ore coming in quite frequently, and of a very encouraging character.

BEST AND BELCHER.—Cleaning out and retimbering the south drift from the winze on the 1700-ft level is making slow progress on account of the intense heat.

SAVAGE.—Driving the main north drifts on the 2100 and 2200-ft levels going ahead as usual.

SILVER HILL.—The cross-cut at the 4th station is steadily advancing toward the ore vein, the face in soft working ground.

BUCKEYE.—Owing to the breaking of a shaft, nothing has been done in the mine for the week past.

LADY WASHINGTON.—The new works are about ready to start up and will do so very shortly, when the shaft will be freed from water and sinking resumed under flattering auspices.

MINT.—The bottom is still in ledge matter of a very favorable nature. The flow of water is slight.

GOWN POINT.—Work is going ahead as usual at all points, the machinery working well, and the prospects hopeful.

PROSPECT.—Work in both shaft and drift going ahead lively with fine prospects, and the new hoisting works pushed toward completion as energetically as possible.

UNION CONSOLIDATED.—The main north drift on the 1300-ft level continues to exhibit excellent indications of ore.

KNICKERBOCKER.—The repairs to the foundation and machinery are nearly completed, ready to again resume work in the shaft, as soon as the water is extracted.

MEXICAN.—Sinking the winze below the 1465-ft level, as usual.

JUSTICE.—The splendid body of ore at the 600-ft level of the old south mine continues a still better showing with each foot of development.

ORIGINAL GOLD HILL.—Work is resuming on the north drift, the new blower operating to very good advantage. The south ore body is looking finely.

GLOBE CONSOLIDATED.—Driving the north and south drifts on the ore vein at the 350-ft level, with some very favorable indications of ore.

LEO.—The prospecting drifts from bottom of the winze, 225 ft below the main tunnel level, are being steadily driven ahead in good working ground, and good progress is being made. The face of the drift is still in very much better of a very favorable character.

GOULD & CURRY.—The main incline has been sufficiently retimbered to admit of the passage of the incline car down to the 1700-ft level, and retimbering the main north drift on that level has been resumed.

YELLOW JACKET.—The east cross-cut, near the north line, on the 1740-ft level, has passed into a very favorable change of ground, with some excellent ore prospects.

HALE & NORCROSS.—The prospecting drifts on the 2200-ft level have not made any valuable or important developments during the week.

DAYTON.—Sinking the main shaft is making the usual good progress, the rock in the bottom working quite soft. Matters about the mine are fast assuming a shape that must soon admit of new and important developments in the mine.

BALTIMORE AND AMERICAN FLAT.—A small amount of very fine ore is being hoisted from the old workings on the 400-ft level. This ore will work at least $100 to the ton, and we hope is but the precursor of much larger quantities to come in a very short time.

BULLION.—The new combination drift on the 2000-ft level of the Imperial is steadily advancing. The main north drift on the 1700-ft level of the Imperial is steadily advancing along the west wall of the ledge, the face in quartz and ore mixed with porphyry.

IMPERIAL-EMPIRE.—Daily yield, 40 tons of ore. The ore breasts continue to look well and yield the usual amount of good milling ore.

NORTH CONSOLIDATED VIRGINIA.—The flow of water is light, and with the aid of a new iron tank for hoisting, which has just been placed in the mine, the flow of water for twenty-four hours can be hoisted out in about one hour's time.

FLORIDA.—The main west drift is evidently about to enter the ore vein itself, judging from the rich assays obtained, some running as high as $2000 to the ton. This was from pieces of ore washed out by the great rush of water tapped in opening the east wall of the ledge. The prospects for a bonanza in the Florida are very flattering.

ROCK ISLAND.—The 650-ft station is completed, and a drift started to cut and prospect the ledge. The water has retarded the work considerably.

SULLIVAN.—The shaft still continues in the excellent vein material mentioned in our last report. It is fully thirty feet wide, and is an important development.

SUTRO TUNNEL.—Ground at face of header very soft and treacherous, having to be lagged and otherwise supported very promptly and carefully as fast as any advancement is made, in order to prevent accidents. These soft streaks of dangerous ground are very liable to be met with at any time. Total length of tunnel to-day, 11,220 ft.

ELY DISTRICT.

BULLION SHIPMENTS.—White Pine *News*, Oct. 23: During the week the Eberhardt and Anrora company shipped twenty-five bars of bullion, valued at $35,986.06. The Shoba mill shipped one bar, valued at $1,299.47.

LOCAL ITEMS.—The regular amount of work goes on with indications of renewed activity in mines now idle as soon as necessary arrangements are completed. Considerable outside work is being done in anticipation of a break in the weather before long. The locomotive will probably make its appearance at this end of the line about the 30th, the contractors for repairs of the railroad being almost through. The shipment of bullion for the week ending October 23d, is $32,184, a slight increase over last week's amount.

RAYMOND & ELY.—Regular quantity of ore daily taken out, same grade as heretofore, considerable of the lower grade being sent to Salt Lake and yielding good returns.

ALPS.—During the past week have been hauling ore to the Floral mill, and yesterday crushing was commenced; the results we will get next week.

FLORAL MILL.—The Floral mill has been running steady the past week; have worked 100 tons for the Raymond & Ely, and is now working on Meadow Valley and Alps ore, with plenty of ore on hand to keep them going for some time.

NEWARK MILL.—The Newark mill was closed down Tuesday last, and will not commence operations until the superintendent, F. Clute, returns from San Francisco; in the meantime the ore is accumulating at the mill.

Utah.

STOCKTON MINES.—Cor. Salt Lake *Tribune*, Oct. 22: The mines of this district are principally located in Silver canon and Spring gulch, within a radius of 2½ miles of Stocktou. Many of them are located by the soldiers of General Connor's command, and "old titles," as a matter of course, abound to some extent. Developments have not been carried on to the extent that the merits of the district would seem to justify, yet considerable has been done, and a great deal more will be done during the coming year. In Silver canon, a short distance from its mouth, is located Lucky Boy No. 2. In this instance there is something in a name, for it has proved a decidedly lucky strike for its fortunate owners this season. It has an incline down about 60 ft, on a vein averaging over 3 ft in width, of galena and carbonate ore, assaying 10.69 ounces in silver and 80 per cent. in lead. The vein appears regular in its course, and has improved as depth has been attained. The owners, Messrs. Davie, Tate and Vaughan, have done their own developing under many discouragements and disadvantages, and are now reaping the rich reward of their perseverance. Regular weekly shipments are being made to the Chicago smelter, where the ore is regarded as being among the most desirable and easily worked in the district.

NEARLY ALL TOLD.—The Order has now been established in forty-seven of the fifty-three counties in California. The only counties in the State now without a Grange are Alpine, Klamath, Mariposa, Mono, Trinity and San Francisco.

THE Grinter Brothers, of Bolinas, are just completing a large trout pond at the head of the bay. It is 100x180 feet, and about five feet deep. The bottom is composed of a clean gravel well adapted to fish.

Government Tests of Beams, Girders and Columns.

A committee of the United Statea Board, appointed to test iron, steel and other metals, hes been instructed "to arrange and conduct experiments to determine the laws nf resistance of heams, girders and columne, to ohange of form and to fracture."

This committee, desiring to attract to this hranch of the inquiry the hest talent and experience of the conntry, in order to reach results of the greatest practical value, solicits the aid and co-operation of all who msnufacture or use heams, girdere or columns.

Many experiments have been made hy the rolling mills engaged in the manufacture of wronght iron heams, the results of which have, dnnhtless, heen carefnlly recorded and tahulated. The committee earnestly asks copies of euch records and tahles. Engineers, architects and mannfacturers, have also made many experiments upon cast iron heams and riveted wronght iron struts and girders, the reaults of which are respectfnlly requested hy the committee.

It is desirable that information as fnll ae may he ohtainahle, with reference to the constitution and mannfacture of the iron used in making the pieces tested, should accompany reports nf experiments, especially chemical analyses of the metal, where tbese have heen carefully made.

The proporlions of the various parts of the semples tested should he exactly given; and in all riveted work the size and position of the rivets shonld he clearly set forth. In all cases the modes of applying and measuring the strains shonld be given.

Accnrate cross sections of the samples tested, drawn to ecsle, large enough to admit of reliahle measnrements, will greatly facilitate a proper nnderstanding and analysis of the re aults.

During the constrnction of the machinery ordered by the board, the committee desires to collect information as above, and to make snch experiments ae seem practicahle hy the use of dead loads. For these experiments, and for those which will he made when the machinery is ready for use, mannfacturers are asked to snpply such hesms, girders and columns aa they may desire to have most carefully and im partially tested.

It may he of interest tn those who are thus asked to contribnte costly articles for destruction hy tests, to he informed that the machinery ordered is believed to he the hest yet designed for testing purposes, and to possess all the nicety and accuracy attainahle with the present knowledge of machine conetruction. The first machine will have a capacity of 400 tons (800,000 lbs.); and this will he replaced hy another of 1,000 tons (2,000,000 lbs.) capacity at an early day.

All snggestions as to the kind of tests to he made, and tbe manner of making them, calculated to give them the greatest practicsl valne, will be gladly received; and for these and all other assistance rendered, proper acknowledgements will he made.

Sample heams, girders or columns, furnished for test, should he stamped at one end with a distingnishing nnmher, trade mark and initials of the maker, and forwarded to Col. T. T. S. Laidley, President of the Board, at Watertown Arsenal, Watertown, Massachusetts.

Reports of tests already made, and all other information herein asked for, may he forwerded tn the chairman of this committee, at Maywood, Illinois.

Wm. Sooy Smith, O. E., *Chairman, Maywood, Ill.*
Lient. Col. Q. A. Gillmore, U. S. A., *Army Building, New York City.*
Chief Engineer D. Smith, U. S. N., *Washington, D. C.*

Mussels on the Great Eastern's Bottom.

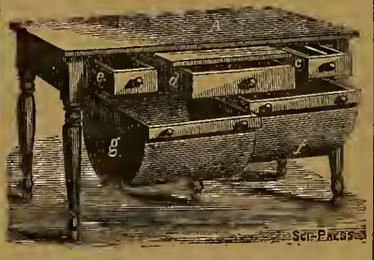
Henry Lee writes in *Land and Water* concerning an examination he has made of the bottom of the Great Eastern: "There were traces of a few harnacles near the level of the water line, especially ahont the atern post, and hetween it and the rndder, and the latter itself, ae well aa the propelling screw, was covered with the common acorn harnacles or "chitter;" hut all the rest of the hull nsually submerged was clad with an enormous mnltitnde of mnssels, clustered together in one dense and continnous depoait extending over a surface of 52,000 square feet nf iron plates, and in some parts six inches thick. Mr. Beckwith had made a oalonlation, which I was ahle to verify with him, of the total weight of the mnsels thns accumnlated. It was found hy careful experiment that the average weight of those on each square foot was from twelve to thirteen ponnds; therefore the vessel was encumhered with not less than 300 tons of living marine animals adhering to her—mnssels enough, in fact, to load witb full cargoes two ordinary collier hrigs. Although the mere weight of this mass would not, perhaps, mnch affect the huoyancy nf a vcasel of 25,000 tons burden, it will he readily understood that the friction of such a rough, jagged incrustation paesing through the water would materially diminish her speed. As those troublesome adheronte were scraped off with shovels hy workmen employed under contract to remove them, they were carried away hy cartloads and hoatloads and hurried along the shore of the haven. In some localitiee they wonld have heen heartily welcnmed hy the fishermen as valuable bait."

A Handy Kitchen Table.

We are certain that the ahove line will attract the attention of those of the gentler sex who are interested in domestic affairs; for "a handy kitchen table" is something not seen every day or in every house. A kitchen table is generally as plain and nnornamentel a thing aa can he conceived, with a little hit of a drawer jnst big enough to hold a cork screw, some clothes pins, pieces of string and perhaps an apron. In effective contrast with a table of this kind may be placed that which is represented on this pege hy the engraving.

As any one can see at a glance, this is one of the most convenient articlea ever presented to the housekeeper. While it is an ordinary kitchen table, it is at the same time a complete closet, as a reference to the cnt will show. *A*, is a general view of the table; *b*, a kneading board, which slides under the top of the table; *c*, a drawer, with spaces for rolling pin, yeast powder, spices, etc.; *d*, and *e*, two drawers for knives, table cloths and general purposes; *f*, and *g*, two convex drawers for flour and meal, each drawer holding 50 pounds.

This gives a closet complete in a table; at the same time it is neat, light and strong. It will save many tiresome steps in the preparation for haking, for instance: First for your kneading hoard, which is no donht split by the falling of a nail, or hy heing hid in the corner of a cloact; then again, for the rolling pin, which the children have had to play with, and left, no one knows where; then for your flour, which is in a sack, eaten up hy the mischievous mice, and the flonr scattered over the floor, or in a hox or harrel, in a distant closet; then for yeast powder and spices. Therefore, with the many steps you have to take in your preparations, yon are tired ont hy the time you are ready for your haking, and thereforo your "dear Hubby" hes to take a short allowance of pastry; hut hy having the "household treasure," all this running and fretting is done away with, as yonr flour is in nice, convenient, mice-proof drawers, yonr kneading hoard al-



C. H. Townsend's Improved Kitchen Table.

ways in its place, clean and sound, yonr rolling pin and spices at your elhow, so tbat you do not have to take a single step in your preparations for haking. These tables are mannfactnred and sold hy E. Hook, 1067 Broadway, Oakland, and also hy John West, 328 Pine street, San Francisco.

Anonnn the World in Eighty-eight Days Jnles Verne's delightful romance, entitled: "A Tonr of the World in Eighty Days," may soon he rewritten with a snbstential hasis of fact to give it additional interest. The *United States Mail*, a jonrnal devoted to postal matter, tells of a gentleman residing in the suburhe of New York, who recently made an experiment with a view to ascertain how long it takea a letter to travel round the world hy mail. He addressed a letter to the United States postal agent at Yokohama, Japan, marked it "*via* Brindisi," and dispatched the same hy steamer leaving New York for Sonthampton, England, on the 13th of May last. The letter inclosed another, addressed to himself, at New York, which he requested the postal agent at Yokohama to forward to the United States, *via* San Frsncisco, hy first steamer. The letter arrived in England on May 24th, and was thence dispatched hy way of Brindisi, Aden (*via* Suez), Ceylon, Siugapore, and Hong Kong to Yokohama, arriving there July 11th. From there the enclosed letter (addresaed to the writer) was forwarded by steamer leaving Yokohama on Jnly 12th, and arrived at San Francisco July 31st; left San Francisco Angust 1st, and reached New York Angnst 9th, having accomplished ita circumferential journey in exactly 88 daya.

Brimstone Works.—The *Silver State* saye: G. W. Meacham, of the Humholdt house, informs ns that Hale & Duffy and F. J. McWorthy & Co., the two companies who own the extensive snlphur deposits at Rahhit Hole, are making arrangements for refining the crude sulphur at the mines. Hale & Duffy have the material for refining works at the river, and McWorthy has just received two large retorts, each several tons capacity, and a lot of other castings and machinery for running the works. He has also brought six large wagons and teams from California to be used in hauling the hrimstone from the mines to the railroad. The demand for thie article is in excess of the supply, and it appears that the Rahhit Holo depoaits are the most available on the coast. A great many teams are employed at the present time in hauling the ornde snlphur tn the railroad, eight nf which, heavily loaded, arrived at the Humholdt hnuse yesterday,

The Microscopical Society.

The regnlar meeting of the San Francisco microscopical society was held on the 21st inst., President Ashhurner in the chair.

Mr. J. Edwards Smith, of Ashtabnls, Ohio, was proposed for corresponding membership.

A portion of the snrplus finds of the society has heen devoted to the purchase of hooks, and it is the pnrpose of the members to have, as soon as possihle, a complete library of microscopical literature. The corresponding secretary, Mr. Hanks, announced the receipt of eight volumea of "*Science Gossip*," twenty-two volumes "*Quarterly Journal Microscopical Science*," aud thirteen volumes of "*Popular Science Review*." There were also received by subscription the last nnmhere of *Grevillea*, *Journal Quekett Microscopical Club*, and *Monthly Microscopical Journal*, and hy donation from the publishers, the Octoher nnmher of the *Overland Monthly*.

The object cabinet waa most handsomely enriched hy donations both great in numher and variety.

Mr. Ashburner started out with a presentation of twenty-seven slides, mounted hy him with diatoms from as many localities, mostly from earths sent the society hy Mr. Arthur M. Edwards, one of the society's corresponding membera, and this was followed by the donstion of five slides of rock sections, by Mr. Attwood, from the foot wall, hanging wall and "horse," met with in the Gold Hill end of the Comstock voin, at a depth nf 1,400 feet. Mr. Attwood promised, also, to present an additional nnmher at the next meeting from the north end of the vein, and he will then accompany the same with a paper whicb will, no donht, he very interesting and useful in its suggestions.

Mr. Kinne donated a slide mounted hy him with specimens of the *Phylloxera vastatrix*, now heing cultivated in this State, under protest, and exhibited from his cahinet a slide mounted hy him, with a nnmber of insects commonly known as the "wooly louse," which infests the pear and other trees.

The great similarity hetween the two was noted, and particularly in the construction of the proboscis. Dr. Burgess handed in a slide which he had monnted with a portion of psuedo membrane from the intestinal canal, and Mr. J. P. Moore added to the list in the way of a slide mounted by him with a transverse section of *Myrica Californica*, California myrtle, and two, with both transverse and longitudinal sections of *Pachystima myrsinites*, or false myrtle.

Mr. Ewing presented a material for mounting, and sand from Feather river, Plumas county, Cal., showing quartz crystals, and Mr. Henry Edwards added to the cahinet some thirty species of lichens from various perts of Australia.

Dr. Harkness exhihited a hoantiful specimen of *mucorini*, growing npon a variety of the capsicnm. Long silvery filaments were attached to the substratum hy root like hranches, each snrmounted by a globular sporangium, which were filled with innumerahle spores. The mucorini may be found in great abundance at this season of the year on any decaying fruita and vegetahles, in whitish tufts, which tnrn hlack at maturity.

Dr. Harkness also exhibited the apormagonia of a new variety of *Puccinia*, found on the *Darlingtonia Californica* (specimens of which were exhihited at the late Mechanics' fair), and which appeared in dark hrown spots on the surface of the plant, and was shown hy a vertical section through the leaf. The spermagonia was run in nrn shaped receptacles hetween the cell structures, the receptaclea heing filled with exceedingly minnte threads, which force their way through the epidermis of the leaf. The hottom of this receptacle is covered with short mycelial hranches, from the ends of which are detached numerous very small spore-like hodies—*spermatia*.

Humholdt District.—The recent discovery of a rich lead in an old tunnel in Humholdt district hy the Knnkel Brothers, is creating much excitement among mining men. W. A. Bolinger and other good judges, who have heen to see the lead, pronounce it rich heyond question, and bring specimens of the ore in which free gold abounds. Several mining men from California who have heard of the strike are now in the district looking at the ledge and taking observatione in ita vicinity. There are many ledges cropping out in the district, some of them twenty or thirty feet wide, and none of them prospected to a greater depth than ten or fifteen feet from the surface. The discoverers of those mines had the tunnel fever hadly, and expended mnch lahor in boring into the sides of the monntains, hut ahandoned their holes before striking the leads they were started to reach. Thia new strike will nndoubtedly cause a reaction, and several companies are now arranging to commence work on the most promising of those ahandoned claims.—*Silver State*.

The Winn-Storm Accident which canaed the partial destrnction of a portion of the framework of the Agricultural hall on the Centennial gronnds recently, it is reported will cause but comparatively little incouvenience, as the huilding, which is to he of wood and glass, in a seriee of Howe trnss eashes of Gothic form, is capahle of erection in two or three months,

Calaveras County Quartz Mines.

Notwithstsnding the fact that the scaroity of water in a great measure impedes active operations in quartz mining, that hranch of industry was never in a more promising condition than at preeent. All through the npper country—especially in the Mosquito, Weat Point, Jesus Maria and Washington districts—more favorahle developments have been made the present season than in any previons yesr, and the results of operatione have heen more remunerative. Capital has taken a very active part in bringing about a hetter condition of affairs in this county, as regards quartz mining, and the fact that investments are in a msjority of instances proving profitable will stimulate further research and development. No county in the State stands better to-day, as a promising field for engaging in mining ventures than Calaveras, and the good showing now heing made will still further tend to attract the attention of moneyed men. What makes Calaveras more than ordinarily attractive to those wishing to engage in mining enterprisea—aside from the fact that the representative miuee of the county are paying well—is the large area of unoccnpied gronnd carrying gold hearing ledges. There is ahundant opportunity for locating and prospecting unclaimed veins, if parties prefer that method, or partially developed ledges can he purchaaed on favorahle terms. The quartz helt of this county—extending from the Mokelnmne on the nortb to the Stanislaus on the south—is fnlly twenty miles in width, and nearly the whole of that area is checkered with veins of gold hearing rock. The fact thst new discoveries are constantly heing made, in addition to the great number nf mines being profitably worked, is ample evidence both of the magnititude of our mining reaources and the fact that they are yet comparatively undeveloped. There is no qnestion but thst Calaveras offers hetter inducements for the prosecution of quartz mining than any nther section of the State, and that fact is acknowledged and appreciated by those who havo the energy, enterprise and capital necessary to engage in the business. Men of means are not slow in availing themselves of such advantages as are offered hy this county, and the consequence is that many of our minea are passing into hands that can combine capital with lahor in developing them. The present enforced inertness, consequent npon the lack of water, will be followed by increased activity with the first rainfall, and there is every indication that the coming season will mark extensive and remunerative quartz mining operations.—*Calaveras Chronicle*.

Manufactnae of Paper.—Of tbe 1,300,000,000 human heings inhahiting the glohe, 360,000,000 hsve no paper nor writing materisl of any kind; 500,000,000 of the Mongolian race nse a paper made from the stalks and leaves of plants; 10,000,000 nse for graphic purposes tablets of wood; 130,000,000—the Persiaus, Hindoos, Armenians and Syrians—have paper made from cotton, while the remeining 300,000,000 use the ordinary staple. The annnal consumption hy this latter number is estimated at 1,800,000,000 pounds, or an average of six pounds to the person, which has increased from two and a half ponnds during tbe last fifty years. To produce this amount of paper 200,000,000 pounds of woolen raga, 800,000,000 pounds of cotton rags, hesides great quantities of linen rags, straw, wood and other material, are yearly consnmed. The paper is manufactured in 3,060 paper mills, employing 90,000 male and 180,000 female lahorers. The proportionate amounts of the different kinds of paper are stated to he: Of writing paper, 300,000,000 pounds; of printing paper, 900,000,000 pounds; of wall paper, 400,000,000 ponnds, aud 200,000,000 pounds of cartoons, blotting paper, etc.

Rich Strike in the Fourth of July.—For some time tho Fourth of Jnly mine, at tbe head of New York canon, has heen showing exceedingly well, hut not nntil yesterday was the real marrow of the honanza reached. Contractor Thomas, we learn, has, by his well directed efforts, placed the mine in an enviable rank as one of the most promising in the whole district. Yesterday in the forenoon a small streak of heavy black metal came in at the bottom of the incline, and hefore night it had increased in width to twelve inches. The black metal on all points on Prospect mountain is very rich, going high up into the hundreds per ton, and the present indicatinns are that the Fonrth of Jnly has an ahundant supply of it. The Fourth of July is owned principally in Carson hy Judge Hilliyer, Ahe Drieshach, Jndge Whitman, Buel Davis, John Neil, Mr. Gardner and perhaps some others, all of whom we congratulate on the improved prospects of their Base Ring honanza.—*Eureka Sentinel*.

Big Teams.—More hig qnartz teams are at present to he seen on the streets of Virginia and Gold Hill than at any time during the past three or four years. Owing to the low stage of water in the Carson river many stamps in the quarter are idle, thereforo teams are in demand to haul ore to ontside mille—that is to mills on the line of the Virginia and Truckee railroad. It looks like old times to see the huge wagons with their "hack-actious" and their twelve, fourteen and sixteen mules rolling along the streets. We miss the jingling of the hells, however, that was heard in the daye of the mountain schooners.—*Virginia Enterprise*.

Useful Information.

Effect of Magnetism on Watches.

A correspondent of the *Scientific American* writes as fellews: A few weeks ago my watch for the first time in ten years, refased to go. Up to then it had kept correct time, and was then in good repair, having been recently cleaned. When it first began to stop I would start it by the key, and it would sometimes run a day; but finally it stopped entirely. I had it carefully examined by an expert, who, although he could find no cause, failed to make it run even for an hour.

I am running at my works a powerful magneto-electric machine for depositing copper; and having noticed that I could magnetize a piece of soft iron at a distance of at least six feet from the machine, so that it would lift and support the weight of a large nail, I became impressed with the idea that some of the steel parts of my watch had become permanently magnetized; so I made a watch repairer take it apart. Having some fine soft iron filings, I dipped the balance wheel, escapement wheel, lever and hair spring into the filings; and each piece raised up at least one-half its own weight of the filings, showing all the polar characteristics of the particles.

I have read of watches being spoiled by magnets, but had no idea that it was unsafe to go into a room containing a magnet.

The watchmaker thought he might "brush it off" for about a dollar. I let him brush on it three days as a lesson in magnetism, and then told him that nothing short of heating it red hot would demagnetize it. He put in new parts, including a new mainspring, which was also infected, and the watch now runs as well as ever.

Common Sense Ventilation.

The best practical statement I have met about ventilation, says Col. Waring in the last *Atlantic*, was contained in the remark of a mining engineer in Pennsylvania: "Air is like a rope; you can pull it better than you can push it." All mechanical appliances for pushing air into a room or a house are disappointing. What we need to do is to pull out the vitiated air already in the room; the fresh supply will take care of itself if means for its admission are provided.

It has been usual to withdraw the air through openings near the ceiling, that is to carry off the warmer and therefore lighter portions, leaving the colder strata at the bottom of the room, with their gradual accumulation of cooled carbonic acid undisturbed. Much the better plan would be to draw this lower air out from a point near the floor, allowing the upper and warmer portions to descend and take its place.

An open fire, with a large chimney throat, is the best ventilator for any room; the one-half or two-thirds of the heat carried up the chimney is the price paid for immunity from disease; and large though this seems from its daily draft on the wood-pile or coal-bin, it is trifling when compared with doctor's bills, and with the loss of strength and efficiency that invariably result from living in unventilated apartments.

Ornamentation With Autumn Leaves.—A very pretty way to ornament any plain article of furniture, a cabinet or panelled trinket cupboard, boxes, jars, trays, etc., is by the following simple process: Having collected the ferns and leaves in all their endless variety, prepare them thus: Lay the leaves one by one on a piece of soft paper, wrong side up, and with a sharp pen knife pare off the projecting veins, so that there will be as little roughness as possible, then place them in books, with a heavy weight, and press them smoothly, leaving them there until you are ready to use them. Prepare the article by painting it black, using a fine brush for the purpose, because it will leave fewer traces. When this is perfectly dry and hard, give it a coat of fine transparent varnish, and before it has become entirely dry, lay on the leaves and fern sprays in graceful groups, according to fancy, pressing them smoothly down, so that every part will adhere. When they are entirely dry, give it another coat of the same transparent varnish, going over the whole surface, leaves and all. If you wish to bronze the black ground in imitation of the Japanese lacquer ware, it can be done by sprinkling a little bronze powder over the sticky varnish after putting on the leaves, then rubbing it lightly with a soft rag to burnish it. These ornamentations are both permanent and effective.—*Cabinet Maker.*

Among the few inventors who have had the satisfaction of beholding the universal acceptance and commercial success of the offspring of their genius must be mentioned M. Jean Engelmann who died a few days ago in Paris. The problem of printing in colors was solved by him, and, indeed, the improvements he introduced in various branches of lithography justify the remark of a French journal, that the whole history of the progress of this art in France is summed up in his name. Beside the important invention of chromo lithography, the modification of this process known as *diaphanie*, and applicable to the decoration of glass, is due to the initiative of M. Engelmann. This eminent lithographer also devoted much of his time and energy to the reproduction of archæological works.

Cause of Hunger.

Persons Eating When Not Hungry.

The feeling of hunger is not caused by the emptiness of the stomach, but the stimulus of the gastric juice which is continually being secreted when in a state of health. Sometimes this secretion stops for reason of the various kinds of derangement in health; then no food can be digested; and there is no feeling of hunger, notwithstanding the stomach may be empty. Of course when in such a condition, it is very injurious to eat, and a horse or any other animal will not do it; but, unfortunately, most men, when the time for their meals has arrived, think that they must eat, hungry or not. The food is then introduced into a stomach unfit to digest; remains undigested, putrifies, and no end of troubles is the consequence. Some persons think they may stimulate their appetite by a tonic, such as bitters or other vaunted preparations; but this is a mistaken course, for its only result is to cause one to eat more when already an amount has been consumed beyond what the gastric juice has been able to prepare. The object to be attained is a large supply of gastric juice, not a large supply of food; and whatever fails to accomplish that object, fails to have efficiency towards the cure of dyspeptic diseases. The formation of gastric juice is directly proportioned to the wear and tear of the system, which it is to be the means of supplying, and this wear and tear can only take place as the result of action. The efficient remedy for dyspepsia is exercise—out-door exercise—beneficial and successful in direct proportion as it is agreeable and interesting.

A still more prolific cause of dyspepsia is drinking; and the danger of excess in this instance is still greater than in the case of eating, as drinks go down more easily than meats. The strongest proof of the excess daily committed by mankind in this direction is the fact that no trades are more flourishing than those dealing in things which people can get down their throats; and the manufacture and sale of drinks, as they go down the easiest, is the most prospering of all, especially beers and wines, and even the two extremes, soda water and whisky.

Every one knows that it is impossible to make a horse drink when he is not thirsty; and also that nothing is easier than to make an ordinary man take a drink whether he may be thirsty or not; and this is what makes the drinking saloons flourish, and keeps so many drunkards' households down in poverty, in case the head of the family has not manliness enough to resist the temptation of *"taking another drink."—Household Magazine.*

Preserving Cider.—A barrel of cider may be preserved in good flavor and condition for next spring by the following method: Fill a clean, strong barrel with juice from sound, good apples, and let it ferment from two to three weeks, until the liquor becomes quite clear. Then rack the cider into tubs, cleanse the barrel and fill it with the fumes of burnt sulphur by burning a rag, dipped in melted brimstone, in the barrel. Replace the cider in the barrel, taking care to fill the cask full, and bung tight. If kept in a cool cellar, it will be nice next April and May.

Good Health.

Feeding Babies With Starch.

The dangers liable to arise from feeding babies upon corn starch is set forth by the London *Sanitary Record* as follows:

Dr. W. Domett Stone writes to a contemporary, stating that his attention has been called to a report of a trial at Taunton, recently, of a married woman, on a charge of starving her twin children to death by feeding them on what is called "corn flour," which she had been warned by her medical man was incapable of sustaining life. Death in both instances having clearly resulted from partaking of this preparation, it cannot, he contends, be too widely known that "corn flour" *per se* is not food, but pure starch, prepared by washing out of maize flour the nutritive portion with alkalies, as was abundantly proved by the evidence of Dr. Bartlett before the Adulteration Committee of the House of Commons last autumn.

Numerous instances of children reduced to skin and bone, from being fed on one or the other of the "corn flours" now before the public, have come under his notice. It may be of some use to your readers to have a "rough-and-ready" test to distinguish those farinaceous foods which are innutritious. Whenever the powder is beautifully white and of extreme fineness the article should be rejected, as being almost certainly composed of starch alone. When, however, the nutrition has not been sacrificed to appearance, and they present their natural brownish color, some of these foods may contain even more nourishment than meat.

Disinfectants.—After an exhaustive series of practical tests of the various disinfectants sold in New York, embracing over fifty kinds, Professor Elwin Waller, of Columbia college, concludes that the best disinfectant is carbolic acid. About one per cent. of the mixture should consist of carbolic acid. For prompt disinfection which is only temporary, strong oxydizing agents, as chlorine, potash permanganate, nitric acid, etc., should be used. Of these the cheapest and most available is chloride of lime.

Extraordinary Sea Sickness.

The following experience of Captain R. C. Coleman, of the American rifle team, was obtained from a member of his family, and of course is authentic:

The Captain, soon after getting out of sight of land, was attacked with a peculiar kind of sea sickness which is very rare, it affecting not more than one in a hundred passengers. Instead of developing in the ordinary form of terrible nausea, it affects the brain, producing delirium and all the symptoms of brain fever. If the patient remains in this condition until he reaches land, or even feels a land breeze, he may recover, but a recovery from this disease under other circumstances than those mentioned—that is, while on board the ship away from land—is sure to be followed by ship fever, which is certain and almost immediate death. The fever and delirium lasted during the entire passage over, and his comrades were almost certain that he would be too much unstrung to shoot in the team. He recovered rapidly, however, on reaching land, and his practice soon proved that his ability to hit the bull's eye was not impaired.

The Captain was informed by the ship physician and other high medical authorities that he had a narrow escape from death, and that he ought not to cross the ocean again. Under such circumstances he very naturally dreaded the return voyage, but it had to be attempted at any rate. Soon after starting on his return he was attacked the same as before, though even more severely. He remained delirious the whole time, however, until the vessel reached Sandy Hook, and escaped ship fever. It was a severe experience; but considering the fact that few affected as he was survive a second ocean passage, he feels that he was very fortunate. Though he returns covered with honors, it would take greater inducements than the victories of Dollymount or Wimbledon to tempt him to cross old ocean again.—*Middletown (Conn.) Press.*

Alarming Spread of Trichinosis.

The *Transactions* of the Indiana State medical society, 1875, contain a report on trichinosis, by Dr. George Sutton, of Aurora, Ind., which contains the following alarming observations:

From microscopic examination of pork killed in Southeastern Indiana, we have found from three to sixteen per cent. of the hogs affected with trichina, the number of hogs diseased varying greatly in different localities.

That over five millions of hogs are slaughtered and packed in the Western States, not including those which are put up for family use by the farmers; that if four per cent. of this pork is diseased, which we believe to be a low estimate, we have 221,484 diseased hogs put annually upon the market; or over 4,000,000 pounds of diseased meat, every ounce of which, under favorable circumstances, is capable of producing disease.

That from the cases of trichinosis that came under our observation, and the *post mortem* examinations, and the effects upon the dog that was fed on the diseased meat, we have come to the conclusion that ninety per cent. of disease produced from eating trichinous pork appears either as gastro-entiritis, or as a diarrhœa or dysentery, and not more than ten per cent. as the fully developed form of trichinosis, in which the muscular system becomes affected.

That as diarrhœa, dysentery and enteritis rank high as causes of mortality in the United States, these diseases causing 31,153 deaths in 1870, as shown by the last census reports; and as we have seen that a large amount of trichinous pork, capable of producing these diseases, is among the principal articles of food in our country; we think it more than probable that trichinæ have a much greater influence in the causes of this class of diseases than has been recognized by the profession.

That it is highly probable that, when the fact becomes more generally known that so large a percentage of pork is swarming with trichinæ, capable of producing disease, it may have an effect upon the use of this meat, and consequently affect the sale, to some extent, of one of the principal articles of commerce in the West.

Oxygen as a Medical Application.—Soon after the discovery of oxygen gas, a strong feeling arose in favor of its medicinal application. Various diseases, such as scurvy, were ascribed to a deficiency of it in the system, and it was accordingly employed in many cases, and, as was at first declared, with brilliant results. In England, it was tried by Beddoes and Hill. The latter declares that he found it useful in asthma, weakness, ulcers, gangrene, white swellings, and scrofulous affections of the bones. These views have been again abandoned, both on chemical and physiological grounds. In asphyxia, from want of air, or from the inspiration of pernicious gases, oxygen gas may be inhaled with advantage. For the same reason, it has been recommended in spasmodic asthma, attended with danger of suffocation. Still it is, at the best, a mere palliative, and can by no means prevent renewed attacks. If we consider, in the application of oxygen gas, its physical action, as already discussed, we shall readily conclude that the inspiration of oxygen is in most cases useless, and that but little—and only in few cases—can be expected from its therapeutical application.

Domestic Economy.

Devonshire Cream.

This is considered a great luxury in the "old country." In Devonshire it is found in every market place, and is sold at about the same price per pound as butter, which costs more time and labor to produce. It is more perishable than butter, but less than cream that has not been cooked. Of course, the fresher it is the better, though it retains its eatable qualities for several days if properly cared for. If it were once fairly introduced to the American public by confectioners and dairymen, there is no doubt that a brisk demand for it would follow.

Directions: New milk fresh from the cow (Alderney or Jersey is best, because richest) is strained into a shallow pan and set away over night, or if in the morning, for the day, to allow all the cream to rise. This pan of milk, with the cream undisturbed, is then placed over the fire in another pan partly filled with water, and allowed to heat gradually until the milk is almost ready to simmer, when it is removed from the fire and set away for several hours to cool. When quite cold, the cream, which by the cooking has become thick and stiff, is skimmed off from the milk, and is then ready to be eaten. It is a nice point to know just when the milk is sufficiently heated, for if it is permitted to "come to a boil," it is spoiled for true "Devonshire," as the cream is set once dispersed and mingled with the milk, and the whole is no better than boiled milk and scum. By watching the surface, however, a careful eye will, at the right moment, see the cream begin to rise a little in the center; the pan should be immediately removed, before the surface becomes broken. It is usually served at dessert with berries or stewed fruits. Great caution must be used not to ruin the cream by over-cooking, but it is almost as nice a point for people with delicate stomachs to know just when to stop eating it.

A Good Family Soup.—According to the London *Agricultural Gazette*, a very good family soup is made from one and a half pounds of lean beef, two pounds of potatoes sliced thin, one large carrot, one large onion, a few shalots, one turnip, one stick of celery, four quarts of water. Let it simmer four hours, flavor with hot sauce to suit the taste, salt, pepper, etc. It is a great improvement to fry all the vegetables when cut in small pieces, together with the meat also cut in pieces conveniently small, taking care that there is fat enough added to prevent the raw vegetables from burning. A dessert-spoonful of coarse brown sugar may be thrown into the pan while the meat, vegetables, etc., are frying. After it has simmered four hours, it should be set to cool for the fat to be taken from the top of the soup before being served up for use. The meat should be sent to table in the soup, not strained as is usually done.

How to Bake an Apple Pie.—Pie is generally denounced, and with justice. The crust is either too rich, or tough and heavy, unfit for digestion, and unpalatable. Yet there are those who come to the rescue of this much abused piece of American cookery. But this is a different article altogether. It is a nice and yet a simple thing to make a pie that is both relished and healthy—that lies light on the stomach, and is easily digested. In this case it becomes a tidbit, and at the same time is inexpensive. Take half a teacupful of butter to a pie of ordinary size, to be rubbed in well with the flour, about a pint. Make into dough after adding sufficient water and a little salt. Quarter the fruit and lay close together; season to suit. In the case of the Spitzenberg no flavoring is required. Have the crust rather thin. Bake slowly and have it well done.—*Household Magazine.*

Rock Cream.—Wash a teacupful of the best rice, and boil slowly until quite soft, in new milk; add white sugar to taste, and then pile it on a dish. Lay on in different places lumps of jelly or thick preserved fruit. Beat the whites of five eggs to a stiff froth, with a little sugaring and flavoring. When well beaten add a tablespoonful of rich cream, and drop it over the rice, imitating the form of a rock of snow. —*Exchange.*

Cucumber Catsup.—The following is an English recipe: Gather the cucumbers when full grown, but before they turn yellow; peel and grate them; let the pulp remain upon a colander until the juice drains off; then rub through a coarse sieve, to separate the seeds; half fill bottles with this pulp, fill up with vinegar, and keep well corked. This retains, in a marked degree, the odor and taste of fresh cucumbers, and is excellent with cold meats. When served at table, salt and pepper are added.

Insipid Food.—Insipid food is not wholesome; and, on the other hand, food with too much taste over-stimulates the appetite and causes over eating. So, too, many foods not in themselves insipid, are made to appear so from contrast after one has been a long time accustomed to highly seasoned food.

MINING AND SCIENTIFIC PRESS.

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San Francisco:

Saturday Morning, Oct 30, 1875

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THE RAINFALL.—Our dry season may now be considered over, as the first shower of rain fell on Tuesday night. On Thursday morning, also, a slight shower fell. Tuesday's rain amounted to .18 inches, and that of Thursday to .04 inches, or .22 inches in all.

THE pump trial has not yet come off, owing to the fact that the competitors have not yet completed all their arrangements. They are all busy, however, and in a few days at farthest this interesting trial will take place.

THE water in the Carson river is steadily on the increase and it will not now be long before the mills can greatly increase the amount of their crushing.

WORKMEN are now framing the timbers for the railroad bridge to span the Pajaro river. The structure will be 300 feet long, with a pier in the center.

IT is expected that the rich ore vein developed in the Justice mine will run directly into the New York Consolidated.

QUICKSILVER is so low and business in consequence so dull at Calistoga that the *Free Press* has issued its valedictory.

The Virginia Disaster.

Most unwelcome news came to this city on Tuesday morning, that Virginia, Nevada, was in flames and that not only the main business portion of the city was being destroyed, but several extensive mills and hoisting works also. This news proved to be too true, and now that the main details have come to hand we find that, contrary to the usual custom, the fire was as destructive as represented. Since the failure of the Bank of California and the sensational occurrences following, there has been nothing like the excitement which prevailed in San Francisco. The two cities are so closely joined by business interests that the calamity in one seriously effects the other.

The fire broke out in a small house on A street, between Taylor and Union, and spread until it burnt up the larger and more substantial portion of the town. From Stewart street to H, and from south of the Bank of California, almost to the divide beyond the Ophir, the city is a ruin. The burnt district extends over an area of three-quarters of a mile in length by half a mile in width. The loss is at present difficult to compute. A strong wind was prevailing at the time, and all efforts to prevent the spread of the fire proved unavailing. The flames and burning cinders were carried hundreds of feet, setting fire to buildings in all directions. Hardly anything was saved in the burnt district, and it is stated that 10,000 people are homeless on the hills, thankful that they escaped with their lives. Only one man was killed, and he by a falling wall.

Within the devastated district were many of the finest business houses and residences. Among the buildings destroyed we mention, besides the mining works, the Catholic, Presbyterian and Episcopal churches, the two printing offices, the railroad depot, the Bank of California, the International Hotel, Williams' block, the Post Office, Pioneer Hall, Piper's Opera House, Washoe Club, Mary's building, the Tahoe House, stores, livery stables, offices, residences, shanties, etc. A number of the best residences in the city escaped, and there is a considerable section of the city left despite the calamity. All the business houses carried heavy stocks of goods, having laid in their fall and winter lines. A brisk trade was anticipated after November 1st, when it was believed that a large number of miners would be paid off, and all were preparing for a lively winter trade. The conflagration has in many cases caused all these hopes to be abandoned. Not only have the stocks of merchandise been destroyed, but the buildings containing them have been swept away. As soon as the confusion and chaos occasioned by the calamity have been somewhat allayed, arrangements will be made to erect temporary buildings, and, if possible, to construct substantial stores on the sites of those destroyed, though some of those burned down were considered fire-proof. The merchants of this city will extend all possible facilities to their customers to aid them in resuming business, and give to those who need it a new start.

The losses to the mining companies are very serious indeed, as the works destroyed were of the most substantial and expensive character. The Consolidated Virginia hoisting works, building and sixty-stamp mill, the battery department of the new California mill, the Ophir works and all the surroundings were destroyed. The Gould & Curry and Andes works had a close shave of it, but were saved. It was hoped to save the Ophir, and giant powder was freely used, but with no avail. When it was observed that the works of the Ophir were in danger, orders were given to bulkhead the shaft at a point about twenty-five feet from the surface, where a tunnel extends to the surface of the ground, about two hundred yards to the eastward. This tunnel has been constructed with a view to such catastrophes as that of yesterday, so that men might escape below it and the shaft be bulkheaded at the point of its intersection. A strong platform was thrown across the shaft, and so much earth piled on as to make it almost fireproof. This work had been accomplished just as the flames had enwrapped the building, and all hands had to flee for their lives. The shaft, from the fireproof partition to the surface and the whole length of the tunnel, were exposed to the fire, but the mine below Mr. Curtis considers secure. Mr. Curtis says that as soon as possible he will have men at work constructing a covering for the shaft and machinery, and commence retimbering down to the level of the tunnel as soon as timbers can be had. All the timbers in the yards have been burnt. The boilers and all the larger portions of the engines are in such a condition that they will do for work again. The boilers are all in place, and partly filled with water, and as soon as possible an engine will be put in position to lower and hoist into the mine. The Ophir workings are so far beneath the surface that an engine larger than a portable donkey will be required. Mr. Curtis has no fears for the safety of the lower workings, and says that even in the event of the possible burning of the shaft below the bulkhead the ground would not cave.

The shaft of the Consolidated Virginia mine was bulkheaded a few feet from the surface by lowering safety cages, springing the catches and piling dirt or ore upon them, thus saving the shaft. On Tuesday night, as smoke was seen issuing through the shaft openings on the bulkhead, it was thought to come from the Ophir. It was also thought there might be fire underground, as there was so much gas rising from the Gould & Curry, that the men could not go into the shaft. A dispatch sent down to-day (Thursday) at 10:40 A. M., states that men have been through the Consolidated Virginia mine as far north as the Ophir line, and everything was all right. The gas in the Gould & Curry came from the old shaft in the Sides ground. This dispatch states that it is certain the Ophir shaft is not badly damaged and is not on fire.

The Consolidated Virginia works will be immediately rebuilt, as will all the others destroyed. Those of the Consolidated Virginia were new and extensive. The Lady Washington mine has duplicates of the machinery, and it is thought they will be purchased for the bonanza mine. The heavy parts of the machinery are not much injured, but the full damages are not yet ascertained. A new flume to the Sierra Nevada mountains will be constructed at once in order to get mining timbers as soon as possible. The saw mills are already running on foundation timbers for the Consolidated Virginia, and they are cleaning off and pushing work as fast as possible. The California mill was entirely new, just completed and was never run a day. It was the finest over built on this coast, the machinery being heavier and more extensive. The pan department of the mill was saved, being some distance from the battery. The surface machinery of the Consolidated Virginia was also of the most substantial and extensive kind and perfectly new. The Ophir works were also of great value, but will soon be replaced.

The Consolidated Virginia mine was the only one upon the Comstock lode that was paying dividends, disbursing over one million dollars monthly since last March, with every prospect of increasing this amount in a few months had not this calamity befallen it. The greatest loss is not that sustained by the burning of the buildings, but the stoppage of work in the mines dependent upon the Ophir shaft, and either the cessation or diminution in amount monthly of dividends from the Consolidated Virginia for several months.

The Con. Virginia hoisting works are entirely destroyed, but this need not prevent the extraction of ore, as it is connected with the Gould & Curry by two drifts, one connection being at the 1145-foot station and the other at the 1500, the latter being the drift that will most probably be used to run this ore through the Best & Belcher to the Gould & Curry shaft, the hoisting power being fully sufficient to raise from 500 to 750 tons of ore daily, besides running the pumps.

The destruction of the Consolidated Virginia mill, and also the batteries of the California, entail no loss upon these companies, as they belong to the Nevada mill and mining company—a corporation of which the principal stockholders are J. G. Fair, J. C. Flood, Wm. S. O'Brien and John Mackay. These mills were named after those mines, and were erected principally to crush the rock extracted from them. The loss of the use to the California of these batteries, or stamps, is especially severe, as these works had just been completed and would have started up crushing its rock sometime in November. Nearly a year was occupied in building the foundations and putting up its machinery, while its sixty stamps were intended to crush 250 tons of ore daily. But the lack of these mining facilities will no doubt be soon remedied by the employment of some of those mills which were lying idle this summer upon the banks of the Carson river for the want of water to run them, and which at this season of the year increases in quantity by the fall rise and the rains which are near at hand.

The rebuilding of the destroyed works will not take so long as their first erection, especially the machinery, patterns of them being saved at the machine works in this city, who can cast and finish their duplicates at very short notice. The shafts are uninjured, with the exception of Ophir, whose top of shaft caught fire, with the extent of the damage not yet ascertained. The Con. Virginia was saved by the covering of its shaft with iron doors and overlaying these with bags of sand, which prove sure securities against the entrance of fire to the interior of shafts.

As yet the full extent of damage is not known. Collections are being made all over this State and Nevada in aid of the sufferers. Wells, Fargo & Co., as usual, are in the van in this good work, collecting and forwarding supplies and money free of charge. The San Francisco Stock Board sent $6,000; Wells, Fargo & Co., $1,000; the Pacific Stock Exchange, $2,000, and many individual contributions swell the amount. Bales of blankets, packages of provisions, and quantities of supplies are being sent forward. Virginia has been very unlucky of late. The day before the fire an immense body of water flooded several mines; for several weeks typhoid fever has raged there, and now fire destroys the city and the works of two principal mines. It is expected the losses will foot up to four or five millions of dollars, and it will take many a day to repair the damage. The people of Nevada, however, are energetic and plucky, and already steps are being taken to rebuild and repair as far as possible.

Our cotemporaries, the Virginia *Enterprise* and Virginia *Chronicle*, whose offices, type, presses and material were entirely destroyed, will, no doubt, resume again shortly. Their proprietors have the sincere sympathy of their brethren of the press. The insurance men have sent their adjusters to the scene of disaster and by our next issue some definite idea may be had of the aggregate loss. The machinery destroyed will be immediately replaced, and as the patterns, etc., are all at the foundries here, it will probably take not more than ninety days to replace the whole machinery. The mines which have lost their works are amply able to pay the loss without assessment, but the big bonanza mine may have to pass its assessment this month. The mines will hardly have to shut down for any length of time, but the disaster unhappily throws a great many men out of employment at an inclement season of the year. A more serious blow to the business interests of this coast could not have occurred, and coming, as it does, on the heels of a heavy financial panic, it will of course work injury to hundreds who were not directly interested in the town. We will be able to give full details of losses and damage next week. The effect of the fire on the mining share market is commented on in another column.

The Reduction and Refining Works of R. J. Kohler & Co.

[Written for the PRESS by E. PIQUE.]

MESSRS. EDITORS:—Having had the opportunity of visiting the above works, I wish to give you a short description of them, as it might be interesting to some of your readers. These works are erected about six miles from Oakland, and are connected on one side with the Central Pacific railroad, and on the other with the bay, so as to insure an easy transportation of ores and materials by water and by land. Their object being to extract the precious metals from any kind of ore, no matter how rebellious and in whatever combination with base metals and other substances, their apparatus is adapted to a variety of operations, such as smelting, refining, roasting, lixiviating, etc. The works are on a very large and substantial scale, involving the expenditure of a very large capital, insuring durability and saving later expenses for repairs and loss of time, connected with other works of a cheap and slight structure. When in complete working order, they will be able to reduce fifty tons of ore per day. Their chimney will be 125 feet high, when finished; at present it reaches seventy-five feet, which is sufficient to commence operations. The smelting furnaces consist, at the lower part of their circumference, of a strong, double wall of cast iron, and between these two walls a regulated stream of water is circulating, so as to prevent the iron walls from being destroyed by too great a heat. The upper part of the smelting furnaces is made of fire-bricks, and the escaping fumes of lead, antimony, arsenic and other volatile substances are forced to travel a long way before they reach the chimney, and to deposit in those underground chambers, and partly at the bottom of the high chimney, everything valuable that would otherwise be carried out in the open air and lost. The refining furnaces are built on the most approved principles, and furnished with some of Mr. Kohler's own improvements. The roasting furnace is a long one, so that three lots of ore can be roasted at the same time, being exposed gradually to different degrees of heat, as understood by metallurgists. This furnace, like everything else, is very substantial, and provided with a very large number of strong iron bars, braces and screws, so as to steady the brick-work.

For the different mechanical operations there is a steam engine of sixty-horse power, besides an excellent artesian well, yielding water in great abundance, and a great many other contrivances, too numerous to mention. A particular feature is a set of apparatus, invented and patented by Mr. Kohler. I am not permitted to enter into details, but I am confident that the very powerful chemical action produced by the above contrivance, will enable Mr. K. to extract completely the precious metals from a certain class of rich ores that would give up only a very small portion of their treasures by any other treatment. Mr. K. being himself the proprietor of a very valuable mine, and having also the promise of very large amounts of ores from other extensive mines, to be worked by him, I do not doubt in the least that the enterprise will be a complete success, rewarding Mr. K. and the shareholders interested in it, according to their highest expectations.

ON THE WRONG SIDE.—The Gold Hill *News* in speaking of the Ophir mine says that it is now confidently believed that the greater proportion of the work done in the mine during the past three or four years has been on the west side of a great horse of porphyry, and that the east side of the ore vein has never been reached at all.

THE Alameda *Independent* is our authority for saying that work on the narrow guage road is going on actively. Three miles are ready for the ties. This portion is on the high ground near Newark, extending southerly from the marsh ground between that place and Dumbarton point. In three weeks it is expected to have the embankment for the road to the marsh.

MR. CARTER, of the firm of Carter Brothers, San Francisco, car builders, is now at work putting up the turn-table at the Grass Valley depot.

IT is intimated that the Southern Pacific will be completed from Soledad to San Miguel within the next eighteen months.

Our Home Industries.

Manufacture and Preparation of Chocolate, Etc.

In reviewing the industrial interests of the city of San Francisco, noting at the same time some of the establishments which figure most prominently therein, we have at different periods and on many occasions spoken at length of the value and importance which the multitudinous industries bear upon the mercantile transactions of the State, and also the acknowledged high reputation which our houses have achieved abroad, in such localities as Mexico, Sandwich islands, Japan, China, etc., the manufactured goods of the city finding a natural channel in the transactions or business intercourse with foreign as well as home countries.

The number of business institutions or diversified branches of general trade which forms the basis for commercial transactions in all the important cities of the United States, is immense. Was it possible to enumerate or give in detail the character and importance of each business house, a number of copious volumes would be necessary. What we would most directly speak of here is the manufacture and preparation of chocolate.

In this direction our city is not inferior in the quality of production, although in quantity it may be equaled or even surpassed by the older cities of the Eastern States. An establishment for the manufacture of chocolate was instituted in this city as early as 1852, and since that period the progressive strides of manufacture have become apparent on every hand, the establishment under discussion becoming identified with the progress, and increasing palpably every year. Mr. D. Ghirardelli formerly carried on the manufacture of chocolate in Peru, and at the period above named he settled in this city, the opportunity here for a wide field affording him auspices for successful prosecution.

The Eureka Mine.

The Eureka (Grass Valley) mine is one of the well-known gold mines of California. The company went into operation about the 1st of October, 1865, since which time it has turned out $4,373,239.85 in bullion, from which dividends to the amount of $2,054,000 have been paid. The dividends have amounted to $102 70 per share. The past year, however, has not been a favorable one, and an immense amount of prospecting has been done, and a large amount of money expended without making any favorable developments. In the annual report, however, the superintendent states that there are still three places worthy of a further prospect, viz.: the 12th level, the Roannaise from No. 3 shaft, and the Morehouse claim.

The mill, hoisting and pumping machinery although getting old, are still in fair working order.

Referring to the Morehouse claim, the president explains to the stockholders that the claim is located south of and cuts the Eureka ledge at right angles, comprises 1,800 feet in length and is covered by a United States patent which includes twelve acres of surface ground. The explorations in the Eureka seem to indicate a probability of the ledge having turned south across Wolf creek into the Morehouse ground instead of continuing west, through the Roannaise ground. For these reasons the trustees of the Eureka thought it advisable to secure the Morehouse claim, the owners of which having fixed a higher value on it than they were willing to pay, an arrangement was made with them as follows: When the Eureka company shall have expended $10,000 in prospecting their ledge, the Morehouse company will deed to the Eureka one-half of the claim. It is further agreed that the Eureka company have the right to stop work at any time they wish to do so, and to remove any machinery they may have on the claim. Shaft No. 3, referred to above, is on the Roannaise ground further to the east than any previous prospecting.

During the year ending September 30th, 1875, in the Eureka mine proper they drove 196 feet of drifts, 879 feet of cross-cuts, and sunk 34 feet of winze; they also sunk 71 feet of shaft on the Roannaise, and 22 feet of shaft and drove 611 feet of drifts on the Eureka No. 2. They hoisted 4,235 tons of quartz and crushed 4,310 tons in 214 running days, with 10 stamps, averaging a little over two tons per day to each stamp. They also concentrated 27¼ tons of sulphurets and worked 39⅛ tons, having also on hands 4¼ tons. There are 250 tons of quartz on the surface, 100 broke in the mine, and Mr. Wm. Watt, the superintendent, estimates there are upwards of 900 tons of ore in sight, which will pay a small profit. The majority of the quartz taken out last year came from the 6th level of the Eureka—3,402 tons out of the 4,235 hoisted.

From the secretary's report for the year ending September 30th, 1875, we make the following extracts, showing the financial affairs of the mine:

RECEIPTS.

Book Account, Oct. 1, 1874	$ 98,340.36
Bullion Account	100,091.36
Mine Account	21.00
Mill Account	725.10
Wood Ranch	100.37
Wood Account	12,897.56
Premiums	446.55
McDougal Works	450.56
Interest	5,700 00
Total	$218,572.91

DISBURSEMENTS.

Mine Account	$ 39,340.26
Mine Account, Prospecting	43,667.50
Mill Account	15 213.56
Sulphuret Concentration	1,042.00
Sulphuret Reduction	243.00
Mine Purchase	800.00
Eureka No. 3 Shaft	2,840.47
Eureka No. 2 Mine	18,476.51
Wood Account	13,083 41
Wood Ranch	88.75
McDougal Works	240.00
Bullion Expenses	388.15
General Expenses	6,163.74
Discount Account	1.96
Book Accounts, Sept. 30, 1875	76,974.57
Total	$218,572.91

The largest item in the receipts was from ores worked—$97,801.91. The heaviest item in the disbursements was for labor on mining account. The pay rolls amounted to $50,725, and the labor on contract was $10,908.

The assets of the company are placed at $120,316 and the liabilities nothing.

They hoisted 4,235 tons of ore during the year and crushed 4,310 tons at the company's mill.

On October 1st, 1874, they had on hand 16½ tons of sulphurets and concentrated during the year 27¼ tons, making 43¾ tons. They worked 9 tons during the year and sold 30⅛ tons. The 27¼ tons concentrated during the year cost on an average of $38.24 per ton. Those worked yielded $91.36 per ton and those sold $47.39 per ton. The 9 tons worked yielded $822.23 and the 30⅛ tons sold yielded $1,415.50.

They worked 4,310 tons of ore by mill process, which yielded $97,823 62. All the ore worked, including sulphurets, yielded an average of $23.21 per ton.

As reduced by mill process the average fineness of the bullion was .844⅛, equal to $17.45 92-100 per ounce. As reduced by chlorination process the average fineness was .985½, equal to $20,37½ per ounce.

The cost of mining 3,985 tons was $39,628.26, or an average of $9.94 per ton. The cost of milling 4,310 tons was $14,388.41, or an average of $3 34 per ton.

Since going into operation, in 1865, the company has disbursed for purchase of mines and perfecting titles, $302,706; for construction, $158,383; for dividends to stockholders, $2,054,000; for mining, milling and other expenses, $1,819,940; making a total of $4,335,030. The receipts from bullion from the mine in this time have been $4,373,239. The net profits have been $2,595,057.

New Single Track Railway.

W. H. Harrison, of Livermore, Alameda county, has recently invented, and patented through the Mining and Scientific Press Patent Agency, an improved single track railway. The improvement consists in a novel means of guiding and steadying the carriage upon its single line of wheels, by means of a series of rollers or pulleys which are fixed upon each side of the rail, while the carriage is provided with a rail upon each side, which successively engages with the pulleys as the carriage passes, and thus maintains it in a proper position.

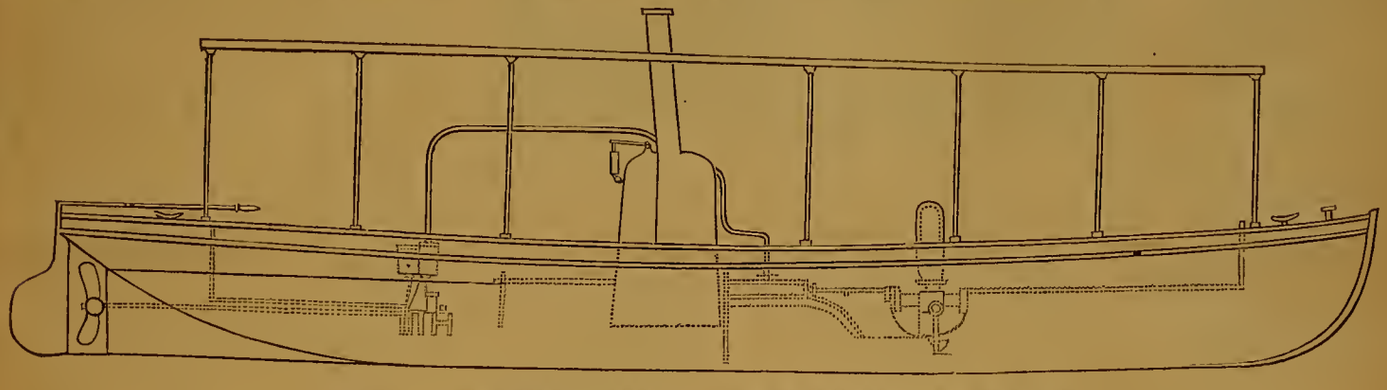
The carriage is mounted on suitable bearing wheels, which are fitted to run upon the single rail. In order to give the carriage stability it will be necessary to guide it at times, although when running at a high speed upon a perfectly straight line, it will be nearly self-sustaining (like a hoop), and will only be thrown off its balance by imperfections in the work. Mr. Harrison's guiding device consists of a rail at each side which is strongly secured to the car in any suitable manner, so that the pair of rails stand opposite each other beneath the level of the car body.

At intervals, upon each side of the main rail, pulleys are fixed so as to turn upon vertical axes, and these pulleys are so grooved that they receive the edges of the rails as they pass, and thus maintain the car in a perfectly horizontal position. The pulleys may be secured in pairs to strong metallic base plates, or any other desirable method may be employed. The ends of the guiding rails are slightly beveled, so as to insure their taking the pulleys easily and without shock. The arrangement is quite simple and easily carried out.

A Steam Fire Launch for San Francisco.

The floating fire engine, of which we give an illustration, is designed for the protection from fire of the shipping wharves and property adjoining the water front. It consists of a steam launch fitted with fire-engine. The length of the hull is thirty-five feet; beam, seven feet. The engine for propelling this little craft is placed near the stern, as will be seen, and is quite independent of the fire-engine, although but one boiler supplies both with steam. The speed is eight miles an hour. To avoid, if possible, the use of salt water in the boiler, fresh water tanks are fitted sufficient for a supply of about one hour's steaming. An awning for the protection of the machinery when stationary is provided, extending, as will be seen, from end to end. It is of wood and made in three sections, so arranged that the whole or part can be easily removed. The fire-engine is placed in the forward end of the craft, working horizontally. The diameter of the steam cylinder is 6½ inches; stroke, 18 inches; and the pump 5¼ inches diameter by 18 inches stroke, capable of discharging 300 gallons per minute to a hight of 160 feet. The delivery is provided with two branches, but if desired, four may be used, in which case four jets, five-eighths of an inch in diameter, could be thrown simultaneously to a distance of from seventy to eighty feet. The suction is taken from the boat's side through a perforated plate.

The boiler is on the Field principle, which is doubtless well known to our readers, in which steam can be raised from cold water in ten minutes. A successful trial of a similar floating engine was made in the East not long since, and from the great ease with which the craft was handled, and rapidity with which she steamed from place to place and at once got to work, we have no doubt that this floating fire-



DESIGN FOR A STEAM FIRE LAUNCH FOR SAN FRANCISCO HARBOR.

The establishment, Nos. 415 and 417 Jackson street, this city, a property forty-six by eighty feet, three floors and basement, contains machinery particularly adapted to the manufacture, and having been constructed in Paris, France, and shipped especially for use in the establishment of which we speak. To this reason we can assign the superiority of the manufacture of this house. Our manufacturers can not only excel the French in the quality of production, but for surpass them when the fact of price is taken into consideration. Our home manufacturers have fought against the prejudice respecting goods manufactured here, and have succeeded in establishing a reputation for making goods, unexcelled by manufacturers in any part of the world.

On entering the manufactory, the business offices are noticed, as well as processes of manufacture and storage of chocolate, Chartres coffee and spices, which go to make up the stock contained in store, and awaiting shipment to all parts of the Pacific coast, Mexico, China, Sandwich islands, South America, etc. The works are under the personal supervision and management of Mr. D. Ghirardelli, Jr., son of the founder of the concern, the financial affairs devolving upon Mr. Harry Chevesich.

The cocoa employed in the manufacture consists of different varieties and obtained from vastly different sources. The superior article is produced in Tabasco, Mexico, and on the other hand, the cheapest and inferior is obtained in San Domingo, while the quality mostly used is what is called Guayaquil. In the basement of the Jackson street establishment the cocoa is roasted, as also coffee beans, and stored ready for use. Machines for grinding, mixing, making the substance up into hard cakes, moulding tables, a room where is performed the cooling process, etc., constitute the features of a department on the first floor, the adjoining apartment containing offices, storage and packing rooms. On the second floor the same unceasing processes of grinding, cleaning cocoa beans of extraneous matter, and facilitating processes, the emanations of the Messrs. Ghirardelli. Spice mills perform their same unceasing round of duties, and throughout the establishment there is an evidence of busy labor, the importance of which is attested by the high standing of this industry in the business pursuits of the people of San Francisco.

The Divining Rod.

Messrs. Editors:—A sharp discussion is now going on in England, in regard to the dowsing or divining rod. Some claim that it has great merits, while others are equally as positive that it has none. If in the search for and discovery of mineral lodes the divining rod has any merits at all, it is certainly desirable they should be generally known. With this view, I would ask of those of your readers who have had any experience in the use of this instrument themselves, or reliable accounts from others, to communicate such facts to you as they may have ascertained, whether they are for or against the use of the rod.

More *opinions* are not desired; *facts* only are wanted. Veritas.

The Nevada *Transcript* says: A company of English and French capitalists are soon to commence to run a tunnel from the Middle Yuba river into a large tract of gravel, situated near the Backbone house, above North Bloomfield. The tunnel will be in the neighborhood of three miles in length, and it is said it will open up one of the best gravel fields on the ridge.

The Nevada *Transcript* says R. H. Smoot had his eye blown out, check blown off and fingers of his left hand shattered by a premature powder explosion while he was filling a blast at Blue Tent.

The Sacramento smelting works are at present running day and night upon ore from Battle Mountain.

Kern county is the scene of the latest notable mining discovery in the State. A ledge of ruby silver has been found six miles from Keroville. This is the only mine of this character of any magnitude on the western slope of the Sierra. It is stated that the ledge shows vein matter of twenty-two feet, and has been cut through at a depth of 110 feet.

Banking.

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H. F. HASTINGS.....Manager.
B. N. VAN BRUNT.....Cashier.

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Especially valuable to Immigrants and Pre-emptors, and interesting to the public generally.

Contains a general statement of amount of Public Lands now open to pre-emption; Rail road Lands, and where they are situated, how reached; and general instructions for locating and holding.

Contains, also, facts of general interest to all in regard to the chief industries of California. Compiled by H. M. VAN ARMAN.

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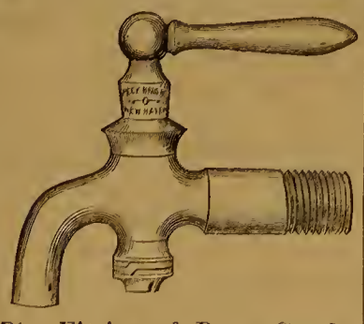

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PRICE.—Per Pint Bottle, 25 cents; per quart Quart Bottle, 40 cents; per Half Gallon, 75 cents.

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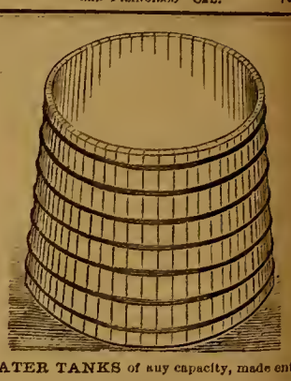

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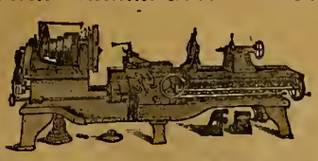

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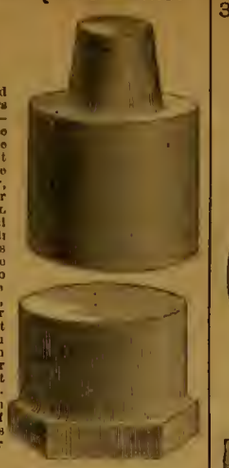

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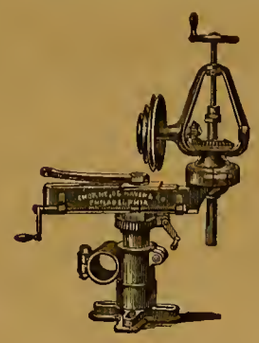

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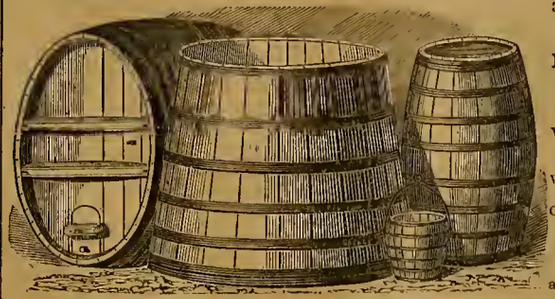

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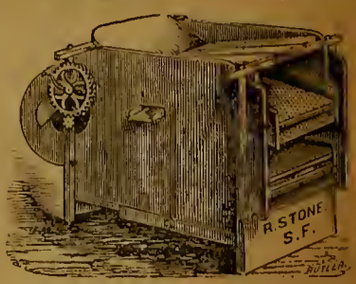

is one of the greatest improvements of the age for cleaning and separating grain, while it combines all the essential qualities of a first-class Fanning Mill. It also far excels anything that has been invented for the separation of grain. It has been thoroughly tested on all the different kinds of mixed grain. It takes out Mustard, Grass Seeds, Barley and Oats, and makes two distinct qualities of Wheat if desired. For further information, apply to

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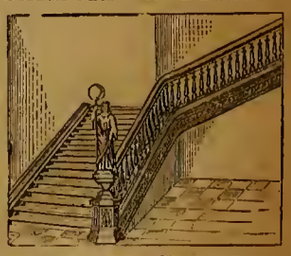

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The Concentrating Works at Falun in Sweden—Continued.

[Written for the PRESS by CHAS. C. RUEGER.]

VIII.—The Sorling and Separation of the Sands and Slums.

As repeatedly mentioned above, the combined palp from the rnbhieh works, from the rock breakers and from the Cornish rollere passes into the funnel appsrstus *a* 9 and *c* 8, where it ie condensed, and then ie raieed, together with the battery pnlp and the overflow of the eand jiggere above desigoated, into the eertiog or grading apparatueee *e* and *f*, thie being accomplished by means of the elevators *d* 6 and *d* 7.

Each of these grading appsratuses coneists of the eix V boxes (Germ., Spitzlutten) *e* 1 to *e* 6, respectively, *f* 1 to *f* 6, and of two fannel tanke (Germ., Spitzkasteo) *e* 7 and *e* 8, reepectively, *f* 7 and *f* 8.

The coustraction of the V boxes and funnel tanke corresponds exactly with Rittinger's requirements. The former consist of boxes having two vertical parallel eides, betwcen which are introduced inclined sidee forming with each other an angle of 60°. Inside the space so enclosed a prismatic box is fitted, corresponding in form with the outside casing, and wbich can be raised or lowered with a ecrew, whereby the channels or "limbs" of the V box, formed between the elanting sidee, is enlarged or decreased, cansing the pulp psssiug through the same to assume a greater or leeser velocity.

Two and two of the V boxes correspond iu breadth. The breadth of the first two is one foot eight and a half inches, that of the third and fourth box 2′ 2″, and of the last two, three feet.

The width of the limbs of the V boxes is adjueted to the quantity of pnlp psssing through them, and is generally about one and one-fonrth inches in the first box, and increaees proportionately in each of the following onee.

The grade of sand separated from the current takes its course through a slit in the bottom of the V, which ie one and one-half inches wide, and converges downward to a small discharge hole commnnicating with a wooden pipe attached benesth. Here the sand ie met by a current of clear water, which ride it of slum, by forcing the latter back into the converging slit; while the coarser grade is forced along to a rising outlet pipe.

Out of the V box, *e* 6, the palp flows into the fnnnel tanke *e* 7 and *e* 8, which are provided with two inverted pyramidal compartments. The eurface of the water in the first tank hae a breadth of nine feet, and a length of fonrteen and one-half feet; while that of the eecond tank, *e* 8, ie twelve feet breadth and eighteen feet long.

The conetrnction of these funnel tanks doee not vary materially from that commonly in use (illnstrated in Knstel's book). The shelle of 3″ plank have an inclination of 55° to the level, and are supported by a framework of euitable strength.

Out of the deepest point of the two compartmente of the funnel tanks the pulp pssses npwards, through a three-fourth inch iron pipe carrying a faucet on its upper or discharge end. The graded pulp is discharged into a second smaller fnanel, in which it is condensed, in esse it be fouud too thin; generally, however, it is fouad suitable to be rnn diretly on to the rotating continnous buddles.

The eame arrangement applies to both of the funnel tanks. In the latter of these the current is very slow, so that the slum therein contained ie almost wholly deposited, and the water pussing off at the surface seeme almost clear. Repeated, carefully conducted experimente have shown, that one cubic foot of the outflow water contains only 0.08 lbs. of slum, and this in such a minnte stage of division as to preclude further treatment by concentration.

The sorting or grading of the eande is very perfect; the six V boxes each furnish one grade of sand, and the two funael tanks two grades of slun esch, so that ten distinct grades are produced, which flow directly into their respeo tive eeparating apparatusee.

The disoharge pipe on these grading sppliances seldom choke np, and since there are pluge at proper placee, it is oasy to avoid and remove disturbanoce. The apparatus therefore require no special enpervision, and are therefore attended to by the workmen having in their charge the percuesion tables and buddles, etc.

For the separation of the saude there are at present six Rittinger's continuons percussion tabice, *g* 1 to *g* 6, which are set up in three groups of two tables each, and at various elevations, as suiting the position of the V boxes.

The general construction of theee tables may be assumed as heing knowu, or it is to be found described in the works ou concontration by Kustel and Raymond; the description here is therefore limited to the mention of a few modifications.

The table has the usual dimensions of eight feet length, and a breadth of eight and one-half feet, and is divided by three strengthening ribs into two fields or divisious. Upon the frsme of the table are fastened one and one-fourth inch boards of fir wood, and over these one and one-fourth inch boards of beech, in the abence of a hardor wood. These latter boards are rnbbed off with pumice etone from time to time, and have been foand servicesble. In the emall experimental works—erected to test the varione machines, and study ont the best mode of their application to the ore under treatment, before planning the large works—a table so made hae been in constant uee for four yeare, and is yet in good condition.

Near the lower end of the table esch divieion has two traneversal slite, one for the waste palp, the other for the middlings. The concentrated stuff dischsrges over the lower edge of the tshle, into the conveying sluice provided for the purpose.

Instead of the wooden posts of the ordinary table frames, there are cast iron standards, to which the tables are hung with adjnstable eyebolts. To facilitate the adjustment of the iaclination of the table, the eye-belt nute are provided with handles.

For the guidance of the tsble, a cast iron fork clasps the extreme end of the percussion beam. On the other end of the beam, and on its lower eide, a one and one-fourth inch iron rod is fastened, and passed through the percnssion block. This bolt or rod carries on its outer end a compound rabber buffer, which eerves to propel the table back against the percussion block. This form of spring is much euperior to the wooden oues. Evolute springs of steel are still better.

Esch tsble hse its own driving ehaft of Bessemer steel, foar and one-hslf inches in dismeter, with eingle cam, conical driving palley, and a fly wheel three feet foar inchee in diameter.

In order to be sble to increase or decrease the number of etrokes of the tsble, the line ehaft is aleo provided with conical pulleys. The line ehsft, *h*, lies along the center of the building, one and one-half feet above the lower floor, and psrallel to the length of the percussion tables, so that the motion can be transmitted to both eides, to the tables set up right and leit. The pulp distribntors and olear water slnicee are placed over the head of the tables.

To facilitate the regalstion of the flow of the clearing water, the cocks on the iron water pipes are provided with long rods of one-half inch roand iron, which reach beyond the foot end of the tables, so that the workmen, while regnlating the flow of water, can observe its effeot on the sepsration of the eande.

The graded sands pass from the V box into a distribnting. elnice, from which two transporting slnicee hranch off to the two divieions of the tables, and it is so arranged that the palp from either V box, or from both together, can be given to either table of the reepective group.

The percussion tablee yield rich "emall" ore for smelting, with six to fourteen per cent. coppor, according as the ore containe more or lees magnetio iron; furthermore, middlings and wastes.

The eande contain about one-millionth part gold, or about six ceats to the ton of ore, and yet a great part of it is saved as free gold, by concentration. It is, however, too little to be separated on the ore tables, it is therefore saved on ocntinnously working endless belt tablee, *i* 1 to *i* 6, set np below each percnssion table. These tables are six feet eight inches long and one foot eight inches broad; the belts lie on an incline of two inches to the foot.

The coucentrated small ore, being collected from both percussion table divisione into one sluice, rune into the distributor of the belt tables, and spreade in a thin layer on to the ten-inch wide belt of coaree duck, which being stretched evenly above and below the tsbles, and the ends lapped, is eecurely eewed together with strong twine. At the head end of the table, and above it, ie a clear water elnice, and below the table a squirt-off pipe.

By means of a mechsnical appliance, the endless canvas belt is drawn over rollers, one at each end of the table, periodically, and with a jerking movement, and carriee with it the gold dnst deposited thereon, which, in paseing below the head end roller, is swept off by the squirt pipe, and accumnlated in especial veesele, while the separated small ore flows with the clearing water downwards, to discharge into reeervoirs placed at the foot of the tsble, so thst this gold dust has continually a clean surface to depoeit oa. The gold contained in the enriched small ore thns extracted, is very variable, amounting to about six to thirty-six, sometimes to 170 millionth, or $3.60 to $102 per ton.

The middlings pnlp flows from the Rittinger percussion tables into the funnel apparatus *K* 1 for condensation, then to be raised by the elevator *l* 1 back into the V box *e* 1.

For the "gleaning" of the percussion table wastes, the endlese belt tables *m* 1 to *m* 3 are provided. The construction of these corresponds with that above described; they are much larger, however, the length is eleven feet six inchos, the breadth five feet, and the iuclination per foot one inch. The belt itself is four feet wide.

The product swept off at the head of these tables by the squirt pipe, consisting of impure, poor small ore, goes with the middlings palp from the percussion tablee back into the V boxes. The wastes from the belt tables flow into the fnnnel apparatne *K* 2 for condeusation, to be subsequently raised by the elovator *l* 2 into the sluice *n* for further transportation.

The arrangement is such, that by means of a cam, in connection with a few levers and rods, the belts of the tables *i* 1 and *i* 2, as well as that of *m* 1 are eimultaneously put in motion. The eame applies to the tables of the other groupe.

Twelve lifts per minute are given, each caueing an upward movement of the belt of one and one-fourth inchee, so that on each of the first two tables 62½ equsre feet of belt are washed per hour, and on the larger table 300 square feet in the eam⁹ time.

The wastes from the percussion tables usnally contain 0.8 to 1.2 per cent. copper, and after having passed the belt tables ooly 0.3 or at moet 0.4 per cent. In the experimentsl works, the wastes from the ordinary "plane tables" were 0.2 to 0.4 per cent. richer.

The arrangements just deecribed apply also to the two following groupe of percussion and belt tables, with the difference, only, that the middlings pnlp from the tsblee *g* 3 and *g* 4 flowe with that of the first group into the funnel apparatus *K* 1, and is lifted by the elevator *l* 1 bsck into the first V box, for a repeated grading and separation, while the middlings pulp from the tables *g* 5 and *g* 6 runs, for the same purpoee, into the funnel apparatus *K* 4, then to be lifted by the elevator *l* 3 into the fifth V box.

The attendance aud eupervieion of the six V boxes and six percussion tables, as well as of the six belt tables for the extrsction of the anriferous small ore, and of the three belt tables which serve for the gleaning of the wastes, ie in the hsnds of two men by day, and the same number by night.

For the separation of the slame, there are at present fonr continuous rotsting buddles (called commonly the Hsiz. rotsting buddles), *p* 1 to *p* 4.

The face of the buddlee ie convex, and has sn inclinstion of one inch per foot, outward. The cone of the bnddles has sixteen feet diameter, and lies 3.7 feet above the lower floor, in order to obtain sufficient fall for the middlinge and waete pulps.

The cast iron verticsl ehaft is hollow, ite outside diameter being six inches, ite inner diameter four and one-half inches. It carries a rasette of cast iron, to which are fastened the spider arms of the buddle coue. Further down on the shsft is another raeette, to eapport the braces for the epider arme.

[To be Continued.]

Sulphurets.

MESSRS. EDITORE:—In reply to Mr. Aaron'e letter: If he will have the kindnese to farnieh me with a esmple of the eulphnreted mstter, with the gold ia the peculisr condition which he describes, I ehall feel obliged. After the examination of it I might be able to answer his queetions, and at the same time, perhape add something interesting to my collection: "Laminated gold persietently retaining the color and hne of the grennd eulphurete, after grinding and washing, and which conld not nuite with the quicksilver."

Since 1852 I bave been both owner and manager of quartz mills in different parts of California, and had a caetom mill at Grass Valley for upwarde of ten years, for which mill the commiseionere appointed by the State Agricultural Society in 1858, after a carefnl examination, awarded me the premiam "for the best quartz mill in the State." During all that time, and while working anriferoue rock from hundreds of different veins, I never met with anything like that described by Mr. Aaron.

With respect to the Wsshoe vein-stone, that containing two per cent. of silver mineralized would be worth upwards of $700 to the ton without taking into acconnt the kustelite or argentiferons gold. The majority of the Washoe mills obtain larger results and work mnoh close thaa they are given credit for. They keep accnrate accounts of silver and gold contents of the veinstone worked, and loes on treatment. I would therefore recommend Mr. Aaron, iustead of gaessing at what ie claimed to be esved by the paa process, or listeniug to the gossip of outsiders, to get permission to examine eome of the Washoe mill books, and find out what has really been done at the different mills during the past six months, which would he better thau imagining resnlts and then asking questione about them. If the Patchen process has any merit it will no doubt be adopted, hnt the idea of the Washoe millmen, with their knowledge, experience and energy, eitting quietly down and working their vein-etone with a loss of fifty per cent. of the eilver contents, cannot be entertained for a moment, except by the man who has on sale a new proces to save all the silver and gold. Most of those conversant with mining mattere know that there are three modes of redncing vein-stone—namely, crnshing, stamping and griuding. The first by horizontal rollers and rock breakere; the second by etampers; the third by edge mills, arrastras, pan mills, mill etones, etc. I recommended fine stamping in the Waehoe mills, as being cheaper than grinding with the pans. I snppose when Mr. Aaron speaks of crushing in the batteries that he means stampiug.

I trust Mr. Aaron will not attribnte it to any want of courtesy on my part, bnt I muet decline to answer any other commnnication from him till he furnishee me with a sample of the sulphurets with the gold in the pecaliar condition he describes. M. ATTWOOD.

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PATENTS & INVENTIONS.

A Weekly List of U. S. Patents Issued to Pacific Coast Inventors.

FROM OFFICIAL REPORTS FOR THE MINING AND SCIENTIFIC PRESS, DEWEY & CO., PUBLISHERS AND U. S. AND FOREIGN PATENT AGENTS.]

By Special Dispatch, Dated Washington D.C., Oct. 26th, 1875.

FOR WEEK ENDING OCTOBER 12TH, 1875.*

SEWING MACHINE TABLE.—Walter B. Higgins, S. F., Cal.

HYDRAULIC LIFT DRY DOCK.—Theodore A. Blake, S. F., Cal,

FARE BOX.—Aaron J. Cortie, S. F., Cal.

MACHINE FOR FILLING SEWING MACHINE BOBBINS.—George Gowing, S. F., Cal.

SHORT THREAD SEWING MACHINE.—John S. Hall, S. F., Cal.

GANG PLOW.—Daniel Kendig, Napa, Cal.

SLOTTED FRAMING SQUARE.—John H. McInnes, S. F., Cal.

SEPARATING GOLD FROM OTHER METALS.—Conrad Wiegaud, Virginia City, Nevada.

ICE MACHINE.—John M. Beath, S. F., Cal.

KNIFE SHARPENER AND POLISHER.—Ed. A. Bashnell, Oakland, Cal.

COMBINED PLANTER AND CULTIVATOR.—Chas. F. Keller, Hesldsburg, Cal.

METHOD AND APPARATUS FOR BURNING OIL.—Elisha E. Rice, S. F., Cal.

BRICK PAVEMENT.—Henry M. Stow, S. F., Cal.

New Incorporations.

The following companies have filed certificates of incorporation in the County Clerk's Office at San Francisco:

THE SYNDICATE MINING CO.—Oct. 20. Location: Bodi district, Mono county. Trustees—John J. Valentine, John Skae, Andrew Baird, H. M. Yerrington and W. H. Hall. Capital stock, $5,000,000, in 50,000 shares.

COMET G. M. CO.—Oct. 20. Trustees, Wm. A. Levanway, S. H. Harmon, E. C. Burns, S. A. Kelley, L. L. Alexander. Capital stock, $5,000,000, divided into 50,000 shares of $100 par value each.

STOCKBROKERS' S. M. CO.—Oct. 23. Trustees—D. B. Harris, O. R. Johnson, R. B. Kyle, A. C. Taylor, Wm. H. Wilcox. Capital stock, $5,000,000, divided into 100,000 shares of $50 par value each.

MENDOCINO RAILROAD CO.—Oct 23. Object, to maintain and construct a railroad from Cuffey's Cove to a point on Douahne's creek, a distance of five and a half miles. Capital stock, $150,000, divided into 10,000 shares of $100 par value each. Trustees, A. W. Hall, West Evans, James McKinley, George C. Perkins, Charles C. Athern.

GLENCOE CONSOLIDATED G. AND S. M. CO.—Oct. 24. Location: Calaveras county; capital, $6,000,000, divided into 60,000 shares of $100 each. Trustees—A. Lefevre, S. Heydenfeldt, J. W. Brumajim, John F. Finn and L. Leavitt.

SULPHUR BANK QUICKSILVER M. CO.—Oct. 27. Location: Lake county, Cal. Trustees—John Parrott, Wm. Burling, James W. Burling, Tiburcio Parrott and Henry L. Lightner. Capital stock, $10,000,000 in 100,000 shares.

METALS.

[WHOLESALE.]

WEDNESDAY M., October 27, 1875.

American Pig Iron, ₱ ton	38 00	@	36 00
Scotch Pig Iron, ₱ ton	35 00	@	37 00
White Pig, ₱ ton	— —	@	38 00
Oregon Pig, ₱ ton	— —	@	40 00
Refined Bar, bad assortment, ₱ lb	— —	@	— 3½
Refined Bar, good assortment, ₱ lb	— —	@	— 4
Boiler, No. 1 to 4	— —	@	— 5½
Plate, No. 5 to 9	— —	@	— 5½
Sheet, No. 10 to 14	— —	@	— 5¾
Sheet, No. 16 to 20	— 5¼	@	— —
Sheet, No. 22 to 24	— 6	@	— —
Sheet, No. 26 to 28	— 6½	@	— —
Horse Shoes, per keg	7 50	@	8 00
Nail Rod	— 10	@	— —
Norway Iron	— 9	@	— —
Rolled Iron	— 6	@	— —
Other Irons for Blacksmiths, Miners, etc.	— —	@	— 4½
COPPER.—			
Braziers'	— 35	@	— —
Copper Tin'd	— 37½	@	— —
O'Niel's Pat.	— 37½	@	— 40
Sheathing, ₱ lb	— 24	@	— 40
Sheathing, Yellow	— —	@	— 25
Sheathing, Old Yellow	— —	@	— 12½
Composition Nails	— 24	@	— —
Composition Bolts	— 24	@	— —
STEEL.—English Cast, ₱ lb	— 20	@	— 25
Anderson & Woods' American Cast	— —	@	— 16½
Drill	— —	@	— 18½
Flat Bar	— 18	@	— 22
Plow Steel	— 8	@	— 10
TIN PLATES.—			
10x14 I C Charcoal	10 50	@	11 00
10x14 I X Charcoal	12 50	@	13 00
Roofing Plate I C Charcoal	10 00	@	10 50
Banca Tin	— 26	@	— —
Australian	— 18	@	— 20
ZINC....By the Cask	— —	@	— 11
Zinc, Sheet 7x3 ft, No 7 to 10 ₱ lb	— —	@	— 11
do do 7x3 ft, No 11 to 14	— —	@	— 11½
do do 8x4 ft, No 8 to 10	— —	@	— 11½
do do 8x4 ft, No 11 to 10	— —	@	— 12
NAILS Assorted sizes	3 60	@	3 75
QUICKSILVER, per lb	— 80	@	— 85

LEATHER.

[WHOLESALE.]

WEDNESDAY M., October 27, 1875.

Oity Tanned Leather, ₱ lb			22@29
Santa Cruz Leather, ₱ lb			22@28
Country Leather, ₱ lb			22@29
Stockton Leather, ₱ lb			25@28
Jodot, 8 Kil., per doz	$50	@	54 00
Jodot, 11 to 13 Kil., per doz	68 00	@	78 00
Jodot 14 to 19 Kil., per doz	82 00	@	94 00
Jodot, second choice, 11 to 16 Kil. ₱ doz	57 00	@	74 00
Cornellian, 12 to 16 Kil	57 00	@	67 00
Cornellian Females, 12 to 13	63 00	@	67 00
Cornellian Females, 14 to 16 Kil	71 00	@	78 50
Simon Ullmo Females, 12 to 13, Kil	60 00	@	63 00
Simon Ullmo Females, 14 to 15, Kil	70 00	@	72 00
Simon Ullmo Females, 16 to 17, Kil	73 00	@	75 00
Simon, 18 Kil., ₱ doz	61 00	@	63 00
Simon, 20 Kil. ₱ doz	65 00	@	67 00
Simon, 24 Kil. ₱ doz	72 00	@	74 00
Robert Calf, 7 and 8 Kil	35 00	@	40 00
French Kips, ₱ lb	1 00	@	1 15
California Kip, ₱ doz	40 00	@	60 00
French Sheep, all colors, ₱ doz	8 00	@	15 00
Eastern Calf for Backs, ₱ lb	1 00	@	1 25
Sheep Roans for Topping, all colors, ₱ doz	8 00	@	12 00
Sheep Roans for Linings, ₱ doz	5 50	@	10 50
California Russett Sheep Linings	1 75	@	4 50
Best Jodot Calf Boot Legs, ₱ pair	5 00	@	5 25
Good French Calf Boot Legs, ₱ pair	4 00	@	4 75
French Calf Boot Legs, ₱ pair	4 00	@	—
Harness Leather, ₱ lb	24	@	32½
Fair Bridle Leather, ₱ doz	48 00	@	72 —
Skirting Leather, ₱ lb	33	@	37½
Welt Leather, ₱ doz	30 00	@	50 00
Buff Leather, ₱ foot	17	@	⅜
Wax Side Leather, ₱ foot	17	@	

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We invite the acquaintance of all parties connected with inventions and patent right business, believing that the mutual conference of legitimate business and professional men is mutual gain. Parties in doubt in regard to their rights as assignees of patents, or purchasers of patented articles, can often receive advise of importance to them from a short call at our office.

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BY OTHER AUTHORS.

The Quartz Operator's Hand-Book; by P. M. Randall. 1871. Revised and Enlarged Edition. Cloth bound, 175 pages. Price, $2.

Sulphurets: What They Are, How Concentrated, How Assayed, and How Worked; with a Chapter on the Blow-Pipe Assay of Minerals. By Wm. M. Barstow, M.D.; 1867; cloth bound, 114 pages. Printed and sold by DEWEY & Co. Price, $1; postage free. The best written work, and most complete work on the subject treated.

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PASO ROBLES, CAL., October 18th, 1875.

DEWEY & CO.—*Gents:* The letters patent for the Tire Upsetter have come to hand. For the prompt manner with which you have brought the matter to a successful issue, please accept my thanks.

Yours Respectfully, JOHN H. MERTZ.

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UNITED STATES

Mineral Land Laws, Revised Statutes,

And Instructions and Forms Under the Same.

We have just issued a pamphlet containing the general mineral land laws of the United States, with instructions of the Commissioner of the Land Office. The contents of this pamphlet comprise all of the Government laws with relation to mineral lands of interest to the mining community, as follows: Mining Statute of May 10th, 1872, with Instructions by the Commissioner of the Land Office; Mining Statute of July 26th, 1866; Mining Statute of July 9th, 1870. Forms required under Mining Act of May 10th, 1872, as follows: Notice of Location; Request for Survey; Application for Patent; Proof of Posting Notice and Diagram of the Claim; Proof that Plat and Notice remained Posted on Claim during Time of Publication; Registers' Certificate of Posting Notice for Sixty Days; Agreement of Publisher; Proof of Publication; Affidavit of $500 Improvements; Statement and Charge of Fees; Proof of Ownership and Possession in Case of Loss or absence of Mining Records; Affidavit of Citizenship; Certificate that no Suit is Pending; Power of Attorney; Protest and Adverse Claim; Non-Mineral Affidavit; Proof that no Known Veins Exist in a Placer Claim, etc. There is also given the U. S. Coal Land Law and Regulations thereunder. The work comprises thirty pages, and will be sold, post-free, for 50 cents. It should be in the hands of every one having any mining interests. DEWEY & CO.,
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At a Stated Term of the Circuit Court

of the United States of America of the Ninth Judicial Circuit held and for the District of California, held at the court room in the city and county of San Francisco, on Thursday, the 30th day of September, in the year of our Lord one thousand eight hundred and seventy-five. Present—The Honorable Lorenzo Sawyer, Judge.

Nicholas Seibert, complainant, vs. Wm. T. Garratt, defendant—In equity.

DECREE.

This cause came on to be heard at the February Term, A. D. 1875, of this Court and was argued by counsel and thereupon upon consideration thereof, it was ordered, adjudged and decreed, as follows, viz: That defendant, William T. Garratt, was not the first or original inventor, or discoverer of the improvement or discovery claimed by him, in and by those certain reissued letters patent of the United States, number five thousand three hundred and twenty-eight (No. 5328), for an alleged new and useful improvement in lubricators, issued to said defendant, William T. Garratt, on the 18th day of March, A. D. 1873, and is not entitled to a patent therefor, and that said reissued letters patent, number five thousand three hundred and twenty-eight (No. 5328) are declared void and the same are hereby vacated and set aside by reason of their interference with those certain letters patent of the United States, number one hundred and eleven thousand eight hundred and eighty-one (No. 111,881) for a new and useful improvement in lubricators, issued to complainant, Nicholas Seibert, on the fourteenth (14th) day of February, A. D. 1871.

It was also further ordered, adjudged and decreed that complainant do have and recover of and from defendant his costs and expenses to be taxed herein.

(Signed) LORENZO SAWYER,
Circuit Judge.

The above decree has reference to "Seibert's Eureka Lubricator" for oiling the valves and cylinders of steam engines.

It has a glass gauge and condensing pipe, or reservoir, with a regulating feed valve, and works as follows: As the water of condensation is admitted, under the oil, just so fast the oil passes out at the top through a pipe into the steam pipe to oil the valves and cylinder.

Parties who infringe or purchase the infringed lubricators, will be held strictly responsible.

N. SEIBERT, Patentee,
125 First Street, S. F.

Mining and Other Companies.

Cloverdale Mining Company — Location of principal place of business, San Francisco, California. Location of works, Cinnabar District, Sonoma County, California.

Notice is hereby given, that at a special meeting of the Stockholders, held on the fifteenth day of October, 1875, an assessment, (No. 3) of two hundred dollars per share was levied upon the capital stock of the corporation, payable immediately, in United States gold coin, to the Secretary, at the office of the company, No. 306 Clay street, San Francisco, California.

Any stock upon which this assessment shall remain unpaid on the 18th day of November, 1875, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Thursday, the 16th day of December, 1875, to pay the delinquent assessment, together with costs of advertising and expenses of sale. ED. B PARTRIDGE, Secretary.

Office, No. 306 Clay street, San Francisco, California.

Keystone Quartz Mining Company—Principal place of business, San Francisco, California. Location of works, Butte Township, Sierra county, California.

Notice is hereby given, that at a meeting of the Board of Directors, held on the 22d day of September, 1875, an assessment (No. 5) of fifty (50) cents per share was levied upon the capital stock of the corporation, payable immediately, in United States gold and silver coin, to the Secretary, at the office of the company, northwest corner Pine and Sansome streets, San Francisco, Cal.

Any stock upon which this assessment shall remain unpaid on the 8th day of November, 1875, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Monday, the 29th day of November, 1875, to pay the delinquent assessment, together with costs of advertising and expenses of sale.

LOUIS VESARIA, Secretary.

Office, northwest corner Pine and Sansome streets, San Francisco, California.

Hope Quicksilver Mining Company—Location of principal place of business, San Francisco, California. Location of works, Cinnabar Mining District, Sonoma County, State of California.

Notice is hereby given, that at a regular meeting of the Board of Directors, held on the 2d day of August, 1875, an assessment (No. 2) of Five cents per share was levied upon the capital stock of the corporation, payable immediately, in United States gold coin, to the Secretary, at the office of the company Room 2, No. 408 California street, San Francisco, Cal.

Any stock upon which this assessment shall remain unpaid on the 9th day of September, 1875, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Thursday, the 30th day of September, 1875, to pay the delinquent assessment, together with costs of advertising and expenses of sale.

JACOB HARDY, Secretary.

Office, Room 2, No. 408 California street, San Francisco California.

POSTPONEMENT.—The date of the delinquency of the above assessment is postponed to the 9th day of October, and the date of delinquent sales to November 1st, 1875. By order of the Trustees. J. HARDY, Secretary.

September 8, 1875.

SECOND POSTPONEMENT.—The date of the delinquency of the above assessment is postponed to November 9, 1875, and the day delinquent sales to December 1, 1875. By order of the Board of Trustees.

JACOB HARDY, Secretary.

San Francisco, October 8, 1875,

Orleans Mining Company—Location of principal place of business, San Francisco, Cal. Location of works, Grass Valley Mining District, Grass Valley, Nevada County, Cal.

Notice is hereby given, that at a meeting of the Board of Trustees of said company, held on the 27th day of October, 1875, an assessment, No. 8, of two dollars per share was levied upon the capital stock of said company, payable immediately in gold coin of the United States of America, to the secretary, at the office of the company, room 8, No. 315 California street, in the city of San Francisco.

Any stock upon which said assessment shall remain unpaid on the 30th day of November, 1875, will be advertised on that day as delinquent, and unless payment shall be made before, will be sold on the 18th day of December, 1875, to pay the delinquent assessment, together with costs of advertising and expenses of sale.

GEO. P. THURSTON, Secretary.

Office, room 8, No. 315 California street, San Francisco, Cal.

Peytona Gold and Silver Mining Company. Location of principal place of business, San Francisco, Cal. Location of works, Virginia Mining District, Nevada.

Notice is hereby given, that at a meeting of the Board of Directors, held on the 23d day of October, 1875, an assessment of five dollars per share was levied upon the capital stock of the corporation, payable immediately, in United States gold coin, to the Secretary, at the office of the company, room No. 11, 215 Sansome street, San Francisco, Cal.

Any stock upon which this assessment shall remain unpaid on the thirtieth day of November, 1875, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on the 18th day of December, 1875, to pay the delinquent assessment, together with costs of advertising and expenses of sale. By order of the Directors. F. J. OWENS, Secretary.

Office—No. 11, 215 Sansome street, San Francisco, Cal.

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Smith's Celebrated Moulders.

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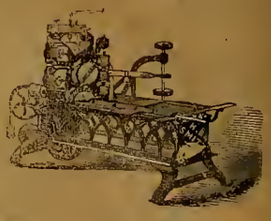
These celebrated Tenoners may be seen in use in all the sash and door factories and first-class planing mills of California. No other machines will be given room in any first-class mill. We have two sizes always on hand. *Prices reduced.* Send for Illustrated Catalogue.



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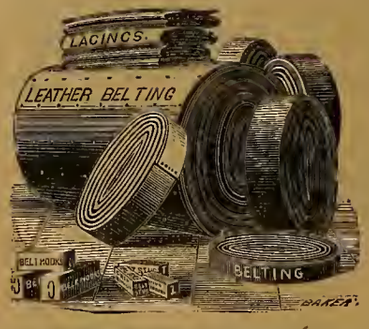
Is gotten up from new patterns specially for this Coast. It has Cast Steel Slotted Cylinder Head, running in patent self-oiling boxes; will plane 24 inch wide and *six inch thick*, and tongue and groove 14 inch wide. Will make rustic and stick gutters, or heavy mouldings, etc., and is the best job machine ever built. ☞ We have always on hand these machines with or without under cutter head, also, a large assortment of Planing Mill Machinery, including Planers, Moulding, Mortising and Tenoning Machines, Band and Jig Saws, Etc. Send for catalogues and prices. TREADWELL & CO., San Francisco.



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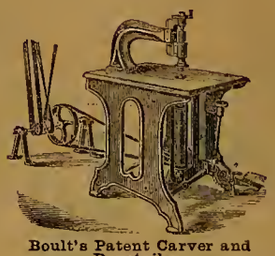

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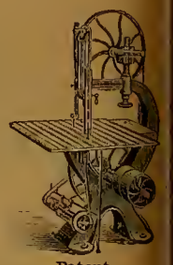
For the manufacture of Furniture, Carriages, Oars, Pianos, Organs, Chairs, Desks, and all kinds of Decorative Work. ☞ One of these machines is running constantly on the Furniture of the Palace Hotel. For descriptive catalogue, address TREADWELL & CO., S. F.



Patent
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For Mining, Shipping, and General Purposes.

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FOR THE RAPID AND ECONOMICAL TRANSPORTATION OF ORES AND OTHER MATERIAL OVER MOUNTAINOUS AND DIFFICULT ROADS.

This system has been in use for over three years, and given thorough satisfaction.

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For transmission of power by means of wire ropes

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ALING WIRE,
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WILL FEED WET OR DRY ORE.

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Over 15,000 now in use here and in Europe. Throws more and hotter water, with less steam, than any others. It has two Waterways, fixed Nozzles, and no movable parts to get out of order.

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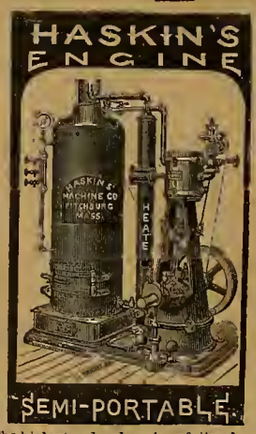
1874. A GRAND SILVER MEDAL. 1874



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All sizes new patent wheels and machines at REDUCED PRICES. Send for circular to TREADWELL & CO., San Francisco.

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Assaying in all its branches, ores analyzed, ores worked by mill process or otherwise. All assays guaranteed to correspond with U. S. mint assays. Silver and gold assay, $2,00; lead assay, $3.00; copper assay, $4.00.

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MINING AND SCIENTIFIC PRESS.

An Illustrated Journal of Mining, Popular Science and General News.

BY DEWEY & CO., Patent Solicitors.

SAN FRANCISCO, SATURDAY, NOVEMBER 6, 1875.

VOLUME XXXI Number 19.

The Fryer Process.

Ever since the "Fryer Process" for working ores was first spoken of on this coast, there has been much speculation as to its natare and as to the reaalts it was to accomplish. Rnmor said it was to entirely "revolutionize" the present system of working ores; hnt as that phrsse has been applied to many dozen patent processes before this, and yet the same old system is still in vogue, the shrewd ones didn't believe in it. In fact, it is hard to make mill men pay any attention to "processes," as so many failnres have been made ia times goae hy.

The people who brought the Fryer process here, however, were "Eastern men," who, strange to say, didn't want any capital "to make a few experiments with," or want any oae to make the experiments for them. They did not want to sell the patent; and, stranger atill, had no stock in it for ssle. They looked abont for a placa in which to try their process on an extended scale and selected Grass Valley, Nevada conuty, as a field of operations.

As soon as it wss known that they had commenced to have machinery made, everybody wanted to kaow what kind of machinery it was. As it happened, however, this did not transpire, as whatever was required they had made at several different foundries, ao that no two machinists oonld oompare notes. Some of the machinery wss made here and some at Grass Valley. No stamps were to be nsed; that was evident and was confessed hy the projectors. How were they going to crnsh the rock, then? That was the qnestion. Were they going back to hydrofluoric acid and dissolve the qnartz and try an old experiment which had proven a failure long since? Was it a roasting process, a smelting process, an amalgamating process, or whst?

Strange to say, as far ae the public is concerned, these questions still remain nnanswered, althongh several months have elapsed since the process was first talked of here.

They have kept their secret well, and althoagh extensive worke have heen pnt ap at Grass Valley, and ore from many different mines worked, no one bnt those directly interested know anything about how it was done. The miners themselves owniag the ore do not know anything aboat it. The results of working are stated to be eminently satisfactory to all, as they get a higher perceatage of assay value than by ordinary mill work; and we are informed get more out of the ore at Grass Valley than they even do by the much-vaunted and expensive chlorination process. They get what silver there is, whioh the chlorinators do not.

The owners of the process, who, by the way, seem to care very little what the public think one way or the other abont it, are perfectly certain they can do what they claim. They will have no hesitation whatever in msking the whole thing public as soon as their patents are all obtained. When they are ready they will in all probability let the pnblic know; hut for the present, the pahlic must continne to he cnrious without having its curiosity gratified.

Our friend Mr. W. A. Skidmore, well known among mining men on this coast, and Deputy to the U. S. Mining Commissioner, has heea np at Grass Valley for the past two weeks, and on his retnrn we qneetioned him as to what the Fryer process was, and what it was doing. He does not know anything more ahout the system than the rest of outsiders; says there are no stamps, bnt there ie a steam engine, the lattsr being the only part of the machinery visible to the outside world. He is eatisfied, however, that as far as working the oree np to a high percentage is concerned, the Fryer proces is a success. Moreover, that seems to be the opinion of most of the miners in that seotion. The works are of large capaoity, and expensive. The ore is heing treated hy the ton; not in small lots. It has heen practically a snccess on a large scale, and as far as he can see, will he ia some measnre like milling in this respect: that the ores can be worked cheaper on a large scale than a small, jnst as a 60-stamp mill oan work cheaper thau a 5-stamp mill, the addition of lahor not increasing with the additional machinery.

Mr. Skidmore informs us thst they havo worked a large nnmher of samples of ore for different parties, charging nothing for working it, and invariably returning the gold and silver resultant to the owners of the samples. It seems to make no difference as to olass of rock, free or refractory. They are now working several tons of rock, from the Providence mine, situated near Nevada City, which is oonsidered the most refractory in the State. What they have already worked of this has given good results. This ore is nsually worked by chlorination, but this process is said to have worked the ore better than the chlorination, saving considerable silver ss well as the gold.

The expense is a trifle more than the ordinary first-class milling treatment, but all the precious metals are saved. The operators claim thst they are able to save ninety-five per cent. of the assay value in any class of rock, no matter what the gangne matter may he.

There is no water nscd in this process; that is, the rock is not snhjected to the action of water at all. The system is fonnded on the fact of the extremo divisihility and atomic chsracter of gold in rock.

The gentlemen interested in the procese, and who have "pnt np" the money, came out from the East recently and last week visitod the works. They are all completely satisfied that the thing is a saccess and have retnrned home again. Mr. Fryer himself is no more adventnrer. He is well known to a number of the gentlemen comprising the company. He is an iaventor of some note, and although a man not more than thirty years of sge, has already perfected a nnmber of very importsnt inventions. He has come here to make his home, and has proved coaclusively to those who have assisted him to perfect his process that he can do what he claimed. It is understood that as soon as the company's arrangements are perfected the right to use the procese will he sold for a very small royalty, so that no very extensive capital will he required. We notice that the Nevada county papers have abiding faith in this process, having become convinced that it is a perfect success. Skeptical persons, however, will naturally desire to eee the works and learn the rationale of the process before helieving in it completely.

The peaks at the Summit are now covered with snow, which fell on Thnrsday. Snow fell in Tnckee, hut only in a mild way. It quickly disappeared.

The Grass Valley *Union* says: "It is reported that the hank of Findley & Co. will he reopened soon and everything satisfactorily adjasted."

An Improved Floor Clamp.

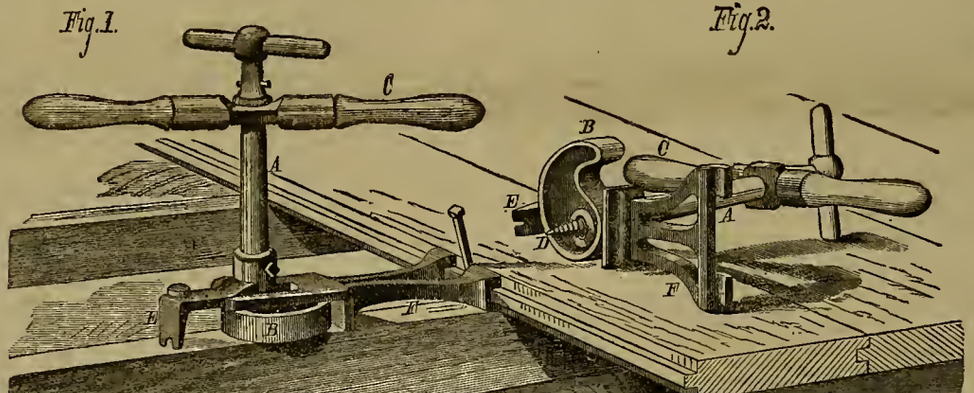
We illustrate herewith an inventioa of especial interest to house carpenters, cabinet makers, oar hnilders and others reqniriag an effective clamping tool. This floor cramp is patented hy W. D. Clarke, of Springfield, Illiaois, and is fnlly desoribed as follows:

It consists of a sleeve, *A*, which at its lower extremity carries a cam, *B*, Fig. 2, and st its upper end has a handle, *C*. Passing through the sleeve, is a rod having a screw point, *D*, at its lower end, and tnrned hy the npper handle shown. Attached to a oollar on the sleeve, *A*, is a rearward extending arm, *E*, the end of which is turned downward and toothed so as to engage with the sarface of the joist or floor. *F* is a slotted or grooved arm which is pressed by the cam agsinst the boards when said cam is snitably revolved by the handle, *C*. The holding arm *E* prevents any rearward motion of the device which is still fnrther secured by the screw point, *D*, entering the wood of the joist or floor. Althongh the device is designated as a floor olamp, it can be used for any pnrpose where a clamp is required, such as clamping doors, sash or articles of fnraitnre, or, in short, anything reqniring a strong and continons pressnre.

We think it wonld be of service in laying deck plank on vessels, where close fitting joints are so necessary.

The immense pressure exerted and the ease and readiness with which the machine can he spplied will, no douht, recommend its nse to carpenters, cabinet makers, car huilders and others having need af an efficient clamp.

The mschine is very compact, occupying but little space, and osn be placed in auy carpenter's chest.



CLARK'S IMPROVED FLOOR CLAMP.

At a meeting of the citizens of Santa Clara, to ohtain snbscriptions to the narrow gauge railroad, to be rnn from deep water on the hay to Santa Clara, thence throngh the Redwood district to Santa Cruz, a committee was appointed to solicit snhscriptions and to report at a meeting to he held next Saturday evening. In the event of $50,000 being snbscribed, the company will locate their principsl offices and shops there. Mnch enthnsiasm is manifested, and no donbt is entertained that the requisite amonnt will he raised.

The Black Hills.—It appears after all that trouble between the Black Hills gold hnnters and the Indians is inevitable. The Sioux City *Journal* has the following, whioh ie snggestiee: "The Black Hills excitement has not all died away, and in fact there ie considerable heing done hereahouts in a quiet manner. Several partiee arrived yesterday in this oity with the intention of making their way without mnch ado into the repnted gold country to pass the winter."

Judge White, the new Chief Jnstice of Utah, arrived in Salt Lake on the 24th nlt.

Our Home Industries.

Maccaroai, Vermicelli, Farina, Etc.

In speakiag of manufactnres it seems to ns a truism, and one beyond aay reasonable doabt, that the iacrease and perfection of basiness occnpations, or art of manufacture, is not so mnch on acconnt of the proportionate increase of popnlation every decade, bat definitely constitnted so, from the faot of specializing business pnrsuits.

We can here trace the csuse which makes the people of this age snperior to those of the past; the fact of individuals devoting special attention to any particnlar pursuit or branch of what once helped to form a certain trade, and the perfection accomplished in the nndertaking tending strongly to the expression we made, that we are a progressive people, and aided considerably hy the knowledge of individuals respecting distiact trades, which once only helped to form a corollary or whole.

The preparation or mannfacture of Italian pastes, maccaroni, vermicelli, farina, etc., in this conntry, and particnlarly in this oity, may be stated as being of no very recent origin, as the hasiness was began in 1853, by a firm—Messrs. Brignardello, Macchiavello & Co., at qnarters Nos. 704 and 706 Sansome street, the qaarters now occnpied hy their snccessors, the California Italian paste company, whose establishment is the largest in point of production in the Uuited States. The business of which we treat, has for its sonrce of supplies not only the conntry west of the Rocky monntains, bnt extends as far Esst as St. Lonis, while large shipments are constaatly made to Mexico, South America, Sandwich islsnds, Japan, China, etc. This fact affording evidence of the importance of the pnrsuit and its high standing in the general trade indnstry of the city.

The Messrs. Prusso & Splivalo have carried on this interesting pnrsnit, in their own right, for the last two years—the gentlemen having formerly participated in the business as the "Co." of the firm which inangurated the bnsiness in San Frsncisco, in 1853. They have bccome practically edncated in the bnsiness; and to their profioiency may be ascribed the snccess which has heen achieved of late years, an acknowledgment of which has been attested in the faot of obtainment of first preminm for goods of the description named, at the Mechsnics' Fair, lately held in this city, and possession of similar testimonials awarded them on other occasions of a similar nature.

The superiority of the firm we speak of does not solely rest npon the proficiency of the members, though to this fact may be ascribed the excellent condition of their mannfactnres; bnt also is dependent npon the excellent and superior qnalities of wheat which they raise in different psrts of the State of California; the oereals here produced heing acknowledged to be the hest in the market. It also adds to their favor when we remark, that it is the only firm in the conntry which employs a similar qnality of whest in the manufactare of Italian psste.

The property occupied by this firm oonsists of 50 feet front, on Sansome street, and extending to the depth of 137½ feet—the entire space occupied by building, in which has heen introdnced machinery of the latest style and description, and particularly adaptable to the production of large qnantities of the several varieties which constitute the mannfactnre, as carried on.

The trade of this establishment, controlled by Messrs. J. Prusso & C. R. Splivalo, is exclusively wi'h wholesale dealers, in the direction of conntry we have named, whero the superiority of their goods have won for the honse a high standing, the degree of commercial snccess achieved by the firm ranking their establishment as the most prominent of its kind in the conntry.

CORRESPONDENCE.

Travels About Santa Rosa.

MESSRS. EDITORS:—Peeks of the Coest range loom np in plein view from Santa Rosa, sherply defined egeinst the northweet horizon, more than twenty miles ewey. On a cleer day the huge redwoods are so distinctly vieible thet the iutervening distence seeme hardly five miles. But a trip there consumes four houre' herd driving, end develops deep canons, e river of respecteble size—a hundred miles long—and the remeins of oue of our meguificent redwood forests, now producing, from four mills, about one hnndred thousand feet of hoards daily.

Whether the writer went there a few deys ego to pleese his fancy for the romantic, to gather stetietics, or as an envoy of the Lick trustees to select a site for the observatory, is nobody's business. Bnt it is certein thet he was provided with one of the heet four-horse turnouts for the occasion; fare, $2. Ten miles of the road lies through the Santa Rosa valley. Farm-honsss, orcherds, fields aud cattle dot the landscape on every hand. The late harvest has heen a plenteous yield and prodncts bring fair prices. One well-known farm, finely improved, with all necessary huildings, a large bearing orchard, ten acres of grapes, excellent fences, and a eituation es heartsome as the September picture on the page of an old almenac, where we used to eee, in our boyhood, the thrifty farmer sowing his grein—can he purohased for $45 per acre. These are 160 acree, three miles from the city; unimproved lands are lower in price. Fifteen miles out we entered the Russien River valley throngh Pocket canon. The first saw-mill ever erected in this region was here, at the intersection of Oregon canon. It was removed in 1858, by Sedgley & Miller, to a poiut lower down, neer Dr. Alden's place. There, hy the way, is a fine patch of cultivated hlackherries, which grow without irrigation. Torrence huilt a water saw-mill in 1861, still further down the stream, which did a thriving husinese until he thinned out the timber. The dam and building, and a few rotten saw logs may be seen yet. At that time no one thonght the redwood wilderness heyoud the river would be cut off for generations. There was no settlement at Stnmptown, which is in the heart of it, until 1867, when Heald & Guerne erected a saw-mill there, and Mr. Guerne, nnfortunately, gave his name to the place. For the sake of euphony let them select an easier name. One redwood standing in Torrence's field, acroes the river from Stumptown, measures fifty-four feet in circumference, a single etem, and 340 feet in hight.

Every few rods on our wey down the canon we met huge lumber wagone, drawn by four or six horses, when we had to give the road and wait for them to paee hy in cloude of dust. Now and then we started up flocks of quails, and onoe we saw a deer feeding with some cattle. It was eome consolation to think we wonld not have seen any game if we had had a gnn along. Betwoen times, when not delayed by teams, we tried to make np lost time. Our wheel horses were mules—good for holding back—though under the exhortatione of our driver they cantered as gracefully as a couple of cows coming from the pasture, each with a boy hanging to her teil. The driver of our mail hack invariahly waters hie team at the "Humming-hird saloon" hefore reaching the river. Why? will always remain a mystery with him, nnless he, too, is in some way connected with the observatory. For it was hore thet our expedition developed some eigns of a scientific charactor, by teking several observatione of a celestial nature through tho bottom of beer glaseee directed toward the zenith.

The channel of the river is about 500 feet wide and thirty feet deep. A stream of clear water, fifty feet broad and knee deep, ripples over the pehhles, where one cannot help looking for stray nuggets of gold that may have heen overlooked. A hoy is watering a horse, mid-side deep in a pool, up the stream. Tha horse turne with a snort and a plunge, making the spray fall like showers of diamonds in the setting sun-light, and canters across tho sand ahead of us into the village. The driver cracks his whip, his leaders hreak into a gallop, and we make our triumphal entry into Stumptown. Though the Octoher day had heen hot, a delicious coolness came with tbe evening seahreeze end pervaded the air. The sun set behind a neighboring mountain, covered to the snmmit with trees, and long rays of yellow light streamed across the valley, which, with the river, the village and the forest helow, soon faded into the sober gloom of twilight. It was very pleasant to sit on the porch after supper, leaning back in a split-hottom chair, reeting and looking at the strango scenery. Rough men, wearing fancy shirts and big hoots, droppod in, one hy one, to gossip with the stage driver, fishing for hits of news from the county seat. A party made up a game of "seven-up" at the har-room table, and some dogs were stretched before the wood fire on the hearth.

In the morning we waked up and peered through the winaow at gigantic redwoods, standing like church steeples, propping wreaths of fog which crept up the river through the night from the ocean, only ten miles distant. We brought a good appetite to the hreekfest, presided over hy Mother Teggert. There was a snowy cloth, with venison steak, hem and egge, hot rolls, hutter cekes, golden hntter, coffee with creem, and so on. After paying a very modest bill we took np the line of march, on foot, through "Big Bottom," the finest hody of redwoode south of Hnmholdt hey. At the outset we passed a mill, where the tanhark of this region is ground and sacked for the city market. Rough berk eells for ten dollers a cord, of two thousand ponnds, delivered at the mill. The hills are full of the oek producing it, and the industry is so well paid for thet squettere are foraging over the lands of our Uncle Samuel, in defiance of the law. A mile further we pess e saw mill, in the midst of the largest timher. The office stends on a stump, and many of the stumps thereahout ere ee hig as the houses. Six yoke of oxen were drewing a log over the skid roed. Ae we leaned against a tree, viewing its pessage, the nine-foot monster jolted the eolid ground and the tree hehind us. Continuing a couple of miles to the head of the valley, at Batchelder's, we passed through a thick iorest of immense trees, etanding so close it is estimated they would eaw more than one hundred thonsand feet of inch hoerds per acre. As commonly piled, there would he a hoard yard covering the surface of the land. Many single trees will cut forty thousand feet of clear lumher. There may he two hundred millione of redwood lumber remaining in "Big Bottom" and its neighhoring canons, hnt the estimete is large.

North of San Francisco there are few other redwoods for supplying the Santa Rosa and Napa valleye; hnt everywhere there is a sprinkling of fir, on the hills, for freming timber and rough uses. There are elso great quantities of oek, madrone, end other woods, good for fnel. The city ie reaching ite iron arms towards thie forest already. A railway *via* Tomales, and one *via* Santa Roea, will soou cross the Russian river. At uo distant day, when the land ie cleared, the eoil will be found very veluable for agricnlture—corn, alfalfa, potatoes and melons succeed finely on the low, alluviel lands. The various kinds of fruits and grapes will doubtless grow on the hill sides, especially where there are springs that may be used for irrigation. Oue drawhack will he, the trouhle of working around the stumps; hut redwood roots lio very deep and the plow can he run close. As this timher fires easily, perhaps they can he hurued out with kerosene oil. There are numerons instances of decayed trees hurning ten feet below the surface. The eoil is from five to twenty-five feet in depth, of a rich deposit of eilt and mold, where plant roots readily penotrate and draw enpplies. At present these lands, where denuded of timher, are reckoned of little value by the lumbermeu. Ten years hence, in the hands of a thrifty popnlation, almost every acre can he made to yield its harvest. I will make the statement eo plain no man can misnnderstand it—that every product of the soil in middle Californie will, and does, grow on these alluvial lands without irrigation.

For several days the writer was employed in surveying thereahout. The lines often ran over hills and gnlches where it was hard, slow work to olimb, and not at all hard to descend if one likes sliding. Each day, at noon and sunset, the mines in Mt. Jackson fired off eharges that echoed and re-echoed through the hills, signals for quitting work. At night, the eilence of the forest was unhroken around the cahin where we slept. It was overshadowed hy redwoods and fragrant laurels, which let in glimpses of the firmament through lofty branches, that seemed to move against the stars.

Now is ths time for men who have faith in the future to go in, ahead of the tide of improvement and speculation, to secnre small homes. The railwaye will bring both. True, the conntry is new, hut time and labor will round up and soften ite rough face. Those who weit aronnd the cities and settled portione of the State, expecting to drop into livee of pleuty and luxurione ease, may ae well stay away, hearing in mind that the primeval curse of labor still rests upou mankind.

J. B. ARMSTRONG.

Santa Rosa, Cal., Oct. 20th.

ORO FINO.—The rich strike in the Oro Fino is developing hetter than even the most sanguine friends of the mine expected. It is found very rich between the 2d and 3d levels, hoth north and south of the shaft. In some places the ledge is from 12 to 14 ft wide, and will averege from 5 to 6 ft in width of good ore, the richest streak heing ahout a foot in thickness and literally filled with coarse, free gold thet does one good to look at. Superintendent Catalow offered to bet last evening that within ten daye from now he could select a ton of ore that wonld mill over $10,000, and he found no takers. The deposit gete richer, the more it is developed, and promises to he an extensive and permanent thing. The mine is now yielding over a ton of ore per day to every man employed in and ahout the mine. The hullion product of the Oro Fino for the current month will he considerably over $40,000, and, if the present rich strike holds out, there is no telling what next month's product will be.—*Idaho Avalanche.*

THE highest mountain in the world has been discovered again. It is in New Guinea, and ie said to he 32,783 feet high. They have ohristened it Mount Hercules.

The C. & C. Shaft—An Immense Engineering Work.

Tbere can be no doubt that the engineering skill displeyed in sinking the new combination shaft of the California and Consolideted Virginie compenies hee heen superior to anything heretofore seen on the Comstock. When it was determined to sink a ehaft to the eastward to touch the bonanze at a point from which it could he worked more advantegeously than from eny other, speed in sinking end en eerly completion of the work were considered all important. To this end every modern applience wes introduced and the experience of the oldeet Comstock minere brought into requisition. The repidity with which the shaft ie being pnt down ie worthy of remark, four feet a day heing the rate of progress. This morning a *Chronicle* reporter visited the shaft, and took a few notes of what had been done and what is now going forward. Ahont seventy-five men are employed on the surface, putting the machinery in order and finishing

The Buildings.

These latter are large and substentielly constructed, the main hnilding being 120 by 50 feet. This merely covere the hoisting engines and the shaft. On the north side of the boiler room, containing three sets of boilers, are the dressing room for men, the office for the timekeeper, hath room, store room, etc., the whole covering an area of 120 by 60 feet. On the south eide are the carpenter and machine shops. There are two carpenter shope, built independently of each other, with an intervening space of fifteen feet, the one being for use in framing and fitting timhers for the California mine and the other for the Consolidated Virginia. They are each 40 hy 80 feet, the one nearest the shaft having a heesment. Parallel to these, on the west, is the mechine shop, 34 by 80 feet, in which lathes, air-compressore and mechines for doing the iron work of hoth mines will be placed. This room ie not yet completed, however, the sills only being laid. The othere are all up and enclosed.

The Hoisting Engines.

The machinery at the C. & C. shaft strikes the observer, nnless he be a practical machiniet, as being immensely complicated. The engines contain all the latest appliances in mining mechinery, and are as perfect as man'e present knowledge of mechanics can make them. They were designed by W. H. Patten, the architect of the Consolidated Virginia mills and several other worke on the Comstock. There are two hoisting engines of twenty-six inchee in diameter and six feet stroke, operating directly upon a ehaft eighteen inchee thick in the center and sixteen at the ends. By thns having the engine cranke directly upon the shaft, the loss of power in friction of gearing, together with the cost of euch gearing and the danger of breakage, are avoided. The cranke are of wrought iron, the pins and piston rods being of steel. The engines are supplied with Cornish double-beat valves and cross-cuts off. They look to the unpracticed eye something like the incline enginee at the Savage, hut differ from these in eome of the detaile of conetruction. They are estimated to have power sufficient to hoist from a depth of 4,000 feet.

A New Safety Brake.

Attached to the hoisting engine is something in the way of a safety brake, which reflecte credit upon the architect of the machinery, and is something which miners, above all others, will appreciate. By an ingenious arrengement of levers, a powerful iron brake strap, which nearly eucircles the fly wheel, ie operated hy a couple of small steam cylinders placed under the floor, eo thet, should the cable he overwound and the cage he on its way toward tho sheaves, the steam from the cyliudere of the engine passes into these small cylinders and the hoisting is instantly stopped. This transfer of the steam is effected hy meane of an indicator, which is itself something new. It ie a perpendicular rod ascending a perpendioular scale, one foot indicating one hundred feet of the shaft. Shonld this indicator be carried above tho mark described, hy over-winding, as above steted, it oporates instantly upon the small steam cylinders and an immediete stoppage is secnred. There are many other points ahont the hoisting engines that are worthy of mention, such as the putting on of the clutch on to the shaft hy an octangular fib, instead of with feathers—the usual way.

The Pumping Engine

Is a monster of its kind, and is novel in its construction, working also so smoothly and so much like a thing of life, that it is worthy of a visit from the ourious. The diameter of the cylinder is forty inches and the etroke eight feet. The pieton ects directly upon the heam of the pump, hy means of a large wooden conuecting rod, thus saving, as with the hoisting engines, a great deal of friction. The engine is supplied with that very intricate machine, the cataract valve, and can be made to perform one etroke per minute, or ae many more as may be desired. At present two strokes per minute are sufficient to keep the water out of the shaft. The ordinary pumping engine cannot he reduced helow four or five etrokes per minute, eo that where the water comes in hut elowly there muet he some unnecessary labor performed. The adaptation of the cataract valve to the pumping engine is due entirely to the study of Mr. Patten. Some time ago it was charged hy a flippent newspaper writer that thie gentleman olaimed the invention of the valves. It is almost needless to say that ths charge is ridiculous, inesmuch as the invention was mentioned, we believe, in an English pnblication on practical mechanics, by John Bourne, eome ten yeare ago. Davis subseqnently improved upon the invention, and the adaptation to the Cornish pumping engine, ee eaid before, is dne to the ingenuity of the architect of the C. & C. works. The engine and the eteem piping ere covered with Salamender filling, the new preparetion for saving heat, and conseqnently eteam. The filling is a wonderful non-conductor, and the engineers think it is a valuable acquisition for an engine. The pnmping engine ie situated, as might have been remarked before, npon the north eide of the hoisting department, and is about ten feet below the level of the hoisting engine.

The Gallows Frame, Etc.

The gallows freme, it was intimated when the works were begun, would be built of iron, ae wood soon rotted away, the constantly ascending steam from the sheft keeping it continually moist. A sort of sprnce pine, however, was got from California, which, for a long time, withstande decay, and of this the frame has been built. The main uprights are abont two feet square, with double trestles thrown across. The frame ie forty feet high, and ie braced with iron and wood in the most thorongh manner. The sheaves, or pullies throngh which the cable runs, are twelve feet in diameter. There is a double floor immediately aronnd the shaft, with a space between of eight feet. The rock will be hoisted, for the most part, np to the second floor, the lower one heing used for loading short timbers for deecent into the sheft. The lower floor is on a level with the basement of the carpenter shope. The blacksmith shop will be on the east side of the main building, bnt is not yet very neer completion. The whole arrangement at the C. & C. sheft betokene skill on the pert of the mechanics, and a desire on the part of the owners of the property that it shall last at least a few ages.

The California's New Mill.

The California's new mill, at Six-mile cauon, commenced on the 19th of April last, is another enterprise that ie making rapid progress, under the superintendence of Mr. Rooney. It will be ready by the 15th of November. It is the largest of its kind on the coast, and therefore in the world, and will be one more wonder for distingnished visitors when finished. It is 150 feet long hy 92 feet hroad—thirty feet longer than the Consolidated Virginia's—and contains forty pans, twenty setting and two cleaner pans. The agitating room, which measures thirty-two by ninety-two feet, contains four agitators, two pans and two settlers. The pan-frames are two feet higher from the floor then those of the Consolidated Virginie, thereby giving much easier access to the bands, etc., helow. The boiler room ie very epacious and solidly huilt, and has in it four sete of hnge boilere. It and the engine room meaenre together eighty feet. The retort house and blacksmith ehops, which are deteched from the main building end built of brick, are jnst being commenced and will meaeure 80x24 feet.

The New Style of Blasting.

A great deal of heavy work had to be done in excavating the foundation for the mill, as the grade npon which it ie built is so steep that a depth from seventeen to twenty-four feet had to be roacbed through eolid rock to obtain a level. Mr. Rooney need a churn drill, making the hole fifteen or twenty feet deep. In this he placed one or two cartridges of giant powder, which, whon exploded, formed a large chamber, and in this the final blasting charge of black powder wae placed. So effectnal is this process, that one blast kept seventeen certs hnsy for three days in removing the debris of the explosion. This was at the Consolidated Virginia works, the only other place at which Mr. Rooney has blasted in the manner prescribed.

The new mill will he well protected against fire, as three hydrants are placed around it, each throwing a magnificent stream of water, more powerful and greater in volume than any steam engine in thie city could supply. At present 140 men are at work. When completed tbe mill will give employment to over forty men, and will crneh abont 275 tons per day.—*Virginia Chronicle, Oct. 22d.*

ALTURAS MINES.—Correspondent Idaho *Avalanche*, Oct. 23: In former lotters to the *Avalanche* I have endeavored to give an nnprejndiced view of the condition, etatus and prospecets of the minee at Rocky Bar and Atlanta. I have represented them as I have found them, not deeming it necesary to make comparisons, disparaging or otherwise, with other camps, hut desirons of aiding to make them known abroed, believing ae I do, that as soon as live capitalists of the Pacific elope find out what there is here, there must unavoidably be a more healthy development and conseqnently a greater increase of popnlation and prosperity. With good management these mines cannot fail to prove an immense source of wealth, and there is no reason why season after season ehonld elapse without their being teken advantage of and mines worked snccessfully. The mammoth ledge in the vicinity of Atlanta is capable of yielding bullion to the valne of millione of dollare, and why should not the advantage of ench a development he reaped at present? There are many emeller minee, also, that ought to he made more productive and give employment to a larger number of men. More capital to develop and hetter management are the great wante of the camp at present.

Scientific Progress.

Geological Importance of the Colorado Explorations.

Very few if eny explorations heve been undertaken which have been pushed forward so rapidly, or resulted in euch important developments, as the recent explorations in the Colorado basin. The immense canyons there have been the result of river erosion rapidly carried on in soft sandstone, and the almost total absence of rain in that region has preserved the results of the erosions almost as intact as if they had but recently been made by artificial means. Hence, the opportunities for studying the geology of the country are extremely favorable. That region is also particularly rich in geological developments.

The extreme barrenness of this region is due to the fact of its great depression—so great that the salts and all the soluble matter contained in the ancient sea which once covered it, have been left in the soil. The soil has never been washed of its impurities as have most other portions of the globe, because its waters have had very little opportunity of finding their way to the sea.

The explorations show that that region has been "lifted up from the ocean's bosom three times; that three times the rocks were fractured, that three times the lava poured out of the crevices, and that three times the waters carved out valleys in their course seawards. The first of these periods was after the formation of the granite rocks; the second succeeded the sandstone formation; the third period is the present. The remnants of the first and second periods are buried; but we know that unnumbered centuries ago in the past, the granites and schists, now on the bottom of the grand canyon, were formed as a sedimentary bed beneath the sea, that then an upheaval took place, after which thousands of feet of beds were washed away in the sea by rains; then a depression took place, sinking the whole region some 20,000 feet below the ocean's surface, and allowing the formation of sandstone, at least 10,000 feet in thickness, as a sediment; then a second upheaval came, changing it again into dry land; then the rains washed away channels in the sandstone 10,000 feet deep, requiring countless years of gentle but unrelenting energy. Again the sea rolled over the land, which became its bottom, and received a new deposit of more than 10,000 feet of rocky bed; and lastly, this ocean bed was again upheaved, and for 100,000 years the atmospheric influences and the running streams, gathered from the clouds in the highest mountain tops, have been making gorges, canons and valleys, and carrying the *debris* back to the sea, from whose bottom the material all came."

The period of time required to form this successive deposits which have been opened up to view by the immense canons of the Colorado, must have been enormous; and in view of its present extreme depression and past uncertain stability, the question naturally comes up: "Will not the sea, at some future period, invade that land, by the sinking down of the latter, and will coral reefs be formed, and serve perhaps for the burial of the bones of the beings which then shall exist? Will the surrounding continents or islands be washed into that sea and form new beds of rock, which, when again upheaved, will form a new land, and canons again be formed, and reveal in their walls, to another race of intelligent beings, some of the features of the time in which we live at present?"

Discovery of a New Metal—Gallium.

Gallium is the name given, "in honor of France," to a new element which has been discovered by M. Lecoq, an amateur *savant*, of Bois-Baudran, Cognac. The celebrated chemist, Wurtz, presented to the Academie des Sciences, in its sitting of September 20th, a note on the part of M. Lecoq, announcing the discovery, particulars of which had been communicated under seal as far back as August 27th. This new element has not yet been isolated, and has not therefore been seen by any one; its physical characteristics remain so far unknown. It is an analogus of zinc and cadmium, of which metals it is an alloy, and was found in a blende from Pietrafita, Spain. The forms under which it is known, so far, are those of the chloride and sulphate. The discoverer is a student of the phenomena of the spectroscope, and it was in the course of his observations that the new metal presented itself, its character being revealed by a spectrum which no simple body had ever given. Two lines, one much brighter than the other, both situated in the violet—the region occupied by the brightest lines of the zinc—were noticed, the place of the former line being at the 417th degree of the scale of lines, and the other at the 404th.

The affinities which gallium has with zinc are declared by chemical analysis as well as by its spectrum. Like zinc it is not thrown down from solution in hydrochloric acid by sulphuretted hydrogen; and preserves its analogy with zinc by being precipitated by the same gas from an acetic acid solution. Under these conditions it is obtained before the zinc, and on fractionation, the two are got separately. Like zinc, the new metal gives a white precipitate with the sulphide of ammonium. On immersing a piece of zinc in a solution of the new metal it separates and comes out, not in a metallic form, but under that of an oxide, precisely as aluminium does under similar circumstances. The analogy with aluminium, however, is not long sustained, for if a small dose of ammonia precipitates the gallium, an excess redissolves it. Up to the present time, only a very small quantity of gallium has been obtained, but M. Wurtz, who presented the paper, has given the academy tubes of solution for experiment; and on asking for a commission to examine into the question and to place gallium on the list of simple bodies, the academy named M. Wurtz himself, joining with him M. Fremy. The actual number of known elements is sixty-three—forty-seven of which are metals and sixteen metalloids. If the new element takes the place claimed for it, France will have obtained an honor equal to that of England, which discovered thallium, and approximative to that of Germany, the discoverer of cæsium and rubidium.

The Magnetization of Gas Spectra.

Some very curious experiments have recently been laid before the French Academy of Sciences by M. Chautard, relative to the influence of a powerful magnet upon the spectra of gases contained in Geissler tubes and illuminated by means of the electric current. In all simple bodies of the chlorine family, and in the gaseous or volatile compounds derived therefrom which thus far have been examined, the action of the magnet is immediate, and manifests itself, not merely by a change of color in the tubes, but by an increased brilliancy of the spectral lines, which become doubled. The bodies thus far submitted to investigation, besides chlorine, which behave similarly include bromine, iodine, the chloride, bromide and fluoride of silicium, the fluoride of boron, hydrochloric acid, chloride of antimony and of bismuth, bichloride of mercury, and the protochlorids and bichloride of tin.

The lights of sulphur and of selenium become extinguished the instant the magnet is excited, and the same is the case with that of the tubes containing chlorine, bromine, and iodine, when the tension of the coil is suitable. The feeble brilliancy of the oxygen illumination is not sensibly modified, nor is that of carbon compounds, such as carbonic acid, carbonic oxide, etc. The fine bands of the nitrogen spectrum are not changed, except in the red and yellow portion. These colors become almost completely extinguished, or at least are replaced by a flat uniform tint, in which all traces of lines disappear. The lines in the more refrangible region remain intact.

The hydrogen lines keep sensibly their normal appearance, but by employing a sufficiently powerful magnet, at the moment of excitation a very brilliant yellow line appears, which is due to sodium, doubtless obtained from the surrounding glass. This line vanishes as if by magic when the current is interrupted, to reappear again, however, for some time, as often as the electric flow is established.—*Scientific American.*

Steam as a Magnetizer.—Steam has been used as a source of electricity in the steam electric machine of Sturgeon, and now it is announced by Donato Tommasi as a source of magnetism. He states that if steam of five or six atmospheres pressure is passed through a copper tube of one-tenth of an inch in diameter, wound as a helix around an iron cylinder, the iron will be magnetized, and attract other iron, act on the compass-needle, and manifest other phenomena. This simple discovery, if correct, opens a new field of investigation. The first matter for investigation must be to compare the steam current with the electric current, and to find if steam corresponds with the positive or with the negative current, that is, if the boiler giving the steam corresponds with the zinc pole of the battery or with the other, (carbon, platinum, etc.,) which question is easily settled by observing which end of the iron bar acquires north or south polarity. The next point of investigation is the increase and decrease of this polarity with the increase and decrease of steam pressure.

What is the Sun?—Professor Randolph, in a lengthy paper on the sun, says: "A molten or white hot mass, 856,000 miles in diameter, equalling in bulk 1,260,000 worlds like our own, having a surrounding ocean of gas or fire, 50,000 miles deep, tongues of flame darting upward more than 50,000 miles, volcanic forces that hurl into the solar atmosphere luminous matter to the hight of 160,000 miles, drawing to itself all the worlds belonging to our family of planets and holding them all in their proper places, attracting with such superior force the millions of solid and stray masses that are wandering in the fathomless abyss that they rush helplessly toward him and fall into his fiery embrace. And thus he continues his sublime and restless march through his fiery orbit, having a period of more than 18,000,000 years.

Oxygen Gas, when inclosed in a thin glass tube, will show itself under the action of a magnet to be paramagnetic, inclining north and south like iron; and while nitrogen, hydrogen and carbonic acids remain unaffected, phosphorus, leather and wood show themselves to be diamagnetic, and arrange themselves equatorially from east to west.

Mechanical Progress.

More About Compressed Steel.

We recently gave, in these columns, a lengthy article on the gigantic efforts which are now being made in Europe to cast steel under powerful compression. The costly experiments and works which have been undertaken in this direction afford ample evidence of the public estimate which is placed upon the most perfect production of this class of steel.

The process of compressing steel in the liquid state, says *Engineering*, is one which we must regard as rational if ingots cannot be cast commercially without being more or less honeycombed; but going to the root of the matter, we are led to inquire how far this honeycombing is a necessity.

It is perfectly well known to steel manufacturers that at some of the principal works at home and abroad thoroughly sound steel castings can be cast by "dead melting" the steel, employing molds with a non-conducting lining, and running the ingots with a sufficient head, and it is a question how far the ingots so cast are inferior to those which have undergone compression. In other words, information is wanted as to the effect of compression on sound steel. If Sir Joseph Whitworth would run two ingots from the same melting of steel, subjecting one only to compression, and then test samples cut from the solid portions of both ingots, the comparative results would be of great interest, particularly if accompanied by further tests made of samples cut from the ingots, and subjected to forging. Such a series of tests would go far to show to what extent the admirable character of the material which Sir Joseph Whitworth is producing is due to the process of compression, or how far it is due to the careful selection of the materials from which the steel is made.

The whole question of the production of high class steel is, however, one on which much could be said, and it is, therefore, one on which it is undesirable to treat at the end of an article which has already grown to considerable length. We shall therefore, for the present dismiss the subject, but we propose to return to it, and to have something to say respecting other modes of treatment than that of compression in a fluid state.

Wooden Rails for Heavy Traffic.

The superintendent of the Muncy Creek, Penn., railroad, says the *Iron Age*, is about to try the experiment of laying wooden rails on that portion of the road between Hughesville and Tivoli, or two miles beyond. With a view to testing the feasibility of wooden rails, the superintendent recently had seven hundred feet of track laid on the curve just beyond Muncy creek, and to the surprise of all, it has been found to answer the purpose much better than was anticipated. The rails are of sugar maple, seven by four inches, and about twelve feet in length. The ties are laid down in the ordinary way, notched, and the rails "let into them" about four inches. They are then keyed firmly with wooden wedges driven on the sides, which makes the track very solid and firm. The locomotive and heavy cars have passed over this experimental track at different rates of speed, and it has been found to work admirably, and give every assurance of success. The cost of laying wooden rails, manufactured out of this hard material—that becomes almost as solid as bone when seasoned—is $450 per mile. Iron costs $4,000 per mile. No iron spikes are required, as the rails are secured with wooden wedges, and the cost of track laying is about the same as putting down iron. These wooden tracks have been tried at different places in the country, and invariably been found to work well.

The Bessemer Converting Process to be Improved.—The Bessemer metal process, in dispensing with the puddling process, and in utilizing the carbon, silica, and other combustible impurities contained in the pig-iron, to effect the fusion of the final metal, has given a vast extension to its application for railway bars, tires, boiler plates, etc. A drawback however to this method is, that it was thus far limited in its application to superior brands of pig-iron, containing much silicon and carbon and no sulphur or phosphorus, which latter impurities are so destructive to the desired qualities of the metal. Indeed, for such qualities of iron the puddling operation has still to be resorted to unless a new process is substituted, to purify those inferior pig irons which constitute the bulk of production; and this is the problem to be solved by iron masters, with the help of metallurgical chemists.

Rapidity of Steel Rail Manufacture.—As an evidence of the rapid progress which steel rail manufacture has made in America—a branch of industry of but very recent origin—the feat of making 1,010 steel rails in the space of twenty-four hours has just been accomplished at a rolling mill of Chicago. They were for the Chicago, Rock Island & Pacific railroad, of standard length, of sixty pounds to the yard, and of a total weight of over 268 tons. Eight furnaces were engaged in this achievement—the greatest accomplishment, it is claimed, ever done anywhere.

Ribless Boats.

Small boats, for coast and river fishing, "built up" without ribs, are very popular in Massachusetts bay, on account of their speed, lightness, cheapness, and ease of construction. They are so easily and quickly made that Eastern fishermen are becoming independent of the boat-builders, and each man builds his own boat at his leisure. To make one, the only materials needed are good clear pine boards, each the whole length of the intended boat, a few pounds of small nails (galvenized), and the materials for stem, keel and stern-post. The boards are run through a sawmill and cut into strips about an inch and a-half wide, and out of these the boat is built up according to working models. The models are merely patterns of wood that give the outside of a half-section of the boat. They give the shape of the boat at every foot of her length, and are formed from some existing boat or drawn from a scale designed by some competent boat-builder. The keel, stern-post and stem are set up and secured together firmly, and then to the keel two strips are fitted horizontally, one on each side, and having been planed down at each end to fit the model, holes are bored through them and they are securely nailed to the keel. Over each is laid another strip, and with the plane and shave it is fitted to them in such a way as to conform to the shape of the hoat, and then each is nailed down as before. In this simple manner the work proceeds. As the strips are nailed one over the other, they are bent to conform to the shape of the boat, and beveled to give the sides the right form.

A single day's practice in fitting the strips to the shape of the boat will enable a good carpenter to do the work with neatness and dispatch, and any person skillful with plane and hammer could in time turn boat-builder. When the sides rise to the gunwale, a broader and thicker strip of oak or ash is laid over all, to act as a fender and gunwale. During the whole process, the strips are kept heavily painted with white lead, and, when all is finished, we have a ribless shell, showing no nails except at the top, and exactly conforming on the outside and in to the model. To give lateral strength, shorter pieces of the strips are built up from the keel inside, and carefully fitted to the sides. The seats are placed over these, and then decks, store-room and cabin may be added as desired. Boats made in this way are very light and buoyant, and, being smooth on the outside, are good sailers. In case of injury they are easily repaired by cutting out the broken place and inserting new strips, secured by hacking on the inside. In practical use, such boats are found to be swift, dry and safe. They make good sea boats, and are said to resist injury with ease. In sailing they demand plenty of ballast, to compensate for their lightness. Their cheapness and ease of construction are rapidly bringing them into favor, as the cost is about one-third less than by the ordinary method. Two men with the material in hand can easily make a boat 18x6 in sixteen days.—*Scribner's World's Work.*

Reduction in the Weight of Cars.—Intimations are constantly coming from intelligent quarters that one of the fields of practical railway reform or improvement which is most neglected in this country relates to the reduction of the weight of freight cars or dead weight in transportation. The latest testimony bearing on this point comes from a prominent iron merchant of New York, who has recently visited England, and who has related to a reporter of the New York *Tribune* as one of his experiences that he "saw ore and coke arriving at furnaces on cars containing nine and a half tons of material, while the cars themselves were marked as weighing less than 13,000 pounds; on one road less than 12,000 pounds." Our own ten-ton cars weigh frequently 18,000 pounds. The saving of dead weight by the English plan seems well worthy of careful study by our railroads.

The Monster Gun Tested.—The secret testing of the monster gun at Woolwich arsenal, September 24th, sufficed to show that the great 81-ton gun is much the most powerful piece of artillery in the world. It is but a short time until it will be definitely settled whether vessels can be constructed in any manner to be invulnerable to the heavy projectiles of the future.. Six pounds were fired with quantities of powder varying from 170 to 240 lbs.; weight of projectile, 1,273 lbs. The pressure in the powder chamber varied from 22.2 to 29.6 tons to the square inch. The highest stroke force of the shot was estimated at 20,400-foot tons. The highest muzzle velocity of shot in sand bolt was 47 feet. The highest recoil of the gun up incline was 38 ft. 2 in. Bore of gun, 14½ inches.

Electric Light for Locomotives.—Russian railroad managers are experimenting with the electric light as a headlight for locomotives. Successful results were obtained on the line from Moscow to Kursk. The apparatus consisted of a battery connected with the front axle, the revolution of which set it in operation, and the track was illuminated a distance of 1,800 feet.

A New Motor has been invented by Chief Engineer Wood, of the United States navy, consisting of a power derived by the agency of carbonic acid obtained by means of electricity and galvanism. He has filed a caveat, and promises to exhibit his invention at the Centennial.

Sales at S. F. Stock Exchange.

FRIDAY, A. M., OCT. 29.

110	Alpha	18¾	@18½
1115	Baltimore Con		@1¾
1260	Best & Belcher	39½	@41
315	Belcher	19	@19¼
300	Bullion		@36
265	Challar	7	@7¼
40	do	h 30	.72
100	Confidence	20½	@21
555	Con Virginia	25	@26
125	Caledonia	17	@17½
2745	California	54¾	@55
10	do	h 5	.55
445	C Point	28	@29
110	Exchequer		
88	Empire	3	@3¼
165	Gould & Curry	12¾	@13
370	Hale & Norcross	37½	@40
1440	Imperial	10½	@10¾
455	Justice	28½	@29
200	do	29	.29
782	Julia	16	@16½
630	Kentuck	14¾	@14½
30	Knickerbocker		.2
720	Lady Bryan		.12
855	Mexican	17¾	@17¾
1090	Ophir	40¾	@41½
50	do	h 30	.42
475	Overman		.58
185	Savage	7	@7¼
615	Sierra Nevada	12¾	@13
40	Seg Belcher	7	@7¼
270	Utah	7	@7½
2078	Union	3¾	@3¾
130	Yellow Jacket	19	@20

AFTERNOON SESSION.

145	Advance	3¼	@3¾
1150	Andes	3¼	@3⅜
100	Belmont		.12
315	Belcher	20½	@21½
115	Bullion		.52
150	Challenge	5¾	@5½
300	Cosmopolitan		.30
1000	Carisa	55½	@56
1490	Crown Point	3	@3¾
50	do	s 5	.32
110	Con Virginia	25	@26
115	Chollar	7	@7¼
200	Dagget		.12
230	Eureka Con	1	.1
50	Empire I		.25
500	Florida	3	
1360	Gila	4½	@4¾
700	Golden Chariot		.1
2030	Imperial		.11
280	Jackson	1½	
400	K K Con		.6
1100	Kentuck	15	@15½
505	Kentuck	15	@15½
370	Leopard	10	@10½
550	Leviathan	17	@2
10	Meadow Valley		.3
100	Star		.2
500	Middes	5½	@6
415	New York	1	@1¾
360	O O Hill		.2
15	Occidental		.2
215	Overman		.58
685	Ophir	41¾	@41⅞
200	Prossian		.2
500	Phil Sher		.1
50	Pacific		.1½
10	Prospect		.2
50	Rock Island		.2¼
25	Savage		.7
105	S Hill	7¼	@7½
525	S Nevada	12¾	@13
100	do	h 5	.13¾
3855	Woodville		.3¾
100	W Belcher		.2
170	Y Jacket		.80

SATURDAY, A. M., OCT. 30.

390	Alpha	19	@20
25	Am Flat		.3¾
745	Baltimore Con	17	@2
925	Belcher	21	@20½
365	Bullion		.56
560	Best & Bel	41½	@42
100	do	h 30	.44¼
150	Challenge		.5¼
180	Chollar	7	.73@11
1375	C Point	3	@3¼
150	do	h 5	.32½@33
185	Confidence	21½	@21⅝
520	Con Virginia	26	@27
2850	California	57	@56⅝
300	Caledonia	19	@20
100	Eureka Con		.2
110	Exchequer	14½	
265	Empire	5¾	@6
450	Gould & Curry	17¾	@18
175	Hale & Nor	40	@39
795	Imperial	11	@10¾
795	Justice	30	@29
720	Julia	15½	@15¾
585	Kentuck	15	@15¾
210	Lady Bryan	1¾	@1¾
1185	Mexican	18	@17¾
90	Meadow Valley	3¼	@3
290	New York	2	@1⅞
1880	Ophir	43¾	@42⅝
50	do	s 43	.43
220	Overman	55	@53
95	Ray & Ely	26	@25
200	Rock Island	2¾	
15	Savage	7	.6
1110	Sierra Nevada	12¾	@13½
15	Seg Belcher	7	.4
100	S Hill	7¼	.7
25	Utah	7	.7
700	Union Con	3¼	@3⅜
50	do	h 5	.9½
3275	Woodville	3¾	@4¼
70	Yellow Jacket	8	@8⅛

MONDAY, A. M., Nov. 1.

50	Alpha	18	@18¾
25	Bullion		.57
770	Best & Bel	39	@39½
355	Belcher	20	@20½
120	Bel Con	2	@2¼
850	Crown Point	3	@3⅛
435	Chollar	7	@6⅞
255	Caledonia	18	@18½
90	Confidence	20¾	@20⅞
1205	Con Virginia	26	@27
650	California	56	@55¾
100	Challenge	5¾	
60	Dayton	5¾	
195	Empire Mill	5¾	@5¾
50	Exchequer	14¾	
460	Gould & O	17	@16¾
100	Hale & Nor	37	@37½
1480	Imperial	10⅝	@10¾
225	Justice		.29
615	Julia	16	@16¾
320	Kentuck	14¾	@14¾
390	Lady Bryan	1¾	@1¾
560	Mexican	17	@17¾
100	New York	1¾	
1805	Ophir	43	@40
25	Occidental	3¼	
550	Rhode Island	2½	
125	Sierra Nevada	13¾	
60	Savage	7¼	@7⅝
450	Succor	62½	@50c
20	Seg Bel	7⅝	@8
220	Sil Hill	8½	@9
20	Utah	7¾	
210	Union Con	3¾	@3⅝
760	Woodville	3¾	@3¾
85	Y Jacket	7¼	

AFTERNOON SESSION.

210	Advance	3¼	@3¾
100	Amazon	1¾	
170	Belmont	1¼	@1½
65	Belcher	20	
280	B & Bel	39¼	@39½
390	Cosmopolitan	30	@30½
406	Con Vir	26	@26¾
1270	Oalifornia	55	@55¼
335	Crown Point	3	
330	Eureka Con	12	@12½
100	Florida	4	
1365	Gila	4¼	@4⅜
300	Goldon Chariot	1	
460	Hussey	15	@87½
50	Jofferson	3	
150	Jackson	1¾	@1¾
250	K K Con	6	@6¼
1080	Kossnth	3¾	@3
175	Kentuck	14¾	@14
260	Leopard	10¾	@11½
1700	Leo	3	@3½
325	Meadow Val	3	@3¾
1100	Mansfield	15	@
360	Mides	6	@8
300	M Star	4	
50	Belle	1	
1470	Ophir	40¾	@40
1000	Poorman	1	@75o
125	Panther	50	@
150	Pacific	1	@1¼
50	Rye Patch	1	@1¼
90	Raymond & Ely	2	@8
200	Rock Island	2	@2½
250	Tyho	12	@12½
265	Union	3	@3⅜
3370	Woodville	3½	@4¾

TUESDAY, A. M., Nov. 2.

100	Alpha	19	@17½
20	Am Flat		.2
100	Andes		.3
270	Best & Belcher	38½	@39¼
445	Belcher	19	@20
160	Bullion	48	@51
200	Balt Con	2	@2¼
150	Chollar	6	@6¾
510	Crown Point	2	@3
165	Caledonia	17	@17½
25	Confidence	19	@19½
470	Con Virginia	26	@26
550	California	54	@55¼
105	Dayton	5	@5½
60	Empire Mill	5	@5½
20	Exchequer	14	@14¼
110	Gould & Curry	16	@16¾
200	Hale & Nor	36	@35
350	Imperial	10	@10¾
105	Julia	16	@16½
60	Kentuck	14	@14¾
145	Lady Bryan	1	@1¼
475	Leviathan	2	@2¾
660	Mexican	17	@17½
200	M Star	1	@1¼
90	New York	1	@1½
705	Ophir	38	@40
1270	Overman	50	@48
100	Occidental	3	@3½
50	O Hill	2	@2¼
650	Rock Island	2	@2½
485	S Nevada	13¾	@14
165	Savage	7	@6¾
65	Seg Belcher	6	@6⅝
50	Succor	60	@65
190	Sil Hill	8	@9¾
745	Union Con	8½	@8¾
1270	Overman	50	@48
100	Occidental	3	@3½
50	O Hill	2	@2¼
650	Rock Island	2	@2½
485	S Nevada	13¾	@14
165	Savage	7	@6¾
65	Seg Belcher	6	@6⅝
50	Succor	60	@65
190	Sil Hill	8	@9¾
745	Union Con	8½	@8¾
190	Sil Hill	8	@9¾
745	Union Con	8½	@8¾
145	Utah	7	
4120	Woodville	3	@3¾
345	Y Jacket	7	@7¼

AFTERNOON SESSION.

100	Advance	3½	
280	Belcher	19½	@20
50	Belmont	1	
300	Best & Bel	40	
370	Crown Point	2	@3
85	Con Virginia	26	
180	California	55½	
150	Chollar	6	@6⅝
250	El Dorado South	2	@3
625	Gila	3½	@3
350	Hussey	1	@1½
320	Ida Elimore	2	@2c
50	Jackson	1¾	
50	Jefferson	4	
235	Justice	27¾	@28
365	Julia	12	@11⅞
60	Kentuck	15	@14¾
570	K K Con	7	
575	Leopard	12	@11½
665	Leviathan	2	@3
355	Meadow Valley	3	@2⅞
15	N Belle	1	
410	Ophir	39¾	@40
10	Overman	19	
150	Prussian	1	
125	Poorman	50c	
10	Rye Patch	1½	
75	Raymond & Ely	2	@2½
60	Silver Hill	8½	
10	Savage	7	
490	Tyho	12½	
90	Union	3¼	
1330	Woodville	3¼	@3⅜
70	Y Jacket	7	@

WEDNESDAY A. M., Nov. 3

250	Alpha	16¼	@16¼
1220	B & Belcher	4	@38½
20	Bullion	49	
705	Belcher	18½	@19
50	do	h 5	.18¾
590	Bal Con	1¾	@1½
475	Chollar	6	@6¾
755	Crown Point	2	@2⅝
233	Con Virginia	26	@26⅝
100	Caledonia	17	@17½
1620	California	55	@55½
400	do	b 30	.56
20	Oonfidence	18½	
30	Challenge	5	
120	Dayton	5	
285	Empire Mill	5¼	
20	Eclipse	6	
10	Exchequer	13	@13½
210	Gould & Curry	16¾	
150	Hale & Nor	36	@35
1490	Imperial	9½	@9¾
635	Justice	25	@25½
1800	Julia	11¾	@12
555	Kentuck	13	@12¾
180	Knickerbocker	2	
280	Lady Bryan	1½	@1¾
345	Mexican	17½	@17¾
295	New York	1¼	
1460	Ophir	40½	@41
390	Overman	46	@47
675	Rock Island	2½	@2⅝
230	Savage	7	@6⅞
110	Sil Hill	7¾	@8
20	Seg Belcher	7	@7
385	S Nevada	12½	
200	do	h 5	.12½
10	Utah	6	@7
810	Union	3¾	@3⅝
350	Yellow Jacket	6	@7
10	do	b 30	.64½

AFTERNOON SESSION.

70	Advance	3½	
1160	Andes	3	@3¼
190	Best & Bel	39	@38¾
400	Belmont	1	@1¼
40	Belcher	18½	@18¾
950	Cosmopolitan	30	@30c
740	California	54¾	@55
90	Con Virginia	25	@25¾
945	Crown Point	2	@2¼
145	Chollar	6	@6⅞
60	Eureka Con	12	@1
150	Florida	3	
390	Gila	3¾	@4⅜
270	Oh Chariot	1	
450	Gonld & Curry	16	@15¾
10	Hussey	1¼	
300	Ida Elimore	1	@0
310	Julia	11¾	@10½
475	Justice	2	@33½
50	K K Con	6¾	
240	Kossuth	2	@1⅝
2475	Leviathan	2	@3¼
1000	Leopard	12	@11¾
50	Minnie	50	
415	Meadow Valley	3	@2⅞
375	Mansfield	10	@
100	M Star	4	
1240	Mexican	16	@16¼
625	N Carson	3	@35c
100	O G Hill	2¼	
160	Occidental	3	
250	Overman	46	@48
795	Ophir	38	@39½
40	Poorman	75c	
75	Raymond & Ely	2	@2½
805	Woodville	3¼	@3⅜
850	Wells-Fargo	30	@
200	Y Jacket	6	@60

SALES OF LAST WEEK AND THIS COMPARED.

THURSDAY A. M., OCT. 28.

145	Alpha	17	
650	Baltimore Con	2¼	
170	Bullion	47	@48
115	Belcher	17½	@18
1110	Best & Belcher	37	@38½
400	do	h 30	.38@40
2585	California	52½	@53
1004	do	s	.53
467	Con Virginia	24	5@26
20	do	h 5	.24
605	Crown Point	2	@2⅞
200	do	h 30	.2
1470	Ophir	40½	@40
1000	Poorman	1	@75o
125	Panther		.50c
150	Pacific	1	@1¼
50	Rye Patch	1	@1¼
90	Raymond & Ely	2	@8
200	Rock Island	2	@2½
250	Tyho	12	@12½
265	Union	3	@3⅜
3370	Woodville	3½	@4¾

THURSDAY, A. M., Nov. 4.

647	Best & Belcher	39	@36
305	Belcher	19	@18½
225	Bullion	45	@44
710	Baltimore Con	1¾	@1¾
125	Chollar	57	@58
2910	California	54¾	@54
100	Caledonia	14½	@15
50	Challenge	5	
665	Con Virginia	25½	@25¾
535	Crown Point	2	5@57⅜
145	Dayton	3½	@2¾
120	Exchequer	12	@10
175	Empire Mill	5¾	@5¾
965	O & Curry	18¾	@18¾
1840	Imperial	8½	@9¼
630	Justice	24	@24½
410	Julia	10¾	@9½
850	Kentuck	13	@13½
180	Knickerbocker	2	
500	Lady Bryan	1½	@1¾
385	Mexican	16½	@16¾
518	New York	1¾	@1
1420	Ophir	38¾	@39
165	Overman	44	@43
215	Rock Island	2½	
320	S Hill	7¼	@8⅜
15	Seg Belcher	7	
125	Savage	5	@6 3
65	Succor	65c	
300	Sierra Nevada	12¼	@11¾
805	Union Con	7⅜	@7¼
10	Utah	7	
405	Yellow Jacket	6	@65

AFTERNOON SESSION.

400	Andes	3½	@3¼
250	Adams' Hill	25o	
40	Advance	3½	
480	Belmont	75c	
250	Eureka Con	12	
500	Golden Chariot	1	
600	Gila	3¾	@3½
800	Hussey	75c	
200	Ida Elimore	10c	
50	Jefferson	4½	
50	Jackson	1¾	
188	Lady Wash	2¾	
100	Leopard	11¼	@11
630	Meadow Valley	3	@
100	Newark	3½	c
60	Occidental	3	
240	C G Hill	2	@1¾
110	Prussian	1¼	@1
600	Pacific	1	
190	Raymond & Ely	2	6½@23
300	Tyho	12½	

The Mining Share Market.

The mining share market still remains in a very depressed condition, with low prices and few sales. The failure of the First National bank had very little effect on the market, but subsequent street rumors of the failure of prominent operators was a good thing for the "bears." The money pressure tells upon the market notwithstanding the prosperous outlook of the mines. The course adopted by the banks in relation to overdrafts keeps a check upon the stock movement for the present, until some new adaptation of means to wants is devised.

Among some a notion got abroad that the Con. Virginia dividend would be passed in consequence of the fire, but $9 per share was freely offered for the dividends payable next week, by the thousands of shares, or any part. There is no doubt about the payment of the amount, $10, and therein is manifested the extraordinary ability with which the mine has been managed exclusively in the interests of the stockholders.

There is really little of interest to mention in connection with the stock market. Several companies are having investigations or suits between stockholders and trustees, and so far, we are glad to say, the stockholders are ahead. We notice also a peculiar feature in an assessment levied on the Great Eastern Cons. quicksilver mining company, which has the following notice tacked on to the assessment:

Notice is hereby given that the directors of the Great Eastern Consolidated quicksilver mining company, at the same meeting at which the above assessment was levied, passed a resolution to give each stockholder one share of the company's working capital stock for every dollar of assessments paid in by each of them to the company.

Inducements of this character are so extremely rare that such a circumstance is worthy of mention. Our stock tables will show the state of the market during the past week.

New Incorporations.

The following companies have filed certificates of incorporation in the County Clerk's Office at San Francisco:

IONE HYDRAULIC M. CO.—Nov. 1. Location: Amador county, Cal. Capital stock, $1,000,000. Directors—B. Peart, Samuel Hart, David Goodman, J. D. Fry and Wm. A. Hooper.

MILLER G. M. CO.—Nov. 1. Location: Nevada county, Cal. Capital stock, $5,000,000. Trustees—S. W. Shaw, J. R. Gates, J. W. Wilber, John Miller and C. K. Robinson.

LEE G. M. CO.—Nov. 1. Location: Storey county, Nev. Trustees—J. M. Seamans, A. Heath, J. A. Harned, J. Treadwell and R. W. Hamilton.

CALIFORNIA FERTILIZING CO.—Nov. 1. Object: Manufacturing, using and selling fertilizers and fertilizing material, and especially that certain compound of animal matter known as a fertilizer of the soil, and claimed to have been invented by Gabriel Vidy; and for the purpose of buying the land and erecting and setting up buildings and apparatus required in the manufacture of fertilizers. It is provided that the capital stock shall be unassessable, and to consist of $10,000,000, to be divided into 100,000 shares. Directors—A. P. Hotaling, P. von Loesecke, Isidore Landaberger, Edward M. Gallagher, Charles Kohler, Henry A. Cobb, Thos. Noble, W. K. Dietrich and J. S. Rosenbaum.

AMERICAN M. CO.—Nov. 4. Location: Storey county, Nev. Capital stock, $10,000,000. Directors—W. J. Conolly, Aaron Holmes, E. A. McCloud, Thos. Wallace and Richard B. Noyes.

MINING SHAREHOLDERS' DIRECTORY.

Compiled every Thursday from Advertisements in the Mining and Scientific Press and other S. F. Journals.]

ASSESSMENTS.—STOCKS ON THE LIST OF THE BOARDS.

Company.	Location.	No. Amt.	Levied.	Delinq'nt.	Sale.	Secretary.	Place of Business.
Amazon Cons M Co	Nevada	1 10	Sept 29	Oct 22	Nov 12	R P Hosmer	330 Pine st
Andes S M Co	Washoe	5 25	Sept 10	Oct 18	Nov 8	M Landers	507 Montgomery st
Baltic Cons M Co	Washoe	2 10	Oct 9	Nov 13	Nov 30	Theo C Kilhe	419 California st
Baltimore Cons M Co	Washoe	10 1 00	Oct 7	Nov 10	Nov 30	C A Sankey	381 Montgomery st
Belmont M Co	Nevada	6 50	Oct 6	Nov 9	Dec 6	Frank Swift	419 California st
Buckeye Water & H M Co	Cal	1 50	Oct 1	Nov 5	Nov 21	W H Lowden	240 Montgomery st
Caledonia S M Co	Washoe	15 3 00	Nov 1	Dec 4	Dec 23	R Wagener	414 California st
Cherry Creek M & M Co	Cherry Creek	5 25	Oct 21	Nov 29	Dec 27	D F Verdenal	409 California st
Chollar-Potosi M Co	Washoe	8 5 00	Oct 14	Nov 17	Dec 7	W E Dean	419 California st
Dayton G & S M Co	Nevada	4 1 00	Sept 15	Oct 19	Nov 8	W B Dean	419 California st
El Dorado S Cons M Co	Nevada	7 1 00	Oct 13	Nov 16	Dec 7	Wm Willis	419 California st
Empire M Co	Idaho	11 50	Oct 23	Nov 29	Dec 20	W Wills	419 California st
Gold Mountain G M Co	Cal	6 25	Sept 10	Oct 20	Nov 10	J P Cavallier	513 California st
Gould & Curry S M Co	Washoe	24 1 00	Oct 26	Nov 27	Dec 18	A K Dnrhrow	309 Montgomery st
Glascow G & S M Co	Nevada	1 10	Sept 20	Oct 30	Nov 23	R P Hosmer	330 Pine st
Ida Elimore M Co	Idaho	19 50	Oct 16	Nov 19	Dec 10	W Willis	419 California st
Illinois Central M Co	Idaho	4 50	Oct 12	Nov 16	Dec 7	R H Brown	402 Montgomery st
Iowa M Co	Washoe	4 5	Sept 16	Oct 18	Nov 12	A D Carpenter	605 Clay st
Justice M Co	{$5 on old stock and $1 on new}	16 6 00	Sept 15	Oct 18	Nov 14	Jas S Kennedy	Merchants' Ex
Kossuth M Co	Nevada	5 75	Oct 4	Nov 9	Nov 30	E F Stone	419 California st
Mansfield G M Co	Cal	4 1 00	Oct 9	Nov 17	Dec 4	J Buffington	311 California st
Meadow Valley M Co	Ely District	9 1 00	Sept 18	Oct 28	Nov 24	C W Colburn	418 California st
Mint G & S M Co	Washoe	11 20	Sept 7	Nov 2	Nov 24	D A Jennings	401 California st
Newark S M Co	Nevada	11 50	Sept 14	Oct 19	Nov 9	Wm Willis	419 California st
New York Cons M Co	Washoe	16 1 25	Oct 27	Dec 1	Dec 20	H C Kibha	419 California st
New York M Co	Washoe	7 1 00	Oct 27	Dec 1	Dec 20	H C Kibhe	419 California st
North Bloomfield Gravel M Co	Cal	40 1 00	Oct 21	Dec 3	Dec 20	T Derby	320 California st
North Cons Virginia M Co	Washoe	1 5	Oct 6	Nov 16	Dec 1	Joseph Magnire	419 California st
Oakland G & S M & M Co	Nevada	2 50	Sept 2	Nov 8	Nov 30	W H Watson	302 Montgomery st
Overman S M Co	Washoe	33 3 00	Oct 12	Nov 16	Dec 7	Geo D Edwards	414 California st
Phoenix G M Co	California	3 3 00	Sept 8	Oct 16	Nov 8	Chas E Elliott	419 California st
Rock Island G & S M Co	Washoe	9 50	Oct 7	Nov 10	Dec 2	J W Clark	418 California st
Savage M Co	Washoe	20 5 00	Oct 8	Nov 10	Nov 29	E B Holmes	419 California st
Sheha S M Co	Nevada	3 10	Oct 27	Nov 29	Dec 22	A Halsey	200 Montgomery st
Sierra Nevada S M Co	Washoe	42 2 00	Oct 1	Nov 5	Nov 23	R Wagener	414 California st
Silver Hill M Co	Washoe	7 1 00	Oct 1	Nov 4	Nov 23	W E Dean	419 California st
Sunrise S M Co	Cal	50	Sept 14	Oct 16	Nov 8	T H Wingard	318 California st
Tiger M Co	Arizona	1 50	Sept 17	Oct 22	Nov 15	W Willis	419 California st
Tiger M Co	Cornucopia	2 10	Oct 29	Dec 8	Dec 28	Frank Swift	419 California st
Troy Cons M Co	Washoe	20	Oct 22	Nov 26	Dec 17	S O Herbert	535 Clay st
Union Cons S M Co	Washoe	8 50	Oct 11	Nov 15	Dec 6	J M Buffington	311 California st
Utah S M Co	Washoe	11 2 00	Oct 14	Nov 22	Dec 10	W E Dean	419 California st
Utah S M Co	Washoe	11 2 00	Oct 19	Nov 22	Dec 10	W E Dean	419 California st
Washington & Creole G & S M Co	Nev	15 75	Sept 27	Oct 30	Nov 20	F D Cleary	401 California st
Wells Fargo M Co	Nev	3 20	Sept 14	Oct 16	Nov 8	C H Bogart	402 Montgomery st
Yellow Jacket S M Co	Washoe	21 5 00	Sept 20	Oct 23	Nov 24	O W Hopkins	Gold Hill Nevada

OTHER COMPANIES—NOT ON THE LISTS OF THE BOARDS.

Black Bawk Coal M Co	Cal	5	Oct 25	Dec 24	Jan 15	H A Powell	520 Montgomery st
Carrie Hale H M & W Co	Cal	2 10	Sept 18	Nov 1	Nov 20	F W Van Reynegom	531 California st
Cerbat Cons G & S M Co	Arizona	19 10	Oct 5	Nov 8	Nov 27	T E Jewell	507 Montgomery st
Cons Pce M Co	Peavine District	9 25	Oct 13	Nov 13	Dec 13	J H Borland	Reno, Nevada
Constitution M Co	Cornucopia Dist	2 10	Oct 29	Dec 4	Dec 24	Frank Swift	419 California st
Coquille Black Sand G M Co	Oregon	1 10	June 8	Oct 13	Nov 18	F P Reynnlds	111½ Leidesdorff st
Eagle Silver M & M Co	Nevada	2 50	Sept 11	Oct 20	Nov 10	H L Byrne	533 Kearny st
East Branch M Co	Cal	2 20	Oct 4	Nov 5	Nov 22	A Martin	520 Washington st
Edith Q M Co	Cal	5 20	Sept 14	Oct 30	Nov 20	Wm Stuart	113 Leidesdorff st
El Dorado W & D G M Co	Cal	11 20 00	Sept 21	Oct 22	Nov 8	Hugh Elias	416 Montgomery st
Enterprise Cons M Co	Cal	5 25	Sept 29	Nov 4	Nov 30	F J Hermann	418 Kearny st
Excelsior Q M Co	Cal	3 5	Oct 8	Nov 10	Dec 2	R Von Pfister	Merchants' Ex
Flowery M Co	Cal	3 15	Sept 17	Oct 25	Nov 17	Scot Sutton	220 Montgomery st
Geneva Cons M Co	Cherry Creek	20	Oct 11	Nov 15	Dec 6	I T Milliken	302 Montgomery st
Gold Run M Co	Cal	13 25	Sept 27	Oct 30	Nov 26	C O Palmer	41 Market st
Great Eastern Cons Q M Co	Cal	1 25	Oct 30	Nov 30	Dec 18	J G Riley	331 Montgomery st
Howard Hill G M Co	Cal	4 35	Sept 27	Nov 3	Nov 24	F J Hermann	418 Kearny st
Imperial Cons M Co	Nevada	3 25	Sept 20	Nov 1	Nov 24	Chas S Neal	419 California st
Kelsey G & S M Co	Cal	14 5	Sept 27	Nov 6	Nov 29	J H Sayre	331 Montgomery st
Lake Mining Co	Nspa Co Cal	4 20 00	Nov 3	Dec 6	Dec 27	R F Knox	19 & 21 First st
London Quicksilver M Co	Napa Co Cal	3 60	Sept 30	Nov 10	Dec 10	A Halsey	200 Sansome st
Morse & Evans G M Co	California	2 10	Sept 6	Nov 15	Nov 12	Daniel Buck	331 Montgomery st
New Idria M Co	Inyo Co Cal	1 50	Oct 28	Nov 30	Dec 23	D F Verdenal	409 California st
Oceanic Quicksilver M Co	Cal	2 50	Oct 22	Nov 23	Dec 13	C G Fnnk	438 California st
Orleans M Co	Cal	8 2 00	Oct 27	Nov 30	Dec 18	Geo P Thurston	315 California st
Panther M Co	Cornucopia	2 25	Oct 29	Dec 1	Dec 20	Frank Swift	419 California st
Pioneer Cons M Co	Nevada	4 10	Sept 14	Oct 19	Nov 9	Wendell Easton	419 California st
Peyrone G & S M Co	Nevada	5 60	Oct 25	Nov 30	Dec 18	T J Owens	218 Sansome st
San Francisco Copper M Co	Nevada	2 10	Aug 4	Sept 6	Sept 30	R De Clairmont	Front & Jackson st
Stanislaus River M Co	Cal	6 20	Oct 29	Nov 30	Dec 17	W Stuart	113 Leidesdorff st
Table Mt Alpha M Co	Cal	9 10	Oct 29	Nov 30	Dec 20	L Leavitt	401 California st
Theresa M Co	Cal	3 10	Oct 7	Nov 8	Nov 24	J W Tripp	408 California st
Union Gravel M Co	Cal	12 1 00	Oct 21	Dec 3	Dec 20	T Derby	320 California st
Ward Ellis S M Co	Nevada	4 10	Oct 22	Nov 29	Dec 18	J M Buffington	311 California st
Young America M Co	Nevada	1 25	Oct 27	Nov 29	Dec 18	R H Brown	402 Montgomery st

MEETINGS TO BE HELD.

Name of Co.	Location.	Secretary.	Office in S. F.	Meeting.	Date.
Challenge Cons M Co	Nevada	W E Dean	419 California st	Annual	Nov 18
Chicago G & S M Co	Washoe	F P Reynolds	111½ Leidesdorff st	Annual	Nov 19
Gold Canon Cons M Co	Washoe	A A Pardow	420 California st	Annual	Nov 17
Hamburg M Co	Nevada	D A Jennings	401 California st	Annual	Nov 9
Hussey Cons M Co		Peter Dean (Pres't)	402 Montg'y st	Special	Nov 15
Northerly Five Cent Hill G M Co	Cal	J M Buffington	311 California st	Annual	Nov 25
South Mountain Cons M Co	Nevada	Wm Willis	419 California st	Annual	Nov 15
St Patrick G M Co	Cal	D F Verdenal	419 California st	Annual	Nov 13
Sutro Mining Co	Nevada	W H Reynolds	434 California

on. There is now no room to doabt the greet richneea of this mine.

At the Sliger mine, near Spenish dry diggins, the lucky hut reticent owners heve heea qaietly taking ont a large amount of extraordinary rich ore for sevsral months. From all we have bsen ahle to learn, we douht whether any mine on ths Pacific coaet has yielded better or ss wsll, in proportion to the amount of work dons nnd the qnantity of rock crushed.

At the Taylor mins, near Greenwood, dsvelopments on the pay chute have been extended since our last notice, nntil it is now dsmonstrated that it extends more than 250 feet. Old and experienced miners declare this to be the longest single pey chute ever developed in California. It embraces a lerge mase of vein matter of very even average as to yisld, and which can he extracted and crushed with remsrkable eese at low cost. With proper machiaery, and with less force than is now employsd at a profit, more than three times the ore could be extracted and crnshed than nt present. Inasmnch as the mine ia more than paying expenses, with three times the yield, at actually lesa expense, the profits and dividends would he enormous.

At the Rosenkranz mine, Superintendent Burlingham is still driving ahead with accustomed energy, and ls taking out conaiderable quantities of very high grade ore. At the Woodaide mine, the difficultiea about ventilation have heen overcome and they are taking out rich rock and realizing fine returns.

INYO.

The Cenao Gordo Goln Find.—Inyo *Independent*, Oct. 28: Some two weeks since we made mention of rather an exciting discovery of gold on the dumps of aome silver-lead minee of Cerro Gordo. Since then we have aeen a very fine specimen of about three ounces weight, being quartz and gold in nearly equal proportiona. It is found in quartz boulders of nearly uniform shape, hut of all aizes. The boulders containing the gold are heavily coated with iron rust or something of that nature, so mnch so that no metal had heen seen or suspected to exiat in the quartz until some months since, when some Mexicans working the lead mine by oontract happened to hreak a rich piece exposing the gold. The discovery was kept secret for a long time, it seems, at least so far as the owners of the mine, Belshaw & Oo., were concerned. In that period the Mexicans, it is aaid, managed to get away with about $3,000 of the richer specimens.

KERN.

Consolidaten Bunnel.—Bakerafield *Gazette*, Oct. 30: Oolonel Burr arrived a few days ago from Keruville, bringing some heantiful specimena from the Conaolidated Bunnel mine. The discovery claim of thia mine, where work is heing dono, is a few miles north of the town, hut it haa been traced south nntil opposite on the west. The company claim 12,000 ft, all of which, it is said, crop out oontinuously. The prospecting work done consists of a tnnnel 150 ft in length, from the point of beginning to the oasing of the lead, reaching it at a depth of 101 ft. Acrosa this a tunnel has heen extended, and it ia found to oonaist of 22 ft of metalliferoua veln matter, 7 ft of which is pure, hard quartz, very rich in hoth silver and gold, and assaying up into the thousands. It is milling ore, the silver appearing in the form of chlorides, sulphurets, raby silver, and in the state in which it ia more or less known to everyhody efter hecoming a medium of exchange. A mill is in contemplation, and a town has heen laid out, to he oalled Ruby city.

NEVADA.

Californta Mine.—Nevada *Transcript*, Oct. 30: The rock in the California mine, on the soath aide of Deer creek, is now looking first rate and is paying well. That part of the ledge on the north aide of the creek, known as the Gold tunnel, will soon he ready to he worked throngh the new inoline. The shaft will he 600 feet from the preaent one, which is on the banks of the creek. It is 600 feet deep, and will he oompleted next week. The hoisting works will then he moved there as soon as possible. The mine has heen worked at that point before and very rich rock was taken out. It is expected it will continue to afford better rock than has heen found sonth of it. The ahaft ia said to he a very fine piece of work. The mill will he left where it is now, so as to be run with water nntil next spring, when it will be removed up to the new shaft and he run with steam. The returns of the California mine will soon be sufficient to pay splendid dividends, nnleas all aigns fail.

Providence Mine.—The owners of the Providence mine have, aince July, been performing lsad work most of the time in the hest part of heir mine. They have opened up new levels, tripped the ledge and left the rock ready to he aken to the aurface when the proper time omes. Enough rock has heen taken ont of ther parts of the mine to keep the mill runing, but the "honanza" portion ia awaiting he completion of Fryer's works. A mining exsrt from San Franciaco, after examining another mine upon which he is to report, visited nd passed through the Providence laat week. Ve are informed that he saya he never saw s pretty a sight in all the mines he ever vised. The rock which lies exposed, ready to be aken ont, ia rich in sulphureta and galena, and glistens like fire aa the lights shine upon it. he dsposit ia very large, and by mill process ill pay up into the hundreda. It is intended work it all by the Fryer process.

Gold Bars.—Grass Valley *Union*, Nov. 3: he Empire mine, the oldest working mine now in this district, ls doing well. We say so because we saw yesterday two very heavy and handsome bricks of gold that had just oome out of the mine. We do not know what the veine of those hricks were, as we could not find Mr. David Watt, the superintendsnt, nor James Bennalleck, the foremen, nor yst Mr. Provines, the amalgamator, to inquire. We "hefted" the hars snd thought that about $18,000 worth of gold wae contaiaed in them.

PLACER.

Mining Interests.—Plecer *Herald*, Oct. 30: What amount the gold yield of Plecer footed up in the halmy days of its existence we have no immediate means of knowing; but we confidently believe that, should the aesson prove favorable, there will he more gold extracted from the minee in this coanty in the succeeding 12 months than was ever taken ont during the sams space of time in the past. Our quartz mines are producing more gold per month than they sver produced bsfore, with the indications favoring still better results. Passing hy the extensive hydranlio works recently opened near Anhurn, now runuing in full hlast with indications of very flattering reanlts, we find that the main ditches supplying Michigan Bluff, Bath and other towns on the Forest Hill divide have, during the summer, bsen greatly enlarged an improved, with the view of a corresponding enlargement in the mining enterpriaes of that aection, a reault for which preparations are heing made, and which, therefore, it is not unreasonahle to expect. Again, we find on the Iowa Hill divide the great Iowa Hill canal ao nearly completed aa to afford this coming season a large amount of water, all of which will be applied to the heat practical advaatage in the deep and extenaive gravel mines in that section; mines known to he rich, but not previously worksd for want of water.

SHASTA.

Coal Mines of Shasta.—Shasta *Courier*, Oct. 30: Years ago ooal was discoversd on the headwaters of Clover creek, and specimens of the same were tried in several hlacksmith shops and prononnced good coal. At that time there were ao roads leading to the locality where the discovery was made, and, as in those daya "gold" waa all the go, hat little attention was paid to the coal bed. But times have changed, and coal is now considered a "good thing," and commands gold. The developmenta in Peck & Kincaid's coal claim, and the great attention it has recently attracted from capitalists and owners of large manufacturing establishments helow, has led to the re-examination of the "original discovery" coal mine of the county, and to looation of claima thereon. Christian Hick, a native of Pottsville, Pa., and a man now 88 years old, having heard of the great value aet upon the Peck & Kincaid mine, and having examined apeoimens of the coal taken therefrom, said he knew the point where the "first coal was discovered in Shasta coanty," and went and found the place, and he and his frienda have located claims and applied to the Governmeut for title to 1,920 acres of land covering the main coal belt as far as discovered, bnt its full extenaion is not known. A nnmber of workmen are now engaged in opening the ledge, which now shows a face of lignite coal, of fine quality, six feet in thickness.

SIERRA.

Iowa Company.—*Mountain Messenger*, Oct. 30: The Iowa company hroke their pump ahout ten daya ago, and have not heen progressing as fast as they would had the acoident not occurred. They sent immediately to San Francisoo for a large pump and it is prohably in plaoe by this time. The old pump was six-inoh, the new one is eight-inch and of ample capacity to prevent the worka from ever heing tronhlsd with water. The oompany have a sump ahont thirty feet deep, nnd will soon commence opening the mine and taking out pay.

Forest City.—Thia little hnt enterprising mining hurg atill holds its own with hright prospects of a hrilliant future. The dumpa of the Bald Mountain company are nearly full, and if rain don't come in a hurry, work will necessarily cease until the reservoirs are filled for a wash up. Everyhody is praying for rain—the minera, to nnearth the glittering gold; the ladies, to free the atmosphere from dust and smoke; the long-suff-ring teamsters, to allay the dust on the road; and the rest of humanity on general prinoiples—that nothing is worse than "too much of a good thing."

The mining companies are husy, steadily pushing forward operations. The North Fork Co. are ahont to sink a shaft, and will he oompelled to run on assessments a while longer before declaring dividends. The South Fork boys are still energetioally cutting away into the bosom of the mountain.

Relocating.—We are informed that partiea who owned mining claims at Monte Cristo fifteen years ago, are now coming hack to claim their ground, other parties having since opened claims and discovered pay. Who the parties so attempting to claim ground ahandoned are, we do not know; but we do know that any such attempt ia a fraud on the present owners, who took up the ground supposed to be worked out, and expended money and time developing it. It is the meanest kind of frand, too, for some buffer, aa soon as he hears that somebody haa struck pay in ground he once owned to oome along and bring suit to recover; and the law is a fraud that will permit him to bring suit without compelling him to give indemnifying bonds to make good the present owners who may be compelled to spend a large amount of money to protect their property from the assaults of the above mentioned kind of cattle.

Nevada.

WASHOE DISTRICT.

Consolidated Virginia.—Gold Hill *News*, Oct. 27: On Saturday last a strong flow of weter hroke throngh the east wall of the mine on the 1400-ft lsvel, flooding the 1500-ft etation and stopping all extraction of ore for the time being. By energstic and judicious managsment the watsr was got wsll undsr control hy Tuesday last, when, in an hear'e time, ths hoisting works, mschine shops, a million and a quarter feet of lnmhsr and timhsrs, 800 cords of wood, the splendid 60-stamp mill, in fact evsrything on the surface of the grounde, were reduced hy fire to a mass of smouldering ruins.

Ophir.—The morning after ths fire msn were set at work to clsar away ths dshris, preparatory to rshailding. Everything will be set going ngain as soon as mechinsry and building materiel can bs obtained.

Rock Islann.—Driving the main west drift at the 650-ft station, to cut ths ledgs, is going slowly forward, the flow of watsr from ths facs heing qnite atrong. Sinking the winze below the 450 ft level ia also making good progress. No changes during the week.

Justice.—The face of the cross-cut at the 600-ft level in the old south mine, or Waller Defeat section, continues in excellsnt ore, and the drift south from the main Justice shaft, at the 800-ft level, ia in very favoraole vein matter, with streaks of low grade ore.

Julia.—The good prospecte opened on the 1400-ft level are steadily on the increaae, every foot of the drift on the 1400-ft level run, adding daily to the valne of the developmenta already made. The ore prospects in the hottom of tho shaft are also growing more encouraging every day. The developments in the face of the main south drift on the 1000-ft level are very encouraging.

Belcher.—The ore hreasts all continue to hoth look well and yield finely. The flow of water in the main incline still continues quite strong and is ahont all the pumps can handle. The 1600-ft level drift ia heing thoroughly retimbered, which will he finished in a very few days more, ready to reanme work in the face of the proapecting drifts. The up-raise from the 1400-ft level ia nearly connected with the winze below the air ahaft on the 1300-ft level, which will give a thorough ventilation of the mine to that depth.

Lany Bryan.—Sinking the main ahaft is making good headway. The aonthwest drift on the 170-ft level has encountered a mixture of clay and quartz, the quartz oarrying ore and being of a very encouraging charaoter.

Globe Consolidaten.—The ledge was struck on last Friday in the main adit tunnel, and penetrated a diatance of eight or ten feet. A portion of the ledge at the point where it waa atrnck, ia fine quartz, filled with sulphurets, and a portion ia qnartz and clay mixed with porphyry. Taken altogether the prospects are qnite encouraging.

Hale & Noncaoss.—Prospecting the 2100 ft level is still vigoronaly prosecnted. The south winze on the 2200-ft level, is down forty-eight feet, the hottom in a mixture of quartz, clay and porphyry.

Amazon and Glasoow.—The main shaft ia sunk to a depth of fifty feet helow the seoond station and 354 feet helow the oroppings. The ore at the different stationa ia showing a steady improvement as greater depth is attained, ao that the prospects of hoth mines are greatly on the increase, the ore assay daily growing better.

Woonville Consolidaten.—The main drift ou the 420-ft level is in a distance of 60 feet, having made excellent progresa dnring the week. The new pnmping machine is on the ground ready for erection as soon as the heavy atone foundations are completed, whioh will he in ahoot a week more.

Lady Washinoton.—The powerful new machinery, which, as we have heretofore stated, is a duplicate of that at the famoas C. & C. shaft, was startsd up for the firat time to-day, and operates fully aa well aa was anticipated. The hig new Cornish lift pump is raising the water from the ahaft at a lively rate.

Leo.—Work progressing favorahly as usual. Face of drift from the hottom of the incline winze continnes in very favorahle vein matter carrying good indications.

Imperial-Empiae.—Daily yield 40 tons of ore, which ia moatly extracted from the ore hreasts hetween the 1850 and 2000-ft levels. The ore stopes are all looking well.

North Chipman—The shaft is completed and thoroughly timbered to a depth of 100 feet. It is ao far one of the finest working shafts on the line of the Comstock.

Orioinal Goln Hill.—Face of north drift in low grade ore. South ore hody ahowing continued improvement as further developed. Preparations heing made to extract ore for milling.

Sutao.—The main west tunnel is steadily advancing, the face in much aofter ground than heretofore. A alight increase in the flow of water.

Succor.—The west and north drifts on the 550-ft level are steadily pressing forward.

Cosmopolitan.—Considerable improvement in the face of the main tnnnel; yielding an increased amount of good pay ore.

Sullivan.—New ahaft 72 ft deep. Drift in 112 ft. Both shaft and drift in the same very promising vein matter mentioned heretofore. It is the regular Comstock ore vein formatiou and streaks of it give good aseaya. The shaft being at the oaat aide and the drift on the west, thia fine vein is kuown to he at least 150 ft wide. It is a really important development.

Oveaman.—The pumps once more have the water undar complete control, and work hse been resumed in the main west drift on the 1100-ft level.

Sierra Nevada.—Sinking the msin shaft ie going rspidly ahead, the hottom in good sinking ground. Ths main west drift on the 1000-ft level is hsing drivsn steadily forward toward ths ore vein. Good progress is heing made.

Florida.—The pumping machinery is doing splendid work, and keeps the shaft frss from wstsr with perfect ease. The flow from the face of the west drift is on the decrease, and the direction of the drift is changed to the northwest in order to cross-cut ths ledge soonsr, being more at right angles. Very good aeseys continus to bs ohtained.

Chollar-Potosi.—Daily yisld, 50 toas of ore, the sseay valns of which is $31 per ton.

North Consolidaten Viaoinia.—Sinking the main shaft is making splendid headway, the rock in the hottom bsing a little firmer than herstofore, hut hlasting well.

Baltimore ann American Flat.—A small amount of rich ore is heing daily taken from the 450-ft statioa.

Leviathan.—The fine ore development at the 420-ft level continnes. Present indications go to show that this ore helongs to the same vein as that developed on the level ahove, end that the hody is continuona from one level to the other.

New York Consolidaten.—The new machinery continues to work as smoothly and well aa could he desired, and at the rate it is lowering the water in the ahaft, the bottom will be reached hefore our next weekly report.

Calenonia.—Sinking the shaft is making good headway.

Nevada.—Sinking the winze helow the level of the east oross-cut from the main aonth drift, on the lower tunnel level, is making excellent progress—the hottom in lively, fine-appearing quartz and ore.

Europa.—Sinking the main shaft is being presaed with all the vigor possihle.

Paospect.—The rock at the bottom of the shaft works favorahly, allowing of good progress in sinking.

Silver Hill.—The main east drift at the 4th station level ia steadily advancing, the face in favorahle working ground. A slight hody of water is met, with indications of a considerahle hody ahead.

Bullion.—The main north drift on the 1700-ft level is rapidly advancing along the west wall of the ledge, with steadily increasing prospects.

Mint.—Sinking the shaft is going steadily ahead, the hottom still in soft working ground.

Sutao Tunnel.—Total length of tunnel to-day, 11,250 ft. The face of the headsr is now in a hard streak of porphyry.

Colorado.

Chelsea Beach.—Colorado *Miner*, Oct. 30: A short distance helow the Brown mine, in the gulch that is noted for the workinga of the Brown, Terrible, Seven-Thirty, Hercules, Roe, Mammoth, Glaagow, and many other large minea, J. McDonald and othera have heen working for a year pnat on a lode called Chelsea Beach. The present developments are a shaft 75 ft deep, with levels at the depth of 35 and 70 ft. The crevice ia of the uniform width of three feet and carries an average vein of ore four inches wide, milling 995 to 117 ounces per ton. The ore is ohiefly galena, intermingled with zinc blende, and often hears heantiful streaks of ruhy and gray copper. Ahont $10,000 has been taken from these workinga, and as much more is in sight. Five drills are running, and more will soon be added. The hoys are tolernhly sure that they have a first-olass mine, and would as soon keep on working it as to devote their spare time to clipping the coupons off U. S. honds.

General News Items.

The Salt Lake *Tribune* says: "It may be of interest to a large numher of yonng gentlemen and ladies in this city, jnst now, to know that there is no marriage law in the Territory. Simply standing up in the presenoe of yonr mother-in-law and saying: 'Sal, let'a hitoh,' or, 'Jerusha, let's go pards for life,' constitntes a legal marriage, and don't cost a cent."

Not less than $300,000 worth of oysters will be sold from Shoalwater hay beds this season, the gathering and moving of them forming one of the chief industriea of Washington Territory.

A Young man named John Rohinson, a consnmptive, on his way from California to his home in Michigan, died on the train near Laramie a few days ago.

The London *Standard's* Santander special says Generals Lama and Quesada have captured Ordnne.

Some fine looking cinnahar has recently heeu found about five milea west of Huffaker's, in Washoe county, Nevada. The locality has not been prospected to any great extent, excavations to the depth of n few feet only having been made.

The mines without exception in Winnemucca mountain are paying the workers of them handsomely for their tronble in extracting the precious ores. There are quite a number of good claims lying idle upon the hill at preaent.

The striking of rich gold quartz in aome of the old mines in Hnmholdt district, Nevada, near the Humboldt houae, has created considerable excitement in that vicinity; so much so as to cause a reorganization of the district.

Amber.

Amber is formed by the pith (medulls, or marrow) which flows from trees of the pine species, as gum flows from the cherry trees and resin from pines. It is, first of all, a liquid which bursts forth in abnudance; then it is congesled by the cold, or by the heat, or by the sea, when the great tides rise and sweep it from the islends. At all events, it is thrown on the cossts, snd it seems to swim with the waves, and not go to the bottom. Our snoestors, thinking that it wes the sep (succns) of a tree, called it, on that sccount, succinum. What proves thet amber is the product of a species of pine, is that when ruhbed it exhales an odor like that of the pine, end that when set on fire it burns efter the fashion, and with the scent of a resinous torch. It is conveyed by the Germans into Pannonia (Hungary) chiefly; thence the Veneti (Venetians), whom the Greeks called Heneti, who are in the immediate p ox-imity to Pennonia, and who lived round the Adrietic see, heve brought it into vogue. The feble which has connected the Padus with amber has an evident cause. In our own dey, the Trsnspsdanien peasant women wear an amber neoklace, for the sske of ornament, no doubt, but also a remedy, forasmnch as amber is deemed good for effections of the tousils and the fauces, these and the neighboring parte of the body heing snbject to meladies produced by the different kinds of waters in the neighborhood of the Alps. From Csrnuntum, in Pannonie, to the coast of Germany, whence amber is brought, there are six hundred miles, a fect not known till recently. Still lives the Roman knight who wss sent to procure amher by Julianus, superintendent of the gladiatory games given by the Emperor Nero. This knight traveled over the markets and the shores of the country, and brought back such an immense quentity of ember thet the nets intended to protect the podium from the wild hessts were festened with buttons of amher. Adorned likewise, with amber, were the arms, the biers, and the whole spparatus for e day. The largest piece the knight hronght weighed thirteen pounds. It is certein tbat amber is also a growth of India. Archeleus, who reigned in Cappadocie, stetes that from that country (India) amber is brought in the crnde stete, end still edhering to the pine berk. It is polished by being sodden in the fat of a sucking pig. Whst proves thet the amber first flowe es a liquid is thet owing to its transparency different ohjects may be seen in the interior, such es ants, small flies, and lizards. It is menifest that those objects got entengled in the ember when it wes still in the liquid stete, and thet they remained imprisoned when the ember hardened.

There ere msny kinds of amber; the white is thet which has the sweetest ecent; hut neither the white or the uncolored are worn much. The deep yellow (fulvns, tawny, fallow) is the most esteemed. Thongh the trensperency of the deep yellow amber is a recommendation, intense brilliancy is objectionable. To please there must be present, not fire, but the resemblance of fire. The amber most in request is the Falernian wine. It is transperent, and has a softened splendor. Certain kiuds attract hy a tender shade, like the tint of hoiled honey, but it ought to be known that any color oan he given to amher that is thought fit. A particuler dye can be given to it by meens of kid fat, or of the anchnsa root; it cen even be made to teke a purple tinge. Moreover, when, hy being rubhed in the hsnd, amher is enriched with an animating heat, it attrects etrew, dry leaves, hest, just as the loadstone attrects iron. Bits of amber in oil will burn with a hrighter and more enduring flame than wicks of flax tow. Suoh is tbe excessive commercial value of thie substence, thet a small humen effigy in amber is sold for a higher price than living and vigorous mon. Verily, one censure (of auch folly) ie not enough. In the objects called Corinthian, copper mixed with silver and gold pleeses; in cerved objects, the skill end genius of the artist delight. We have shown whet recommends murrhines and crystals. Pearls are worn in the ears; gems on the fingers. In short, in ell foolish superfluities there is either the satisfaction of vanity or there is reel use; bnt as regards amber, there is nothing to charm beyond the consciousness of possessing an erticle of luxury. Domitus Nero (the emperor), along with his numerous other ebsurdities, had given the name of ember to the hair of his wife, Poppœs, and he had even celebrated the heir es amber in eome verses; for fine names are never lacking for corporel defects. From thet moment ember became a third color, much in request with the (Romau) ladies. Amber, however, is found to be of some value in medicine; but this is not the reason why women are fond of it. Worn as an emulet, amber is advantageous. According to Callistratus, whether teken in a drink or worn as an amulet, amber at all ages ie medicinal in cases of madness and dysuria. This writer mentions a fresh variety, which is called chryselectrum, and which is (as its name indicates) of the color of gold, and in the morning presents the most charming gradistione of hue. For fire it has a signal hunger, and if it is near fire it catches flamo and burns with immenso celerity. This amber (if we may believo Callistratus) cures fever and other dieeases, if it is worn on the nock; cures affections of the ear when it is ground and mixed with honey and oil of roses; cures dimuess of sight when mixed with Attic honey; cures affections of tho stomach, either when taken in a powder alone, or drank in water along with a mastic. Moreover, amber can be efficiently and extensively employed in imitating translucid precious stones, especially amethysts; for, as we have seid it can be tinged of every color. The pertinacity of certain enthors forces us to spesk, next of all, of lyncurium; for those who do not meintain thet this is a kind of amber, yet, at leest, declare that it is a precious stone. They effirm thet the lyncurium is the product of the urine of the lynx, bnt blended with a kind of eerth; this animsl (so the authors ssy) covering up his urine as if grudging the benefit men might derive from it; thet it has the same tint as the fire-colored amber, end cen be carved; that it attracts not only leaves and straws, but thin plates of hrsss and iron, which Theophrastus, giving credence to the statements of Diocles, believed.—*Cope's Tobacco Plant.*

Phylloxera in California.

A fow notes of a flying trip I lstely made to Sonoma, may he of interest to your readers. My main object was to become acqusinted with the local features in their hearing upon the ravages of the Phylloxera or vine louse, which heve of late become so serioua es to alerm even those who, not long ago, were wont to make sport both of the insect and of its discoverers.

The Napa valley seems, thus fer, to be almost exempt from the pest, although some unpleasant symptoms are reported from several localities. I did not stop to examine these, the more as the Napa vitioultural society eppeers to he fully alive to the danger, and its active secretary, Col. Eyre, is vigorously sounding the alarm through the newspaper press.

The hillside vineyards, seen on tho stage route to Sonome, look well; but as we approach the town, sickly spots are seen here snd there, and hecome quite frequent and obvious as we proceed beyond, on tho Santa Rosa road. While some of theee, forming conspicuous depresetone in the luxuriant mass of folisge, are evidently the work of the destroyer, whom good culture alone cennot keep in check, there are others which speak only of shallow or insufficient tillage, want of drainage or neglect. Still, meking due allowance for such cases, there is enough of the real article to justify the most serious apprehensions for the future, unless the progress of the evil is promptly checked.

The region most sorely afflicted thus far, is the Wohler neighhorhood, ahout four miles beyond Sonoma. Here some ten acres of vines, over ten years old, etand dead or dying, and much of whet remains is fearfully pitted with the ominous deed spots, speeking of new centers of destruction. But if you dig or pull up one of the ssd looking specimens in search of the enemy, you will be disappointed. The phylloxera is fond of good living, and leaves its depleted victims for "fresh fields, and pastures new," some time hefore one uot acquainted with the peculiarities of the plegue would think the csse a hopeless one. You will, perhaps, find a tew main roots still alive, but their outer bark is loose around them, end heneath is a blackish, spongy powder. Here and there, perhsps, a solitery straggler may still he seen. But go the next fair looking vine—with its crop of herries just e shade less mature and full than they ought to be—hare the crown of the root, end you will see the surfece diversified with yellowish spots, which any good eye, but still better, a magnifying gless, soon resolves into scores of shield-shaped, cross-wrinkled insects, of a great veriety of sizes, from a mere dot to about one-fortieth of an inch. Intermingled with these ere clusters of oblong yellow eggs, a copious supply of which may he found in every crevice of the berk. The lice cannot he said to "swerm," for they sit perfectly still, with their thread-like hoak (almost the length of the entire hody) aunk into the substance of the sap-wood. Occasionelly you see one standing on its head, struggling end kicking viciously, in the effort to get a hetter lodgement—absurdly like a hog rooting for potatoes!

Go a few rows further into the apparently healthy vines in full bearing. You mey see nothing about the stock or principal roots; but dig up some of the fine terminel rootlets which interlace from both sidee hetween the rows, end you may find them teeming with lice. They are the scouts and outposts of the advancing army, which can thus ohviously cross from row to row underground—a fact which explains the limited efficacy, or often total uselessness, of any ohstacles to their progress eplied around the stock or crown of their roots. And since, moreover, Riley has shown that the winglese insect can migrate with tolereble ease over the surface of any ordinary soil, the hope of thus checking its spread must be abandoned.

Beyond the tocus of greatest inteneity, just referred to, we find the splendid vineyards of Hon. McPherson Hill, Gen. Whalen, Ches. V. Stusrt and all others further up the valley, as yet exempt from attack, so far ae known.

Such is the state of affairs at this time. What it may be a year hence, unless vigorous measures are at once taken, may be inferred from the fact that in one spot where a dozen vines were affected last yoer, some *seven hundred*—almost an acre—are now gone heyond hope of recovery.

Now, as to the means of prevention and cure. I doubt that we can do better than follow the lead of the French Commission, availing ourselves of the dearly hought experience of the European viticulturists; the more as we are cultivsting the European grape, which with us is affected precisely as in Europe. The insect attacks the roots exclusively; not a leaf-gall is to be seen. Hence it is probeble thet the winged form is rarely developed; as yet, it has not been seen at all in Sonoma.

The French Commission finds that the use of weak solutions of alkaline sulpho-cerhonetes for the destructiou of the vine-louse, aided by that of potassic and ammoniacal manures for strengthening the vine, insures, if not the extermineticn of the insect, at least certsiuly such relief as will meke the vines to bear profiteble crops. And they add that where these means have failed of succoss, the failure is directly traceable to injudicious or imperfect use.

I think wo should attach great importence to a formel expression of opinion coming from such men as MM. Dumas and Cornu, despite many contradictory reports from private sources. It is well known that of all experiments, those in agriculture require the ntmost circumspection in their execution. If the remedies prescribed for vines recently attacked have failed to resuscitete dying ones; if a slovenly or niggerdly application hes left the evil apparently unchecked, there are but too msny who will at once reise, end many more who will echo, the howl of uusuccess.

Let us, as quickly as possible, give the prescription of the French Commission a thorough triel, while diligently searching for further remedies. Should private enterprise fail to furnish promptly the needed supply of the sulpho-carhonates, the agricultural and chemical departments of the University are willing to take the matter in hand, if means ere furnished. I am now engsged in the investigation of the soils of Sonoma valley, with a view to determining in what manner the enriching process mey most cheaply be carried out. Direct experiments on vines cannot usefully be made on the agricultural grounds at Berkoloy for obvious reasons; but all possible assistance will be given to individuals and socicties willing to experiment on the spot.

I cannot conclude without strenously recommending, in the planting of new vineyards, a trial of the retional expedient already largely practiced in France, of grafting the European grapes on American roots, which strongly resist the vine-louse. Among these, tho Clinton and Concord seem to he especially worth trying. But local experience must definitely settle the hest stock for grefting, which evidently varies in different localities. Experiments on this subject should immediately be initieted hy the viticultural societies of tho State.—*Prof. Eugene Hilgard in Rural Press.*

The Winter Here and at The East.

There is none of the darkor shades of human nature that is more conspicuously brought torth hy those who expatiate on man's depravity than ingratitude. Now, for our part, we could nevor see the difference in culpability hetween slandering an individual membor of the human family, accnsing him of had habits to which he is really not addicted, and "lumping" the whole rece together, and charging it with crimes and misdemeanors of which it is not guilty. Prominent smong which is ingratitude; it has secured this pre-eminence, no doubt, from the fect thet it is concedod to be the worst thing that its detrectors can say against human nature, ingratitude being supposed to be coneiderably sharper than a serpent's tooth. These poets ero hlind guidee, and the world has suffered immensely, end done itself great injustice in judging human nature by e poetical estimate.

Men is not ungrateful. Let those who wish to see proof of his gratitude in small things place some little favors in bis wey, and watch nnprejudiced the effect upon the recipient. Let them suepend for a moment their supposed commendable efforts at making two blades of grass grow where only one grew beforo, and make an attempt on the soil of the human heert to produce a few more fresh, green blades of gratitude, and they will soon behold satisfactory results; or, if an exhibition of the higher reaches of gratitude ie desired, the best way to form a correct estimate of the feelings that prevail in men's intercourse with hie Maker is to note the manner in which he receives what the seasons hring in their coursee. It is hardly feir to call it local pride, when the Arab, after duly enjoying "the spicy breezes" and ell the other glories of "Araby, the blest," throwe himself upon the sand, and after the dread simoon has passed over his proetrate body rises up end exclaime, "Alla is good." Or the inhahitant of more rigid climes, who, in a similer manner, megnifies the blessings of *his* country, manifests a degree of gratitnde which is worthy of notice in a race which has been represented as quite destitute of this quality.

If the climete of California disinclined to labor and were enervating in its effects, we should have slight grounds for rejoicing; hut instead of this, we have an atmosphere hy day stimulating to labor or active exercise, aud at night everything favore sleep. These qualities are doing much towerd stimulating immigration hithor; and we shall look for little cessation in thie flood through the winter months. The season's reports from thoso who are spending their first winter here will also induce immigratiou. Taking these matters into consideration, we shall look for as great an influx in the early part of 1876 as wo received in 1875, notwithstanding times havo somewhat improved thero, and though all possible influences aro being used to keep people

The Crystal Salt Works.

The Alameda County *Independent* ssys: A visit to the Crystel salt works, near Alvarsdo, this week, hes enabled us to gather a few items of interest to our readers concerniug the msnufacture of this article. Some time since we gave an accouut of Quigley's sslt works, and then declered our purpose, as soon as possible, to gain and give further information about other salt works in our county.

These Orystal selt works were first started in the year 1864, by J. A. Plummer. Only three hundred tons were mede thet year, as the whole matter was new, and the experiment e venture for the owner. In 1865 the labor began iu reel esrnest, improvements were established, and the enterprise began tc assume sll the charecteristics of a permanent and profitsble undertaking. Since that year the manufacture has been steadily advanciug in activity and success, until it now stands equal and probably superior, to any salt mannfactory on the hay.

The present year not less than 2,000 tons of choice packing salt will be manufectured hy this establishment, end this kind of salt meets with ready sale among the heef and pork packers of San Francisco end elsewhere.

There are two separate branches of this enterprise, one under the chsrge of J. A. Plummer, Jr., and one under ths direction of C. A. Plummer; while the general husiness is msnaged in San Francisco by J. A. Plnmmer, Sr.

The quantity of salt required for family use is far beyond what those unacquainted with the business would anticipate. Thus, this establishment griuds twenty-four tons of table salt, twenty-five tons of deiry salt, and fifty tons of pork-packing salt weekly; and a double gang of men is employed, so that the work may go on hy night es woll as by day in the mill and drying-house. A steam engine and regular dryers are connected with tho works. The salt is put into large bags when grouud, snd shipped to the packing-house in San Francisco, where it is repacked in small sacks, and haled for market.

There are nine vets, all huilt of Oregon pine, in the brsnch under J. A. Plummer, Jr. Only lumber is used, and thst of the hest kind, there being no eerth divisions between these vats, and for them no less than 150,000 feet of the above lumber were fouud necessary. There are six warehouses for storing the salt, aud s tramwey connects them with the landing, where there ie also a large storehouse as well as cosl sheds.

Tho branch establisbment, under Charles A. Plummer, is called the Turks' Island salt works, snd is situated ebout a mile directly west of the town of Alvarado. Here there sre five vats, which have also turned out this season 1,000 tons of choice rock salt. These vats, too, ere built exclusively of Oregon pine, which experience shows to he the best material for the purpose. A tramway connects these works also with tho landing, rnnning a distance of ahout 1,500 feet. Only pork-packing salt is ground here, and 300 tons have been ground thus fir this season. A schooner of fifty-five tons burden belongs to the company, and is kept constantly ruuniug to San Francisco to trausport the salt from hoth of these brsnches. These latter salt works were first started by Plummer & Sons, in 1868.

Thirty men are kept constently et work during the husy season, that is, the salt making season, which is during the hot end dry weather. Wooden and steel hoes are used to rake up the salt, which is first drawn into windrows, then into piles and in straight rows. A portable track is laid down hetween the piles, upon which the cer is placed, and tho salt put into it and then run down to the shore, where it is washed end stored. In washing, ammonis, nitric acid and lime-juice are employed, after which the salt is considered ready for use in the market, or for sale. To show the purity of the article, as here manufactnred, we may meation thet the State chemist analyzed it, sud found thet the salt stood et ninety-seven per cent., or only three per cent. below ebsolute perfection or free from the admixture of all foreign substences.

Truly these salt works furnish ebuudant evidence of what an important and extensive industry hes grown up along our bay shore from very small beginnings—an industry that is still further cepeble of almost indefinite expansion and enlergement.

PRODUCTS FROM DISTILLATION OF COAL.—The burning of a piece of bituminoue coal seems, and really is, a very simple matter; but to nnderstand fully the chemistry of the process is a matter requiring much thought and study. Observations thus far have shown thst such combustion results in the formstion of at least fifty-one different chemical compounds, to say nothing of the indefinite number not yet determined, and which aro supposod to be quite numeroue. There is a practical utility in knowing these compounds, as without thst knowledge it is impossible to calculate accurately the heating power of any given coal.

A WRITER in a Belgian journal says thst be has snccessfully kept a marine aquerium for nearly ten years without renewing the ees wster in it; all that he does heing to edd fresh water as tho salt water evaporates, the same degree of saltness being invariably maintained.

MERCURIAL ointment is excellent to oil a gun with to prevent rusting. It is also equally good applied to cutlery, needles, or other polished

Good Health.

How Small-pox is Communicated.

Small-pox originates from actual contact with the developed scab, from this scab dissolved in water, or from the effluvia of it. It is not communicated by the *developing* vesicle or pustule, or received from being in a room or car with a person with the eruptive stage *commencing*. In all cases the disease is caused by the well-developed scab or the matter from it. The following cases will illustrate the truth of these assertions:

1. A young man came to the country from New York city, riding in a railroad car forty miles and in a private carriage six miles. The evening of his arrival I saw him. He was complaining of headache, and thought he had a "bilious" attack. The third day he had a severe sore throat, and upon examination I found a vesicle upon the end of the uvula. He complained too of his back, and there too a vesicle was found, which ultimately formed a perfect scab and adhered to the shirt. Now the sequel was this: A colored woman, living with her family some distance from the farm house where the young man was sick, washed this shirt and then her two children's clothes in the same suds; but subsequently, in putting clean clothes on them, she used for one these, for the other those that had been washed on a previous occasion. The first soon had small-pox; the second escaped at that time. Here a scab diluted with water produced small-pox, the clothes being the vehicle of contagion.

2. A gentleman having a large family of sons and daughters declared vaccination a humbug, and not one of them was vaccinated. A daughter, on her wedding tour, staid all night at a New York hotel, where a case of confluent small-pox had died, her room opening into the hall through which the corpse had been carried. In two weeks she returned, and was at a party where many young persons of each sex were assembled, when she complained of being quite sick, and her sister remarked how "feverish" her breath was. I found her next morning breaking out with small-pox; the disease was confluent and severe. But her sister and friends, with her for hours upon the night of the party, this feverish breath exhaled by her in the room, did not have the disease; every one escaped.

3. A young man having recovered from small-pox a month had his head combed by his mother, and in combing she removed a scab. Subsequently she used the comb upon her own hair, and had a severe attack of small-pox.

4. A neighboring physician, careless about washing, attended a severe case of small-pox. In feeling the patient's pulse some matter from a scab on the wrist adhered to his fingers; and having bushy whiskers which he was in the habit of rubbing, the matter lodged in them. His wife received the poison, thence took the small-pox and died.—*Am. Practitioner.*

A New Use of Alcohol.

A new use for alcohol has been discovered by a German physician of Weinheim, Dr. Schwalbe, who, if we may credit the accounts which reach us, has reported one hundred cases of various forms of tumors and glandular swellings which he has successfully treated by the subcutaneous injection of the tincture of iodine. Subsequently having injected the simple alcohol with equally favorable results, he concluded that the latter is really the effective agent. The subcutaneous injection of this fluid produces chronic inflammation of the connective tissue, by which it is caused to contract, and the pressure thus produced obliterates the lymph ducts. In some cases he has used ether in connection with alcohol in order to dissolve fats, and in this way he reports that he has cured several cases of fatty tumors. But the most important discovery of all is that alcohol thus administered prevents the extension of the cancer to neighboring tissues and lymphatic glands. By injecting the alcohol the tumor may be isolated, as it were. The contractive connective tissue then approaching the growth itself, presses upon it, stops the supply of blood, and causes it to disappear by a gradual wasting away. In connection with Dr. Hasse, Dr. Schwalbe claims that he has cured three cases of cancer of the breast in this way. We suppose that temporary cures are meant, as cancer is a disease of the blood, and is, therefore, constitutional, although locally manifested; and it is well known that the successful removal of cancer of the breast is very apt to be followed by a reappearance of the disease elsewhere.

Bee Inoculation.—A Cincinnati scientist has allowed himself to be stung once a day for three weeks by bees to ascertain the effect of the bites. He says that after about the tenth time the pain and swelling were slight, the body seeming to become inoculated with the poison.

Hot Sand Bath for the Feet.—Those who suffer with cold feet may restore the warmth to them by walking for an hour daily on the sand or earth made warm by the sun; and even a hot sand bath for the feet at home may be used as a substitute.

Insanity from Overwork.—It is asserted on medical authority that the insanity of a large proportion of the patients received into Bethlehem hospital, London, is traced directly or indirectly to overwork.

Glycerine in Medicine.

The use of glycerine for the medical compounder and practitioner are constantly being enlarged by practice and observation. In addition to its numerous and long well known uses otherwise, it has recently been found very useful as a solvent and conveyer of santonine and quinine sulphos, medicines which are often avoided when really needed on account of the repugnance which some patients feel towards tasting them. These medicines when prepared with glycerine and oil of cinnamon lose all their unpleasant taste, and will keep for an indefinite time without fermentation or other change.

Glycerine is the only known agent which will preserve vaccine lymph for any considerable time without deterioration. It has been found extremely useful in numerous skin diseases. It has been successfully employed in curing cancers—not in removing their humors from the system, but in the temporary relief of healing or driving them away when they have made their appearance upon the surface.

It has been found especially serviceable in connection with all substances used locally in diseases of the eyes, except nitrate of silver, which it decomposes.

Deafness.—In cases of deafness from deficiency, accumulation, or hardness of the cerumen glycerine is one of the best agents we possess, introduced into the canal by means of raw cotton saturated with it.

Food for Infants.—Infants raised by hand can be kept comparatively free from many of the ills to which they are prone by the substitution of from four to six drachms of glycerine, for the amount of sugar usually added to the cream, milk or water constituting their diet.

We have gathered the above facts from a paper in the Detroit *Medical Review*, by Dr. Tidd, of Middleport, Ohio. The doctor further remarks: "I confidently assert, without fear of successful contradiction, that glycerine *possesses the power of withdrawing the watery elements from any tissue to which it is continuously applied.*"

Another use for Alcohol.—In some experiments made by Dr. Horvath, a German physician, in the production of local anæsthesia, he states that if the hand be immersed for a short time in ice water, severe pain is caused, but that no such pain was produced on immersing the hand in cold alcohol, not even when the temperature of the alcohol was as low as five degrees Cent. Glycerine was found to possess a similar property. Ether caused pain, and quicksilver more acute pain still, causing the speedy withdrawal of the finger when plunged into this liquid at a temperature of three degrees. It was next ascertained that, on the finger being held for a long time in alcohol having a temperature of five degrees C., no pain was experienced, and although the finger distinctly perceived the faintest touch, sharp pricks gave no pain. This seemed to show that the application of cold alcohol has the effect of depriving the part of the special sensibility to pain, without, however, impairing the delicacy of the general tactile sensation, which, as is well known, resides in the superficial integument.

Useful Information.

The First Planing Machine.—It is an interesting question as to where the first planing machine was made; according to the London *Iron Trade Exchange* it was built in the Holland street works of John Rennie, the elder. "In March, 1814, (and we copy from an original memorandum book of the late George Rennie,) the following plan was adopted for chipping the cast iron sides of a new lathe: The sides are placed close together, with their faces upward; two planks of elm, one on each side, are bolted with their edges truly placed and upward; upon the edges of the planks run four wheels on axles, which support a track of oak. To the truck is fixed a slide rest, to which is attached a cutting tool; the truck is well loaded with weights, and pulled along the surface of the elm planks by means of a crab and chain. Thus the tool planes the iron lathe bed straight." This was, in fact, the first planing machine, crude and rude as it was, and from it Whitworth, to whom the original apparatus was shown, subsequently made a self-acting machine. We all know how important a tool it has become in the manufacture of nearly every kind of machinery.

Improving Gypsum.—It is asserted that gypsum becomes harder by placing it, after calcination, for a few minutes in a mixture of water with eight per cent. of sulphuric acid, and then calcining again. We think this quite likely to be so, as gypsum often contains quicklime, which by this treatment is also changed into a sulphate or gypsum. Alum is also known to harden plaster casts, and it is now proposed to immerse the freshly burnt gypsum in a solution of ten parts of alum and ninety parts of water, and then to calcine again. Casts made of such plaster can be polished like marble. It has surprised us that Landrin, in France, has announced as a novelty cements prepared of plaster and lime, or sulphate of lime and quicklime, (which latter changes into a carbonate.) He says that he has even used as much as seventy-five per cent. of lime; well, all our plasters are such mixtures, as pure plaster sets too quickly, so that the mixture can be smoothed better.

Utilizing Pine Leaves.

We have already, in these columns, called attention to the fact that the Austrians had discovered and were making large use of a process for utilizing the pine tree leaves or "needles." And now, according to the *Scientific American*, the industry bids fair to be put in the way of a practical trial in this country, by Mr. Charles Fulton, of New York. The coherent parts of these acicular leaves are dissolved and removed by boiling in suitable chemicals. The result is a substance resembling cotton, or perhaps more nearly wool, of a dark greenish brown color. It is prepared in four qualities, adapted for stuffing mattresses, pillows, etc., and for weaving. For the latter purpose, the fibers of the material are separated and treated in machines similar to fulling mills. Other processes follow, which result in the production of an excellent thread, which can be woven alone or mixed with wool, cotton, silk, or other fibers. Cloth of very close and fine texture is exhibited, made of the thread. It is soft and pliable, and resembles a fair quality of flannel. There is an enormous amount of raw material for this manufacture in the country, which now is of no value, and which can be obtained at simply the cost of transportation. By the process above described, it is rendered available both for textile and for paper industries, and hence may form a new and valuable supply.

Venetian Diamonds.—This is the latest imitation, and anybody who chooses can do it for himself and have a small golconda for himself, in a very short time and at a trifling cost. They are sometimes called "Parisian diamonds," from the fact of their origination in Paris. The process of preparation is described as follows: The body is of crystal (quartz) which is the hardest and best substance that could possibly be used for the purpose. Then, after the crystals are cut in proper shape, they are put into a galvanic battery, which coats them over with a liquid, that is made of diamonds which are too small to be cut and the chippings and cuttings that are taken off of diamonds during the process of shaping them. Thus all of the small particles of diamonds that have heretofore been comparatively worthless, can now, since this great discovery, be used to produce diamond liquid. The originator claims to have spent twenty-eight years in perfecting his process, which he claims to be a great discovery. What next?

Embossing Leather.—The art of embossing and ornamenting leather is not altogether a revival of the antique art as practised by the Moors, specimens of which are to be seen at this day in the Alhambra, for leather covering for furniture is found in many ancient palaces and ancestral halls of England and upon the continent. It has become a craft, though very limited in extent, developing wonderful originality and real artistic dexterity. As the Moorish designs are in a measure unfitted for modern use, modern artists are compelled to originate patterns which are consonant with the construction and style of household furniture of the present day. The recent revival of this mode of ornamentation in America is meeting with much favor, and is beginning to receive recognition as an artistic work.

Coal and Iron.—It was England's coal and iron—effectually wielded by her "Iron Duke"—which overthrew Napoleon's effort to establish the fifth great empire of the world. Had it not been for the great and superior progress which the English had at that time made in this their comparatively new and rising industry, the map of Europe would no doubt to-day have presented a very different appearance from what it does, and there would have been no Kaiser William, or any Napoleon in exile. The hammer and the forge is to-day the real ruler of the world.

Mouth glue is made by dissolving, with the aid of heat, pure glue, as parchment, glue, or gelatine, with about a quarter or one-third of its weight of coarse brown sugar, in as small a quantity of boiling water as possible. This, when perfectly liquid, should be cast into thin cakes, on a flat surface, very slightly oiled, and as it cools, cut up into pieces of a convenient size. When required for use, moisten one end. A piece kept in the desk or workbox is exceedingly convenient.

Asbestos Paper.—Asbestos pounded in a mortar till reduced to a cotton-like mass, and then freed from earthy matter in a sieve, has been put in a paper vat, and good sheets of laid paper produced in the usual way. The sheets, on being written upon, were placed in the fire, but came out uninjured, though the writing was burned out and effaced.

An Important Mechanical Hint Derived from Science.—It is said that the screw-shaped fossil from which the Archimedes limestone is named was the original of the old Athenian mechanic's idea of the screw power. So these fossils, buried four thousand feet under our prairies, tell us there is nothing new under the sun.

Beautiful semi-transparent casts of fancy articles may be taken in a compound of two parts unbaked gypsum, one part bleached beeswax, and one part paraffine. This becomes plastic at 120°, and is quite tough.

Domestic Economy.

Hints on Kitchen Economy.

Cleanliness is the most essential ingredient in the art of cooking; a dirty kitchen being a disgrace both to mistress and maid.

Be clean in your person, paying particular attention to the hands, which should always be clean.

Do not go about slipshod. Provide yourself with good, well-fitting boots. You will find them less fatiguing in a warm kitchen, than loose, untidy slippers.

Provide yourself with at least a dozen good-sized serviceable cooking-aprons, made with bibs. These will save your gowns, and keep you neat and clean. Have them made large enough around so as to nearly meet behind.

Never waste or throw away anything that can be turned to account. In warm weather, any gravies or soup that are left from the preceding day should be just boiled up, and poured into clean pans. This is particularly necessary where vegetables have been added to the preparation, as it then so soon turns sour. In cooler weather every other day will be often enough to warm up these things.

If you have a spare kitchen cupboard, keep your baked pastry in it; it preserves it crisp, and prevents it from becoming wet and heavy, which it is liable to do in the larder.

In cooking, clear as you go; that is to say, do not allow a host of basins, plates, spoons and other utensils to accumulate on the dressers and tables whilst you are engaged in preparing the dinner. By a little management and forethought, much confusion may be saved in this way. It is as easy to put a thing in its place when it is done with, as it is to keep continually moving it to find room for fresh requisites. For instance, after making a pudding, the flour-tub, pasteboard and rolling-pin should be put away, and any basins, spoons, etc., taken to the scullery, neatly packed up near the sink, to be washed when the proper time arrives. Neatness, order and method should be observed.

Never let your stock of spices, salt, seasonings, herbs, etc., dwindle down so low that, some day in the midst of preparing a large dinner, you find yourself minus a very important ingredient, thereby causing much confusion and annoyance.

If you live in the country, have your vegetables gathered from the garden at an early hour, so that there is ample time to make your search for caterpillars, etc. These disagreeable additions need never make their appearance on cauliflowers or cabbages, if the vegetable in the raw state is allowed to soak in salt and water for an hour or so. Of course, if the vegetables are not brought in till the last moment, this precaution cannot be taken.

Be very particular in cleansing all vegetables free from grit. Nothing is so unpleasant, and nothing so easily avoided, if but common care be exercised.

When you have done peeling onions, wash the knife at once, and put it away to be cleaned and do not use it for anything else until it has been cleaned. Nothing is nastier or more indicative of a slovenly and untidy cook than to use an onion knife in the preparation of any dish where the flavor of the onion is a disagreeable surprise.

After you have washed your saucepans, fish-kettles, etc., stand them before the fire for a few minutes, to get thoroughly dry inside, before putting them away. They should then be kept in a dry place, in order that they may escape the deteriorating influence of rust, and thereby be quickly destroyed. Never leave sauce-pans dirty from one day's use to be cleaned the next: it is slovenly and untidy.

Empty soups or gravies into a basin as soon as they are done; never allow them to remain all night in the stock-pot.

In copper utensils, if the tin has worn off, have it immediately replaced.

Pudding-cloths and jelly bags should have your immediate attention after being used; the former should be well washed, scalded and hung up to dry. Let them be perfectly aired before being folded up and put in the drawer, or they will have a disagreeable smell when next wanted.

Do not be afraid of hot water in washing up dishes and dirty cooking-utensils. As these are essentially greasy, luke-warm water cannot possibly have the effect of cleansing them effectually. Do not be chary also of changing and renewing the water occasionally. You will thus save yourself much time and labor in the long run.

Clean your tins with soap and whitening, rubbed on with a flannel; wipe them with a clean, dry, soft cloth, and polish with a dry leather and powdered whitening. Mind that neither the cloth nor leather is greasy.

Do not scrub the inside of your frying-pan, as, after this operation, any preparation fried is liable to catch or burn in the pan. If the pan has become black inside, rub it with a hard crust of bread, and wash in hot water, mixed with a little soda.

If you have a large dinner to prepare, much may be got ready the day before, and many dishes are a great deal better for being thus made early. To soups and gravies this remark is particularly applicable.—*Arthur's Home Magazine.*

MINING AND SCIENTIFIC PRESS.

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THE ORIGINAL ARTICLES in this paper are mostly set in solid type, giving in our columns one-third more reading than is contained in ordinary leaded matter.

San Francisco:
Saturday Morning, Nov. 6, 1875

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More Awards for Mechanics' Fair Exhibits.

The Board of Manegers of the Mechanics' fair met on Tuesday evening and made the following awarde in addition to those already published:

P. Mezzara, for original designs in statuary, silver medal.
W. T. Garratt, California made bells, silver medal.
John Rodgers, for lubricating cream, diploma.
Henry Lake, blacking, diploma.
G. E. Hersey, sheep shearer, diploma.

A report of the late exhibition is being drawn up by Mr. J. H. Culver, the Secretary of the Board of Managers, and exhibitors are solicited to send him any information in regard to exhibits.

DEATH OF MAYOR OTIS.—James Otis, Mayor of San Francisco, died at his residence in this city Saturday morning, Oct. 30th. He had long been a prominent merchant of this city, having arrived here in 1849 with Captain Macondray, who together established the house of Macondray & Co. Mr. Otis married the daughter of his partner, who survives with six children. He was born in Boston, and was a descendant of Harrison Gray Otis, of Revolutionary memory. He was educated to the mercantile business in that city. He held several prominent positions here, having been President of the Chamber of Commerce and a member of the Board of Supervisors. He was elected two years ago Mayor of San Francisco by the Independents. His official term would have expired in about a month. He was not a candidate for re-election, but had been mentioned for the office of Governor.

A New Process for Treating Ores.

We bring to-day to the notice of the mining population of the Pacific coast another new process for treating ores, which is worthy of more than usual attention. Miners generally are skeptical on the subject of new processes, and as we have had several of late, they may turn aside from them all as unworthy of notice. The inventors, however, should have a fair hearing and trial, and if there is anything in their improvements worthy of adoption, their claims should be acknowledged by the mining community. The process to which we refer has been tested in Washington, and is now being tested in this city, with a view to its general introduction. We went one day this week to a building on Main street, near Harrison, where the ore is being worked, and propose to lay the result of our observations before the mining public.

To premise; the process has not before been publicly described, except in the reports of the patent office, and is entirely new in its character. It doesn't claim to do impossible things in the way of working the ore for nothing, or of getting out 101 per cent. of what is in it. The invention has for its object the reducing to the metallic state, the metals contained in silver, copper, lead, zinc, and mercury ore; also metals in chemical combination with non-metallic substances; and to this end it simply consists in the application of marsh-gas (CH_4) and heat, as we shall try to describe.

The reductive quality of hydrogen gas is a fact well known to chemists; but the expense attending the generating of this agent is such as to preclude its use in practical manipulations of this character. Hydro-carbon vapors have also been named as a reductive agent; but this being a generic term, no practical idea would be conveyed by its use.

The obstacles in the way of preparing and applying many of the series of hydro-carbon vapors have rendered them as reducing agents practically useless. The object of this inventor, therefore, was not only to ascertain the best possible agent for bringing the metals contained in the ore to the metallic state, but at the same time to find out which one of the series, while it should possess the above quality, should also have the advantage of economy. By many experimental efforts he has accomplished the desideratum long sought; *i. e.* that of having a reductive agent sufficient in its effects, combined with economy in its production, ease of manipulation, and one which will give an unfailing test or evidence of reduction. The agents employed are, as before stated, marsh-gas (CH_4) and heat.

It should be particularly understood that the gas is not required in a chemically pure condition, though it may be so used if economy would justify it. When this marsh-gas is made from coal it is distilled at a high temperature in order to get an excess of that gas desired. When illuminating gas already manufactured is used, it is passed through a separate retort, filled with red hot coke, in order to convert the olefiant gas into marsh-gas. This gas can also be distilled from wood or other substances.

The ore is worked as follows: A retort is arranged in the usual way, having a head which can be hermetically sealed. The retort is furnished near one end with a suitable pipe, through which the gas is admitted from the reservoir. In this instance the gas used is the ordinary illuminating gas of the city, which is passed through a separate retort, filled with red hot coke, before being turned into the ore retort. The pipe referred to is supplied with an ordinary stop cock. At the opposite end of the retort is an escape pipe, which is also provided with a stop cock and a short branch pipe, in the end of which latter a gas burner is secured. The escape pipe has its outer end bent downward into a small barrel of water. The retort is, of course, over a suitably constructed furnace. The retort is charged with ore and the head or door hermetically sealed. Gas is admitted to the retort, which will soon expel the air therefrom. A strong red heat is now applied, when the reaction at once commences. It is noticed that during the process of reduction the gases escaping from the burner will not ignite, but as the reduction nears completion the gas emits a dull bluish flame, and increases in tone until all the metals contained in the ore are reduced to a metallic state, when the flame burns brightly—that is, if the gas possesses sufficient illuminating quality—as the brilliancy of the flame must, of course, depend upon the character of the gas used.

When the reduction is completed the ore is removed from the retort, placed in a furnace and melted with suitable flux. The malleable metals will sink to the bottom and the slag rise to the top. In case the ore contains pyrites or bisulphide of iron, it is roasted in the open air before it is introduced in the retort.

In the event of the ore containing copper and silver in combination with sulphur, as usual, and it is necessary to obtain a separation of these metals after their reduction in the retort, the spongy metals are dissolved in sulphuric acid and the sulphate of silver is then separated, while in solution, from the sulphate of copper, by an addition of common salt, which will precipitate the chloride of silver and leave the copper in solution. The chloride of silver is then treated with heat and marsh-gas.

When the ore, besides copper and silver, contains gold and lead after the reduction by heat and marsh-gas, as described, the metals can be melted in solid mass, and this alloy treated with sulphuric acid, which will dissolve the silver and copper, and leave the gold and a portion of the lead in an insoluble state. The solution containing the silver and copper is then poured off, which is treated with chloride of sodium, as stated above, and the remaining gold and lead are melted with a suitable flux. In treating the chloride of silver with marsh gas, for the purpose of reducing it to a metallic state, it is not necessary to use as high a degree of heat as when treating ores. If it is desirable to have it left after treatment in a spongy state, a dull red heat is all sufficient.

This process is the invention of Mr. Demitry Mindeleff. Our attention was first called to it a few months since by an item in a Washington, D. C., paper, which stated that Mr. T. H. Alexander, a patent attorney of that city, would shortly leave for this coast with Mr. Mindeleff for the purpose of making a test of a new process for working ores. Both these gentlemen are now here. After experimenting in Washington they came to San Francisco, put up the retorts, etc., and have been making a series of tests. Messrs. J. R. Smedberg and E. M. Robinson, with Mr. C. E. Luckhardt, have been testing the process thoroughly, and when their reports are ready we will publish what is of interest to the public in regard to the technical and economic results. If this turns out *metallic* copper, for instance, in this one process, as the inventor claims, it does away with the ten or twelve different processes usually required for this purpose. The ore, as it comes from the retort, is perfectly friable and spongy, and can be pulverized by pressure between the fingers. In some of the copper ore we saw, which had been treated by the process, the copper in an apparently metallic state, in small fibres and bunches, appeared all over the surface and through the whole mass of every lump. The coal from which the gas is made is used in the form of coke for heating the retort. The amount used per pound of ore will be shown in Mr. Smedberg's report, and Mr. Luckhardt, the metallurgist, will, of course, state the economic result and the state of the metals in the ore after passing through the retort.

Academy of Sciences.

The regular meeting of the California Academy of Sciences was held on Monday evening last, Dr. A. B. Stout in the Chair. Dr. G. F. Becker, of the State University, and Chas. W. Banks were elected resident members. Dr. Henri Filhol, a celebrated French scientist, and member of the Scientific Academy of Paris, who was sent by the government of France to make observations on the transit of Venus, and who is visiting San Francisco, was introduced to the society by Dr. Stout. The Chairman requested the distinguished guest to favor the society with some observations. Dr. Filhol spoke the English language imperfectly and urged this as an excuse for not acceding to the invitation of the Chairman, but he was prevailed upon to address the members briefly.

W. E. Burleigh has sent to the society from the island of St. George, Alaska, one full grown male fur seal, one full grown female fur seal, one fœtus (nearly full grown) of fur seal, one sea lion, two months old; the head of a young walrus, two years old. The fur seals were carefully selected specimens. They were sent with the skull and limb bones attached. All are well preserved in salt and are suitable for stuffing, as is also the sea lion and walrus head. It is the intention of the society to have these donations from Mr. Burleigh stuffed and displayed in the Academy.

Dr. A. C. Parry, a distinguished botanist now on a visit to this coast, read a short paper on "Botany and Horticulture in California." His views were those of a sojourner among us, and expressed surprise that in this climate, where there is such a wide field for the horticulturist, that no public botanical gardens had been established. He saw in many gardens in San Francisco and Oakland more plants of foreign varieties than home production. It seemed to him that only very few of our native plants were cultivated in the garden, although elsewhere the California plants were considered beautiful and choice. Some of the most celebrated native flowers and shrubs could not be seen anywhere growing in the gardens of San Francisco or Oakland, their places being filled with certain common foreign plants. He thought this was due to a want of proper appreciation of our floral beauties and could only be remedied by the dissemination of more general botanical knowledge.

Dr. Gibbons pointed out the peculiarity of our rain storms in comparison with those of the Eastern States, and gave quite an interesting lecture on the meteorological peculiarities of this locality. He deplored the fact that so little on this subject was taught in our public schools, and thought that the children should all be instructed better in meteorology. He doubted if one in ten of the children could tell why cloude formed, or what made it rain, or why the seasons changed. Our idea is that this would apply to grown up people as well as the children, for this kind of useful knowledge is extremely scarce. At the conclusion of Dr. Gibbons' remarks the Academy adjourned.

PANAMINT shipped nearly $74,000 worth of bullion for the first half of last month.

The Damage to the Mines by the Virginia Fire.

The energetic people of Virginia are already rebuilding and repairing the damages of the late fire. The insurance adjusters who went up there have issued a memorial to the effect that in view of the present condition of the water supply, street mains and hydrants (developed by the recent fire) and of the large preponderance of inflammable material comprising the city, they deem it highly impolitic, unwise and unsafe to continue to underwrite, and thereby expose the capitals of the insurance companies to greater disaster; and they will consider it their duty to so represent to their respective companies, and advise a discontinuance of further business unless the following improvements be made:

First—The construction of water works with a twelve or eighteen inch main on C street, and six-inch connections on parallel and cross streets, with not less than four hydrants on each block.

Second—The establishment of a proper fire limit in the business portion of the city, within which no wooden structure shall be erected.

Third—The widening of the cross streets.

The Virginia papers see the propriety of all this except the fire limit part of it, to which they object, as the ruin has been so great it would be impossible to compel men to build brick or stone houses. The insurance men, however, having lost nearly two million dollars insist that prompt, radical measures are necessary to prevent a repetition of similar disasters and to induce the underwriters to insure property in Virginia.

We see by the local papers that in every direction buildings are going up, and large gangs of laborers are wheeling bricks from the ruins, cleaning and piling them for use. Toppling walls are being pulled down, lumber hauled and everything being done toward rebuilding the city. Not a moment of time is being lost. In places where the fire still smolders, and renders the bricks too hot for handling, one gang of men dashes water over them while others bear them off. Lumber is scarce, but is hourly becoming more plentiful.

In regard to the Consolidated Virginia mine the Gold Hill *News* states that the loss of the hoisting works machinery, assay office, lumber and supplies alone will not fall far short of $1,000,000. The lose of the mill amounts to $431,000, which will swell the sum total to $1,500,000. The cages were stopped in the shaft 40 feet below the surface, covered with rock and earth, and the shaft saved complete. All the books, papers, deeds and accounts of every description were saved complete, so that not even a scrap was lost. The C. & C. shaft and works were also saved by a gigantic effort. Supply of ore being entirely cut off, the remainder of the mills will of course have to shut down when their present supply of ore is exhausted. The morning after the fire Superintendent Fair had orders at the mills in the mountains for lumber to rebuild the entire works, and men are at work preparing the grounds.

The Ophir hoisting works, office and surrounding buildings, along with a large amount of wood, lumber and other supplies, were totally destroyed. The loss of the hoisting works alone will amount to not less than $250,000, while the loss of supplies for winter use will probably foot up $50,000. The works were insured for $60,000, in some of the best English companies, so that the actual loss will not fall a great deal short of $250,000. As a matter of course, when the supply of ore in the dumps end at the mills is exhausted, the mills must stop, as there is nowhere else at the present time a sufficient amount of ore being extracted to keep them running. Every effort was made to save the shaft and mine, and so far as the shaft is concerned, with almost perfect success. The safeties of the cages were sprung in the shaft at a depth of 30 feet below the surface and then covered with earth and rock, which prevented the descent of the flames and saved the mines from destruction. The larger pieces of the pumping and hoisting machinery are but little, if any, damaged, so that much of it will do to use again.

Advices dated on the 2d inst. stated that a snow storm had suspended work to a great extent, and it would not be resumed until the storm ceased. Work on Consolidated Virginia and Ophir has not been interrupted. Despite the snow and rain it will be pushed on to steady completion, if men and money can do it. The work of retimbering the burned part of the shaft has been completed, and a donkey engine has been set up, and the bailing out of water in the mine begun from the new combination shaft. The Ophir company has procured a double hoisting engine, and from the New York mine the pump and connecting rods. Machinery will be set up as soon as possible. It is the same as was destroyed in the Ophir works. The machinery in the incline hoisting works is little damaged, but the heavy foundations are totally ruined. It was expected that the railroad tunnel would be completed on the 3d inst., when the necessary mining timbers could be deposited on the ground. The storm will to some extent injure the machinery, etc Mr. Mackey says he has 10,000,000 feet of lum

ber at Huffaker's, waiting to be used in the construction of the Consolidated Virginia hoisting worke, which will be brought in as soon as the railroad tunnel is completed. When this is done some 800 men will be put at work, and the Ophir will employ perhaps 500 more. Mackey is certain that with this force the works of both companies will be finished within 30 days, and everything running as before the fire. Tools and stores to the value of $50,000 were destroyed in the Consolidated Virginia storehouse, and new ones have been ordered by telegraph from San Francisco. The smaller parts of the machinery were greatly damaged, but are being repaired by the Virginia foundries. Very little new casting will be needed, and this will come from San Francisco. The usual dividend will be declared on Consolidated Virginia for this month, over a million and a half in bullion having already been turned out from the mine, while the surplus of cash on hand is considerable. The stockholders will suffer none from the destruction of the works, either in the form of an assessment or a failure to pay dividends. Such is the statement of John Mackey. Whether Ophir will find it necessary to assess or not is uncertain, many believing that such a step will not be necessary. There is now no gas, fire, or appreciable amount of water in either Ophir, Consolidated Virginia, California, Gould & Curry, Savage, or Hale & Norcross.

The loss of the stamp mill of the California will alone amount to $80,000, there being no insurance whatever. It was only by herculean effort that the C. & C. shaft and buildings were saved. At the time of the flow of water into the Consolidated Virginia mine the lower levels of the Best & Belcher were flooded with water. The lower levels of the California mine were also flooded, so that every effort of the superintendent and the employees were exhausted in efforts to control the flood until Tuesday, when the Consolidated Virginia hoisting works and the new 60-stamp mill just about completed, were swept away by a tempest of fire. Since that time the pumps in the Gould and Curry being unable to drain the flow as fast as it came, the water rose about 200 feet in the shaft, not having reached the 1500-ft level. The Gould and Curry pumps now, however, handle all the water in the mine and that which came from the Consolidated Virginia, which latter has diminished to ten inches. The buildings of this mine came near being destroyed, but were fortunately saved. They have reason to be thankful, when all have suffered around them. During the past week the Savage has had its hands full with water, having done nothing in the mine beyond pumping and endeavoring to keep water within bounds. They kept it a few feet below the 2000-ft level, with tanks on the incline and used the pump exclusively on the 1600-ft level.

The destruction of the Ophir hoisting works has stopped work in the Mexican mine altogether, as well as in the Union Consolidated. A comparatively small amount of ore from the Consolidated Virginia is being hoisted through the Gould & Curry. The resources of the mines are immense, and there is plenty of bullion in the big bonanza to repair all losses by the recent great calamity. Merely the regular Consolidated Virginia dividend for a single month is sufficient to replace all the hoisting works destroyed.

The Utah mine has a number of men briskly employed clearing away the debris of their burnt hoisting works, and are preparing for the erection of new machinery. The contract for engines and boilers has been let and work commenced on them. The lumber for building has only been partially delivered, on account of the burning of the railroad tunnel.

Contributions of money and supplies are being sent rapidly to the sufferers by the fire. The relief committee in this city have done good work, and San Francisco cash contributions, on Tuesday night, amounted to $24,871. In addition to this, large quantities of blankets, clothing, provisions, etc., have been forwarded. Wells, Fargo & Co. have forwarded from different places $7,533 in cash; but the total value of goods received by them cannot be estimated, The committee have met with open-handedness everywhere, and from all classes, so that the suffering of the homeless people of Virginia is being rapidly relieved.

Geology of the Yellowstone.

We give on this page a sketch showing some of the geological peculiarities of the Yellowstone valley, as observed by the Government survey under Prof. Hayden. This sketch shows quite clearly the stratified character of the tufas and breccias. The entire mass is most curiously variegated in color, from an ashen-cream color to deep purple. The series of gray volcanic ashes alternates with more or less coarse strata of breccias, the fragments cemented with the tufas. This sketch shows a curious instance of a sort of unconformability, showing, probably, the periods of deposition. The underlying portion had been worn into a conical shape by the waters of the lake, prior to the deposition of the slanting mass. In the background there is a lofty range of volcanic breccia or conglomerates, rising 3,000 feet above the valley.

A School of Mines has been inaugurated in connection with the Michigan University. It has assay furnaces, forges, blast furnaces and other appliances for practical work in metallurgy.

An Improved Mill Dog.

We herewith illustrate a new style of "mill dog" which will be of interest to the lumbermen of the coast. The dogs are made by Filer, Stowell & Co., Cream City iron works, Milwaukee, Wis. The manufacturers claim superiority for the following reasons:

It will seize the log and draw it to the standard. No dogs, unless they are curved and work in opposite directions, can do this successfully on all kinds of logs, as well as cants. The double-tooth is a new invention, and is the best device ever found to supplement the teeth usually need for flat surfaces, so that round logs, of whatever shape or size, whether with thick bark, thin bark, or no bark, will be seized instantly by this and held. They are made entirely of steel, and examination will demonstrate that the manner of construction is so complete and thorough as to render them the strongest and most durable of any yet made which have any pretension to approach them in excellence. For instance: the pivots on which the teeth vibrate are solid with the bed plate and one and one-eighth inch diameter of cast steel; the tap bolt shown in cut serving only to hold them in position on the pivot.

By a new arrangement of a rachet and pawl the dogs are held in whatever position they are left in the log, and there is, therefore, no possibility of their letting go. Whenever the operator, through carelessness, or design, drops the lever, all the teeth are withdrawn and recede into the standard, so that in no case can they get their noses taken off by the saw. Mill men will appreciate the danger to men, saw and dogs which is thus avoided. The leverage, and consequently strong grip, of this dog is greater than is found in any other, so that a more secure hold is obtained by this dog, with slight exertion, than is gained in others by the utmost effort. By the application of a universal joint to connecting shaft, these dogs may be attached to head blocks, which are independent of each other, so that it makes no difference whether the standards move parallel with each other or not; the dogs will operate simultaneously on each standard from the motion of the one lever. For this feature application for a patent is pending.

The dogs as usually made may be attached to any ordinary standard. They also make a standard containing the dog which may be substituted for any other standard—including the Stearn's standard, winged or otherwise. The face of the standard being wide, and the teeth of dog coming forth from the center of it, have no tendency to spring the cant, thus obviating the necessity of wings, inasmuch as they serve the same purpose. The left hand cut represents the dog in position for holding a round log. It will be seen that it is adapted to any size, as two or more teeth are sure to enter and hold it so securely that the makers are willing to guarantee that any ordinary size up to eighteen inches may entirely be sawed up from the first dogging, without rolling the log at all. The cut on the right hand shows position of teeth when in a flat surface. Five or more teeth enter where the surface is wide, the supplementary teeth being driven in or not at the option of operator.

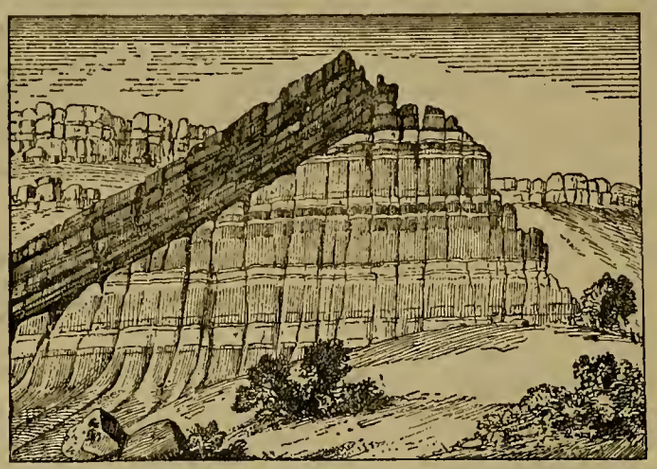
This is called the "boss dog," and it is claimed that by its use the cutting capacity of a lumber mill is greatly increased. Those desiring further information can address the manufacturers as above.

Suspension of Findley's Bank.

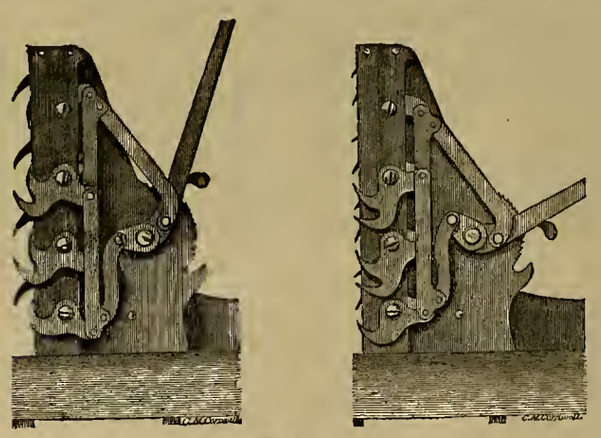
Among the financial sensations of the past week was the suspension of the bank of Thos. Findley & Co., of Grass Valley, Nevada county, which occurred on Monday, October 25th. This suspension has created much surprise in all circles, as the institution was supposed to be sound, and as Mr. Findley had earned the reputation of a careful, discreet financier, while building up his own fortune as a merchant and banker and as State Treasurer, his record while in this position being particularly meritorious. As a merchant, Mr. Findley was noted for his accommodations to "prospectors" and miners of small means, and as a banker he carried out the same rule in his connection with the later and more extensive mining operations of Nevada county. Probably he needed to learn that prudence is the better part of financial as well as of physical valor. We would suggest here that we have heard that Mr. Findley and other bankers have had cause to complain that their customers do not seem to realize that there is a call for promptness, and sometimes for accommodations even, on the part of those who come in front of the banking counter as well as for those who stand behind it.

Public opinion is apparently as yet divided as to whether this is to be a permanent failure or only a temporary suspension. We hope it will be the latter. Nevada county is steadily developing a healthy, vigorous growth. She is rich in her gold mines, and for her horticultural productions she is becoming quite noted, and many a cozy little farm is nestling in her rich canons.

It was at first reported that the interests of the Nevada County narrow gauge railroad were involved in the failure or suspension of Findley's bank, but this matter seems to be definitely cleared up, and the road is now supposed to be unaffected by the occurrence.



VOLCANIC TUFAS AND BRECCIA, YELLOWSTONE VALLEY.



THE "BOSS DOG."

Hale & Duffy and F. J. McWorthy & Co., the two companies who own the extensive sulphur deposits at Rabbit Hole, in Humboldt county, are making arrangements for refining the crude sulphur at the mines. Hale & Duffy have the material for refining works at the river, and McWorthy has just received two large retorts, each of several tons capacity, and a lot of other castings and machinery for running the work.

The Woodville Mine Investigation.

The stockholders of the Woodville Consolidated mining company have shown an energetic determination in getting at the bottom of the affairs of their company, which is highly commendable, and their example is a good one to stockholders in other companies who are dissatisfied with the way their affairs are managed—or mismanaged—by the trustees. The Committee of Eleven, appointed by the stockholders, reported at the meeting held on Wednesday evening last, and their report, which we append, speaks for itself, giving a complete history of the "inside" transactions. The history of the trouble between the officers and a portion of the stockholders is familiar to the public. The results so far show that where there is a fixed determination on the part of stockholders to investigate the management, it can be done, though as many failures have previously been made. The rottenness in this company no doubt exists in many others, and the sooner all such are cleaned out and the trustees removed the better it will be for the mining interests. Before giving the report it should be stated that in the course of this business a point of great interest, involving the right of a stockholder in an incorporated company to examine the books and affairs, has been decided.

It was the case of Wm. N. Helman, secretary of the "Woodville Consolidated silver mining company," who had been arrested on complaint of A. P. Needles, for a violation of Section No. 565 of the Penal Code, which provides that "Every officer or agent of any corporation having or keeping an office in this State, who has in his custody or control any book, paper or document of such corporation, and who refuses to give to any stockholder or member of such corporation, lawfully demanding during office hours, to inspect or take a copy of the same, or any part thereof, a reasonable opportunity to do so, is guilty of a misdemeanor."

Special counsel for the prosecution opened the case by introducing in evidence a certified copy of the articles of incorporation of the Woodville company, and proving that the defendant Helman is and has been for some time past the secretary of the company.

The complainant, Mr. A. P. Needles, who is chairman of a committee appointed by the dissatisfied stockholders to investigate the affairs of the Woodville, was sworn and said: I have been a stockholder in the company for six months. On the 13th of October had twenty-five shares of the stock transferred in my name on the books of the company. On the 26th of last October, at about 1 o'clock in the afternoon, I went to the office of the company accompanied by Michael Hayes and T. Rodgers Johnson. Know the defendant as the secretary of the company. Had been to the office before and had asked for permission to copy the minutes. On this occasion had asked for permission to copy them and was refused. I asked Mr. Helman several times, but he still refused. Thereupon I read

A Written Demand

For the books. The demand is as follows:

San Francisco, October 25th, 1875.

W. M. Helman, Secretary, Etc.—Sir: Being a stockholder in the Woodville Consolidated silver mining company, and desiring an inspection and copy of the journal of proceedings, or book of minutes of the Directors of the Woodville Consolidated silver mining company, I demand of you such inspection for the purpose aforesaid. And in order that you may not be uninformed as to your criminal liability in the premises in the event of your refusal, I would refer you to section 565 of the Penal Code of the State of California. And I desire to inform you that unless my demand is complied with I shall certainly cause you to be arrested and prosecuted. A. P. Needles.

This was read in the presence of several persons. His response was that he had been ordered by the directors not to allow the minutes to be copied. I asked him if he refused to allow me to copy the minutes. He evaded a direct answer and hesitated. Asked him again if he refused, and he said, I refuse to allow you to copy them.

Mr. Helman said he did not refuse to allow the books to be examined, but refused to have copies made from the minute book, as the trustees had ordered him not to give any one permission to do so. The counsel on both sides argued the case at some length, after which the court found the defendant guilty as charged.

John W. Pearson, the president of the company, who had been arrested on a charge similar to that of which the secretary was convicted, was called for trial. The evidence was not sufficient to warrant a conviction, and the case dismissed.

The Investigating Committee's report is as follows:

To the Stockholders of the Woodville Consolidated Silver Mining Company—Gentlemen:—As your Committee of Eleven, appointed by you to investigate the affairs of the company, we beg to submit the following:

We have had six general and many special

(Continued on Page 300.)

Banking.

The Merchants' Exchange Bank
OF SAN FRANCISCO.

Capital, Five Million Dollars.

A. HAYWARD.....President.
O. W. KELLOGG.....Vice-President.
H. F. HASTINGS.....Manager.
R. N. VAN BRUNT.....Cashier.

BANKING HOUSE,
No. 423 California street San Francisco.

KOUNTZE BROTHERS, BANKERS,
12 WALL STREET, NEW YORK,

Allow interest at the rato of Four per cent. upon daily balances of Gold and Currency.
Receive consignments of Gold, Silver and Lead Bullion, and make Cash advances thereon.
Invite Correspondence from Bankers, Mining Companies, Merchants and Smelting Works.

French Savings and Loan Society,

411 Bush street, above Kearny..... SAN FRANCISCO

4v27tf G. MAHE, Director.

Business Directory.

GILES H. GRAY. JAMES M. HAVEN.
GRAY & HAVEN,
ATTORNEYS AND COUNSELORS AT LAW
In Building of Pacific Insurance Co., N. E. corner California and Leidesdorff streets,
SAN FRANCISCO.

JOHN ROACH, Optician,
429 Montgomery Street,
. W. corner Sacramento.
Sur ve instruments made, repaired and adjusted
22v17-3m

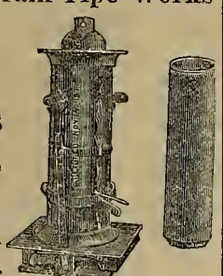
WM. BARTLING. HENRY KIMBALL.
BARTLING & KIMBALL,
BOOKBINDERS,
Paper Rulers and Blank Book Manufacturers,
505 Clay street, (southwest cor. Sansome),
5v12-3m SAN FRANCISCO

MENZO SPRING,
Manufacturer of
Dr. Bly's Patent Artificial Limbs
OFFICE AND ADDRESS,
No. 166 TEHAMA STREET,
Cor. Third, bet. Howard and Folsom, San Francisco.
eowbp

Miscellaneous Notices.

Office of Drain Pipe Works

S. W. Corner Sacramento and Montgomery Sts., S. F.



DRAINS
CONSTRUCTED
In any part of the State, and
Work Warranted

E. T. MENOMY
Proprietor.

Bronze Turkeys
Gobblers, 30 to 40 pounds. Hens 15 to 20 pounds.

Emden Geese
40 to 50 pounds per pair at maturity.
LEGHORNS, BANTAMS
BRAHMAS, GAMES BLACK
HOUDANS. CAYUGA DUCKS

EGGS, fresh, pure, packed so as to hatch after arrival on any part of the Coast. For Illustrated Circular and Price-List, address
M. EYRE, Napa, Cal.
[Please state where you saw this advertisement.]

San Francisco Cordage Company.
Established 1856.
We have just added a large amount of new machinery of the latest and most improved kind, and are again prepared to fill orders for Rope of any special lengths and sizes. Constantly on hand a large stock of Manila Rope, all sizes; Tarred Manila Rope; Hay Rope; Whale Line, etc., etc.
TUBBS & CO.,
e20 611 and 613 Front street, San Francisco

CHAS. H. PHELPS,
ATTORNEY AT LAW,
306 PINE ST., N. W. Cor. Sansome, SAN FRANCISCO
Especial attention given to cases involving Mining, Patent or Commercial Law.

W. T. GARRATT'S
BRASS and BELL FOUNDRY
SAN FRANCISCO,
MANUFACTURER AND IMPORTER OF
Church and Steamboat BELLS and GONGS,
BRASS CASTINGS of all kinds,
WATER GATES, GAS GATES,
FIRE HYDRANTS,
DOCK HYDRANTS,
GARDEN HYDRANTS.
A General Assortment of Engineers' Finding.

Hooker's Patent Celebrated
STEAM PUMP
The Best and Most Durable in use. Also, a variety of other
PUMPS
For Mining and Farming Purposes.
ROOT'S BLAST BLOWERS,
For Ventilating Mines and for Smelting Works.
HYDRAULIC PIPES AND NOZZLES,
For Mining Purposes.
Garratt's Improved Journal Metal.
IMPORTER OF
IRON PIPE AND MALLEABLE IRON FITTINGS.
ALL KINDS OF
WORK AND COMPOSITION NAILS,
16-tf AT LOWEST RATES.

SANBORN & BYRNES,
STAIR BUILDERS.

Mechanics' Mills, Mission Street,
Bet. First and Fremont, San Francisco. Orders from the country promptly attended to. All kinds of Stair Material furnished to order. Wood and Ivory Turners. Billiard Balls and Ten Pins, Fancy Newels and Balusters. 25v8-8m-bp

OF INTEREST TO
MINING COMPANIES.
A Mining and Civil Engineer, of long experience, collected in Europe and America, well acquainted with correct management of mines and mills, practised in projecting and constructing mining and milling machinery, and especially *machinery for mechanical ore concentration*, is open for re-engagement, and would prefer the task of constructing works for mechanical concentration of low grade ores on a well developed mine, or of remodeling ineffective works in the ore milling line for successful operation. Apply to Messrs. DEWEY & CO., of this office, for reference.

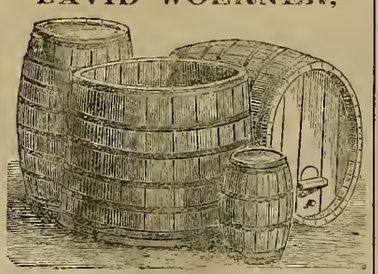
Miners and Capitalists.
Assistance is required to develop an extensive Gravel Mine on the richest lead in Sierra County—the above has been thoroughly prospected, and proved to be rich. For further particulars,
Address "B M," This Office.

GAS AND STEAM PIPE
IN LOTS TO SUIT.
TREADWELL & CO., San Francisco

THE TURBINE.

Simplest, Cheapest, and Most Durable.
The Inventor of the Dexter Windmill has made new and useful improvements in Windmills, patented March 16th, 1875, and now feels confident of having the SIMPLEST, CHEAPEST, MOST DURABLE, and
ONLY PERMANENT WINDMILL
IN THE WORLD.
SIMPLEST, because it is less complicated; CHEAPEST, because it never needs repair, standing on a firm foundation; MOST DURABLE, because it is all under cover, and has less rigging to get out of order; ONLY PERMANENT, because the only Windmill in the world that has never been injured by storms. Hundreds of people, who have thought the Dexter perfect, will be glad to observe the SUPERIORITY OF THE TURBINE over all predecessors. Although much improved, the price of mills remain the same as formerly. Persons who study their own interest will investigate the TURBINE before purchasing any other.
Territory for sale outside of California, at reasonable rates and easy terms.
Mills built to order of the best material, and at the shortest notice, by Kimball Manufacturing Company, corner Fourth and Bryant streets, San Francisco. Any orders sent to their address will receive prompt attention.
For further information regarding Mills or Territory, send for New Circular. Address,
A. H. SOUTHWICK,
P. O. Box 1385, San Francisco; or
P. O. Box 25, Oakland, Cal.
mr13-1am-bp

DAVID WOERNER,



COOPER,
No. 104 and 112 Swear St., San Francisco.
Wine Casks, Tanks, Tubs, Pipes, Beer Barrels, etc., Manufactured at Short Notice and LOW RATES.
LUMBER for CASKS, etc., TANKS, etc. Steamed and Dried if required.
eow-bp.

Glasgow Iron and Metal Importing Co.
Have always on hand a large Stock of
Bar and Bundle Iron, Sheet and Plate Iron Boiler Flues, Gasand Water Pipe, Cast Steel, Plow and Shear Steel, Anvils, Cumberland Coal, Etc.
WM. McCRINDLE, Manager, 22 & 24 Fremont St., S. F
m6-m2

Metallurgy and Ores.

JOHN TAYLOR & CO.,
IMPORTERS OF AND DEALERS IN
ASSAYERS' MATERIALS
Chemical Apparatus and Chemicals, Druggists Glassware and Sundries, etc.
512 and 518 Washington street, SAN FRANCISCO
We would call the special attention of Assayers Chemists, Mining Companies, Milling Companies Prospectors, etc., to our large and well adapted stock
ASSAYERS' MATERIALS
—AND—
Chemical Apparatus,
Having been engaged in furnishing these supplies since the first discovery of mines on the Pacific Coast.
Our Gold and Silver Tables, showing the value per ounce Troy at different degrees of fineness, and valuable tables for computation of assays in Grains Grammes, will be sent free upon application.
7v25-tf JOHN TAYLOR & CO.

Nevada Metallurgical Works,
21 First street.....San Francisco.
Ores worked by any process.
Ores sampled.
Assaying in all its branches.
Analysis of Ores, Minerals, Waters, etc.
Plans furnished for the most suitable process for working Ores.
Special attention paid to the Mining and Metallurgy of Quicksilver.
E. HUHN,
C. A. LUCKHARDT,
Mining Engineers and Metallurgists.

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COMMISSION MERCHANTS,
ADVANCES MADE
On all kinds of Ores, and particular attention
PAID TO
CONSIGNMENTS OF GOODS.
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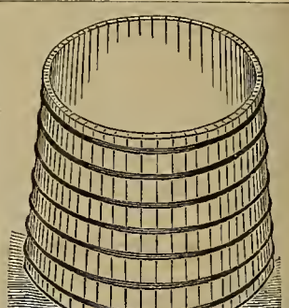
Instructions in Assaying,
Chemical Analysis, Determination of Minerals, and use of the Blow-pipe.
HENRY G. HANKS
Will receive a few pupils at his new laboratory, 617 Montgomery street, up-stairs. TERMS MODERATE

LEOPOLD KUH,
(Formerly of the U. S. Branch Mint, S. F.)
Assayer and Metallurgical CHEMIST,
No. 611 Commercial Street,
(Opposite the U. S. Branch Mint.)
SAN FRANCISCO CAL. 7v21-3m



WATER TANKS of any capacity, made entirely by machinery. Material the best in use; construction not excelled. Attention, dispatch, satisfaction. Cost less than elsewhere.
WELLS, RUSSELL & CO.,
Mechanics' Mills, Cor. Mission & Fremont Streets.
3v28-3m-sa

Diamond Drill Co.
The undersigned, owners of LESCHOT'S PATENT for DIAMOND POINTED DRILLS, now brought to the highest state of perfection, are prepared to fill orders for the IMPROVED PROSPECTING and TUNNELING DRILLS, with or without power, at short notice, and at reduced prices Abundant testimony furnished of the great economy and successful working of numerous machines in operation in the quartz and gravel mines on this coast. Circulars forwarded, and full information given upon application.
A. J. SEVERANCE & CO.
Office, No. 315 California street, Rooms 1 and 2.
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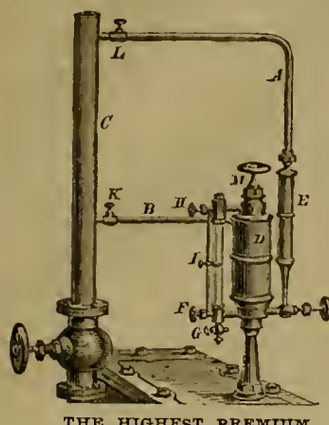
CANDLES.
MITCHELL'S
New York Candles
Full Weight and 14 ounce.
Will be found on comparison to be
Unequalled in Quality.

14 GMG OZ.
STEARIC ACID CANDLES
GEO. M. GRANT & CO.
PHILADELPHIA.

FOR SALE BY ALL THE LEADING JOBBERS.
Geo. M. Grant & Co., Agents, San Francisco.

Machinery.

N. Seibert's Eureka Lubricators.



THE HIGHEST PREMIUM

Awarded by the Mechanics' Institute Fair, San Francisco, and State Fair, Sacramento, 1871.

These Lubricators are acknowledged by all engineers to be superior to any they have ever used: feed constantly by pressure of condensed water, supplied by pipe A, regulated under the oil by valve J, and forced out through check valve and pipe B into the steam pipe C; it then becomes greasy steam, passes to all the valves and cylinder at every stroke of the engine; glass tube I indicates amount used per hour. Packing on rods and stems lasts longer, and the rings on the piston will not corrode. One pint of oil will last from three to six days, according to speed and size of engine; I, sliding gauge; K, valve to shut off when engine stopps; H, F, valves to shut off in case of frost; steam does not enter the cup; it is always cool; warranted to give satisfaction. Patented February 14, 1871. Manufactured by California Brass Works, 126 First street, S. F. 24v23

ROOT'S "SAFETY" BOILER

MANUFACTURED BY THE

Abendroth & Root M'f'g Co.,

BROOKLYN, N. Y.

THE ROOT WROUGHT-IRON SECTIONAL SAFETY BOILER has been improved and perfected by Eight years experience, and the sale of

Over 1,500 Boilers,

for all purposes. Is perfectly safe from Destructive Explosion, all parts easily accessible for cleaning, **Utmost Durability, Highest Economy in Fuel, Reasonable Price.** Working portion composed of **Wrought-iron Boiler Tubes, tested to a pressure of 500 pounds per square inch.** Steam from cold water in from *ten* to *twenty* minutes.

We refer to the following parties, among others, who are using the Root Safety Boilers:

H. F. Williams.....San Francisco, Cal
Humphrey & Mook.....Millerton, Cal.
Parko & Bowie.....Virginia City, Nevada.
Choilar-Potosi Mining Co.....Virginia City, Nevada.
Union Mill & Mining Co.....Gold Hill, Nevada.
Belchor Silver Mining Co.....Gold Hill, Nevada.
Imperial Mining Co. (170 h.p).....Gold Hill, Nevada.
J. B. Montgomery.....Portland, Oregon.

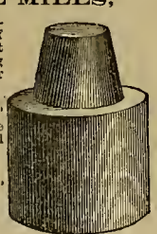
Send for Circular and Price List.

J. CURLE, Gen'l. Agent for Pacific Coast,
No. 513 Montgomery St., San Francisco.

STEEL SHOES AND DIES
FOR QUARTZ MILLS,

Made by our improved process. After many years of patient research and experiment we have succeeded in producing STEEL SHOES AND DIES for QUARTZ MILLS, which are unequalled for *Strength, Durability* and *Economy.*

Die.


Shoe.

Will wear three times longer than any iron Shoes.

BUILDERS AND CONTRACTORS

Of Quartz Mills, Pans, Separators, Concentrators, Jigs, Hydraulic Rock Breakers, Furnaces, Engines, Boilers and Shafting, and General Mining Machinery in all its details, and Furnishers of Mining Supplies.
All orders promptly filled.

MOREY & SPERRY,
88 Liberty street, N. Y.
Examination solicited.

STEAM ENGINES & BOILERS

From 3 to 75-horse power. Shafting, Pulleys, Hoist Gears Quartz Mills, Water Tanks, Spanish Arastras, Pumps and Pipes, Hepburn and Belden Pans, and all kinds of Machinery for sale at lowest prices by

THOS. P. H. WHITELAW,
266 Brannan street, S. F

Highest cash prices paid for all kinds of Machinery.

Improved Cast and Forged Steel Shoes and Dies for Quartz Mills.

[PATENTED MAY 26TH, 1874.]
Price Reduced to 16 Cents Per Pound.
SAN FRANCISCO, November 10th, 1874.

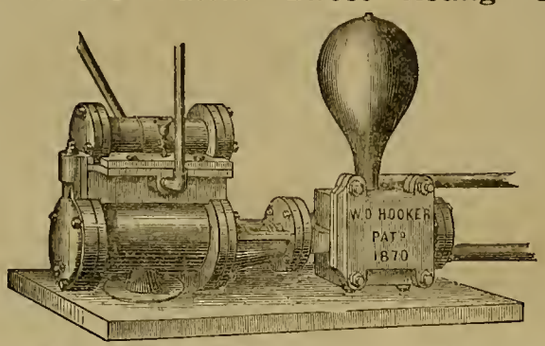
To Supts. of Quartz Mills and Mining Men generally:

We take pleasure in stating that owing to the rapid increase in our orders, our Pittsburg Manufacturers have been compelled to add largely to their works—a new gas furnace and heavier trip hammer—and are thus enabled to reduce the cost of steel and at the same time produce SHOES AND DIES superior to any yet manufactured. We have consequently reduced the price to 16 cents per pound and solicit a trial order, guaranteeing that you will find them at least 10 per cent. cheaper than the best iron. There are no STEEL SHOES AND DIES made excepting under our patent and sold at this office, or by our authorized agents, though certain Eastern manufacturers advertise STEEL SHOES AND DIES which are only cast iron hardened by the addition of a composition. They will not out-wear two sets of common iron, though called steel. They are very brittle and are not capable of being tempered, flying from under the hammer like cast iron. Our STEEL SHOES AND DIES are in use in many of the largest mills on the Pacific Coast, and all who have tried them pronounce them cheaper and far superior to iron in every respect, even at the old price of 20 cents per pound. Their advantages over iron are cheapness on first cost, increased crushing capacity, time saved in changing and in setting tappets, increased value of amalgam by absence of iron dust and chippings, and a saving of 75 per cent. in freight. It takes 50 days to fill orders from the manufactory East. Price 16 cents per pound shipped at San Francisco. Terms liberal.

Address all orders, with dimensions, to W. R. Townsend, Secretary.

1v29-3m **CAST STEEL SHOE & DIE CO., Room 4, Academy Building, S. F**

Hooker's Patent Direct Acting Steam Pump.



W. T. GARRATT,
Cor. Fremont & Natoma streets, S. F.,
Sole Proprietor & Manufacturer for the Pacific Coast.

SIMPLE, CHEAP AND DURABLE.

Adapted for all purposes for which Steam Pumps are used.
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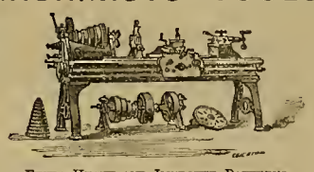

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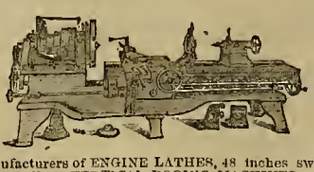

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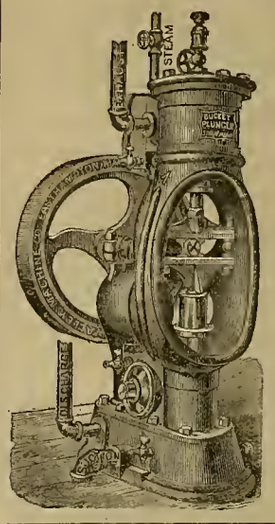

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Anaheim, Cal., October 12, 1874.

(Continued from Page 297.)

sessions, and our labors hsvs been srdnons, disagreesble snd difficnlt, snd msde especially ao by the refusal of Mr. Pesrson to allow tbe committee free access to tbe books, papers snd voncbers, and by his refnsal to meet with us or give ns ia any way information relative to tbe working of ths mine, which was justly due na as atockholders.

Ws think, howevsr, thet the fscts snd information wa propose prssenting will be of sufficient importance to enable you to take necessaary measnrea to redress your jnat causes for grievsnce.

Ths abstrsct of msttera of record wss taken from the minnte books in ths office of the company, and wonld doubtless be mucb fuller and more complete hed the ordera given hy Pearson to allow no frntaer copies to be mads not been so faithfully carried out. We give yon, however, brief sbatracts of ths minntes of nesrly every meeting held whersin snything of importance was done from ths time of tbe incorporation of the Woodville gold snd silver mining company down to the preaent.

History of the Company.

We find that the Woodville gold snd silver mining company was incorporated May 6th, 1872, with a capital stock of $2,800,000, divided into 28,000 shsrea of a par value of $100 sach, and thst the following named gentlemen were ita trustees, viz.: J. A. Pritcherd, M. D. Townsend, W. H. Sears, W. F. Myres and Cbarlss Jonea. Batween this meeting and one held October 9th, 1874, nothing of importance transpired, but in order that we might show you the time and date thet J. W. Pearson first became connected with the mine as a truatee, we were obliged to trace the miantes through, which brings us to the meeting of October 9th, 1874, when the cepital atock of the company was increasad from the sum of $2,800,000 to $6,000,-000. At the time of this increase or watering, the trusteea were John W. Pearson, G. D. Roberts, and Wm. Sherman, witb two others, whose namea we did not get. John W. Pearson was president, end Wm. Helman, secretary.

On the 14th of January, 1875, tbe Woodville Consolidated silver mining company, and known to some as "Paarson'a Bonanza," was incorporated, with a capital stock of $12,000,000 divided into 120,000 shares, with Wm. Sherman, Robert Sberwood, J. R. Lee, J. S. Wall, and H. G. Maynard es trustees. We beg of tbese of yon who mias tbe name of Pearson from tbe directory, not to think for a moment that he is not tbere, for from the evidence which ia continnally fonnd, he seems to be head and foremost in every important measure connected with tbe mine.

Jannary 20, 1875, another meeting was held, the minutea of wbich show the following disposition of a portion of the 120,000 shares of the Woodville Consolideted. At tais meeting it was voted to issue to the following nemed companies 47,500 shares, on their execnting to this company a good and anfficient deed, said shares to be isaned as follows:

Blue Ledge Company	6,000 shares.
Rogers Company	6,000 shares.
Perieman Company	8,000 shares.
Coso or Surplus Company	8,000 shares.
North Woodville Company	6,000 shares.
Sonth Woodville Company	7,500 shares.
Ramsdell Company	6,000 shares.

In addition to thia, it was voted to issne 60,-000 ahares, or one-half the capital stock of this company, to the Woodville Silver Mining Co., (Jobu W. Paaraon, preaident,) on their deeding to this company tbeir aole and entire property. The balance of the 120 sharea is unaccounted. Pinned to the minntes we fonnd a memorandum made in pencil, as follows: "Hyde, Barrett, Ramsdell and Ambross got 6,600 shares, instead of Ramsdell 6,000, as per book, and signed 'Pearson.'" It appears that while tbe meeting disposed of their vote of bnt 47,500 sberea to tbese outside companies, that one compsny whoae portion was bnt 6,000 shares got, as Mr. Pearson's memoranda reads, 600 sharea more than belonged to them.

How the Shares Went.

It will perhaps be remembered by many, if not ell of yon who were present at the meeting held in tbe police coart rooms, Oct. 9th, tbat Mr. Pearson stated that the Woodville Conaoli dated had purchased but one outside claim end that was purchesed on the advice of the attorneya of the company; and yet yon will notice by tbe records that instead of but one claim being purchased, our stock was issued to seven different compenies for and in consideration of their executing to this compauy good and sufficient deeds, etc. There seems to be a question of veracity between Pearson and the records, with every evidence of the records being ahead; hnt worse thnn this is the faot tbet these purchases are entirely valueless, and evidence can be produced to prove this and will be submitted whenever you see fit to take this matter into tbe oourts.

Tbese pnrchasea ehow the disposition of the Woodville Consolidated atock aa follows:

Forty-eight thousand one bnndred sha es for worthless property nnd 60,000 sharea for Woodville G. & S. M. Co., the stock of which was issued to John W. Pearson, leaving still unaccounted for 11,900 shares.

Fully appreciating the anxiety you might feel to know who the Messrs. Hyde, Barrett, Ramsdell & Ambross were, to whom 6,600 abares were issued, instead of tbe 6,000 sbares aseigned to Ramsdell, as per tbe minntes of the meeting, we tried to ascertain, but are sorry to report not even progress, and can only refer you to Mr. Pearson, who must know them, elae he wouldn't have been so liberal witb the atock as to have given them 600 shares more than ths meeting voted to issue to tbem.

Jsnusry 27, 1875, J. S. Wall resigned as trnstee, and John W. Pearaon waa elected in hia stead.

At thia meeting the president and secretary were instructed to issne 60,000 shsrea of its cspital stock to ths stockholders of ths Woodville gold and silver mining compsny, *pro rata*, and the secrstary was instrncted to deliver ssid stock so issusd *pro rata* to the stockholdera of said Woodville gold and silvsr mining company, in exchange for the sbarea held by thsm, and to cancel asid stock as soon as received.

March 25, 1875, ws find record of sn amendment to the meeting of January 27th, sa follows: The president snd secretsry of the Woodville Consolidated silver mining compsny shall st once isane to the president snd secrstery of the Woodville gold and silver mining company 60,000 shares of its cspital stock, to be by them distributed to the atockholders of said Woodville gold and silver mining compsny.

The original motion, Janoery 27th, was that the president and secretary of the Woodville Conaolidated wers instructed to isaue the 60,-000 sharsa to ths atockholdera of the Woodville gold and silver mining company, and ths smendment provides thet tbey shall issue it to tbe president (John W. Pesrson) and secretery, to be distribnted by them to those stockholdera.

There may be no particular difference; but if not why was anch an amendmsnt offered nearly sixty daya afterwards? At thia aame meeting Mr. Pearson made a motion, which waa aeconded by Williem Sherman, that the president and secretary were anthorized to issne the company's promissory note for belance dne on note dua the Woodville gold and silver mining company, which was held by the National Gold bank and trust company, amonnting to $30,-000 and interest. How tbis company became interested in this note, or why such promissory note was issued by this compeny, is a matter which, together with many others connected with the manegement of this company, we trust yon will aee fit to take into the conrt.

On motion of Mr. Lee, seconded by Mr. Pearson, assesement No. 1, of $1 per ahare, was levied npon the capital atook of the company, amounting to $120,000.

How Pearson Worked the Mine.

April 12, 1875, on motion of Mr. Lee, seoonded by Mr. Maynard, it waa resolved that the president and secretary be anthorized to issue the company's aixty-day note in favor of John W. Pearson, in settlement of balance dne him at this dete aa treasurer, amounting to $93,-425.11. Tbis is another matter, and of no small importance to yon, that should be ventileted in the courts.

With the shaft down less tban 600 feet, the last 100 feet of which was let by Mr. Crossman, the superintendent, for $30 per foot, it is not quite easy from the data wa have to aacertain how tbe company became indebted to tbe treasnrer, Mr. Pearson, in the snm of over $90,000. And yet it don't end here; for May 13tb, 1875, jnst thirty deys after, we find the president and secretary are suthorized, on motion of this same Mr. Lee, to issue the company's ninety-day note in favor of John W. Pearson for $51,958.56, tbe amount due him as traasnrer at this date, at a rate of interest not to exceed one and one-half per cent. per montb.

Within thirty days the company's notes were issued to John W. Pearaon for tbe snm of over $140,000.

The only record of any expenditnres being made during this time of more than ordinary was this, wbich was found spread npon the minutes of the same meeting, *i. e.*: *Resolved*, that the contract entered into on behalf of the company by Superintendent Crossman, for sinking 100 feet of shaft at $30 per foot (contractors to pay the company's chief engineer), be and the seme is ratified, and tbat the bookkeeper at the mine be inatrncted to obtain a copy of the contract end forward to this office forthwith.

The contract for $30 per foot, owing to the independent action of Superintendent Crossmen, saved you $60 per foot, or $6,000, as J. H. Pearson stated to Mr. Crossman tbat he hed made arrangementa with his brother, John W. Pearson, to take the shaft at $90 per foot. This action on tbe pert of Mr. Crosaman accounts for the motion made at a later meeting that tbe superintendent be probibited from making contracts in bebelf of the company without the consent and approval of the Boerd of Trnstees, and, still furtber or later, the motion by Mr. Pearson tbet Superintendent Crossman'a salary be discontinned from July 1st, etc.

Mr. Sberman moved that the foreman be discharged, and that the book-keeper, Mr. J. H. Pearson, be instructed to act as foreman in the absence of the superintendent.

Motion of Sherman aod seconded by Mr. Pearaon, it was resolved that the superintendent is hereby anthorized to make all necessary porohesea of material for the sinking of 100 feet of shaft, and send bille for ssme, npproved by himself, to the book-keeper, J. H. Pearson, for payment, who alone is autborized to receive all moneys and make all disbnrsements.

Mr. John W. Pearson, as treasurer, located in San Francisco, and bis brother, J. H. Pearson, as financial agent, at Gold Hill, ought to have given the Pearson family very nearly supreme control of the financea, and there can be bnt little doubt, from appsarsncea, that it did.

Tracing the Records.

Upon motion of Mr. Sberman it waa reaolved that the anperintendent be prohibited from making contrscts in behslf of ths compeny witbout the consent and approvsl of the Bosrd of Directors. June 25th, 1875, on motion of Mr. Pearson, it wsa resolved tbat while the compauy is only sinking its shafts, the wbole concern shall be run and msnsged by tbis Bosrd, and ths company'aforemsn, J. H. Pearson, and tbat Snperintendent Crossman's salsry be discontinued from July 1st next, until such time as this Bosrd shall order him snd hs doss take possession of the compsny's mine snd mills. This movs on ths part of Mr. Pearson is the only ons connected with his managemsnt tbet ws can find that savors in the least of a disposition to do hia duty by the stockholders, and is moat likely accounted for by the fact that it wsa a promotion for his brother, J. H. Peareon. On motion of J. W. Psarson, it waa resolved thet assessment No. 2, of 60 cents per ahsrs, be levied upon the capital stock, amonnting to $72,000.

July 9th, 1875, on motion of Mr. Pearson, H. G. Maynsrd's seat as trustee was declsrsd vacsnt, by rsason of his fsilnre to place atock in his nams on ths booka of the company, and E. M. Seaton was elected in his stead.

On motion of Mr. Seston it was resolved thet the company purchsse of J. B. Hsggin as per his commnnication to thia Board of the 8th instent—on fils—certsin 53,235½ sharea of the capital stock of ths South Woodville mining company for $75,000 cash, provided that said J. B. Heggin furnishea the balance entire of tbe capital stock of the said South Woodville to this company, together with said South Woodville mining company's deeds, tranaferred to this company for the South Woodville mining company's one-third interest in the new shaft and machinery of the Woodville Consolidated silver mining company, and for that certain mine owned by said Soutb Woodville mining company, known as the Periman mine, and all property, interest and claima of seid South Woodville mining company in the State of Nevada, and that this company psy said $75,000 for aaid ahaft and machinery, mines and claims, and not for aaid stock, which atook thia company will only accept to protect it in the purchase of aaid mines and other property, togetber with good and sufficient deeds from Rogers, Hyde and Barrett for all their intersat not conaolidated. Yonr attention is called to that portion of this proposition made by Mr. Seaton so aoon after hia election aa trustee, which relates to one-third interest which the Sonth Woodville has in the new shaft and maohinery of the Woodville Consolidated, and we heg to suggest that in tbis transaction alone can be fonnd "food for tboughtful people," to aay the leest.

On motion of Mr. Pearaon, John Rowe, D. M. Seaton and Preaident Lee were appointed a oommittee to borrow, for the use of the company, to pay for tbe purchase of the Sonth Woodville company's property, $75,000, interest not to exceed two per cent. per month; and the president and secretary were autborized to issue the compeny's promissory note therefor; and that tbe said committee ahall receive and deliver to this compauy good and sufficient deeds for the claims purchased, and pay aaid money therefor.

August 21at, on motion of Mr. Pearson, it was resolved, tbat assessment No. 3 of $1 per share be levied npon each and every share of the capital stock, amonnting to $120,000; which amount, as fonnd by the booka wben examined, together with the amounts of the two previous assessments, in all $312,000, has been paid into the hands of Mr. Pearson, as treasurer.

Up to Date.

Up to this time, August 21st, 1875, and since March 25th, or within six months, you, as stockholders, have been called upon and have paid into the hands of John W. Pearson the sum of $312,000, and within the same time given the notes of your company to him for over $140,000, for balances due him as Treasurer.

In addition to this, from information which we think can be reduced to legal evidence, there hea been shipped to this city from the Woodville Consolidated mine over $130,000 in bullion. Per contra, can any one tell us tonight wbere we, as stockholders, have received a considsration for our money? What developments or improvements have been made that warrant any such expenditures? Is there any reason why you should longer submit to what appears to be extortion in the fullest senee of the word? And yet this system of mauagement does not end here, for on September 17th, 1875, a contract was entered into between Risdon, Rogers & Co. and the Woodville Consolidated mining company to furniah pumping machinery, engines and boilers on the gronnds of the company at Gold Hill, Nevada. Tbe oontract covenants, agrees and binds itself and futnre management to pay Risdon, Rogers & Co. $65,000, gold coin, 90 per cent. to be paid at the end of each month for labor and materiel as furnished; and as security, said company covenants and agrees that said Risdon, Rogers & Co. may enforce the same by law or by serving a written notice on said mining company'a superintendent or president; tbat if said payments in arrears are not made good within five days of said notice, tbat said shafts, grounds, machinery and sufficient gronnde aronnd the shaft to complete and operate the same to suit the purposes of the purchaser to operate said mine and other uses, shall be sold.

Ssid ssle to bs made, by posting notice on said shsft snd mining material five dsys, to ths higbest bidder for cash, snd said asle shall be final and have no right to redeem; and it is bereby agreed tbat Risdon, Rogers & Co. mey sell out their interest one to another, and that no member of the preaent or fnture managsment shall be held personally responsible. All extra materisl furnished or labor performed shall be psid by said company.

Ws submit this contract ss a model one of its kind, snd point out to you one of its beanties. It provides that Mr. Risdon may sell his intereat to Mr. Rogers, who then hsa control of tbe contract, and which, according to its rssding, might at any time place the whole property in ths hands of Mr. Rogers; and when we tell you that Mr. Rogers is the father-in-law of Mr. Pearson it will not be difficult for yon to draw conclusiona, which ought to satisfy yon es to whether or not it is for your interest to allow the present msnegement to continue.

October 29th tbe secratary was instructed to pay Perlman $1 25 per share for all Sonth Woodville mining stock hs may present.

In ths absence of any further information rsgerding this movs, the srrsngsmsnt appeara to be another "job." Whether it is or not is a subject for future oonsidaration. At the same mesting Messrs. Cnrtis and Mather, who wers selected by yon to act with us sa an investigeting committes, were elected as trustees of ths company by Mr. Pearaon. Mr. Pearaon made tha following propoaition by letter:

Gentlemen:—I propose to cell a meeting of the directors of the company to-morrow, at 11 o'clock A. M., at which two of our trnatees will resign, and we will elect two of your commitee in their atead as trusteea, who can and shall have full acceas to the company'a affaira; and when your committee'a trustees have reported on the company'a affaira, if they discover dishoneet management on the part of the trusteea I will join in calling a stockholder'a meating or a new election. This action on my part to atay all actions and proceedings of committee till yonr trustees and committee report. Signed,

JOHN W. PEARSON.

The Difficulties of the Investigation.

This proposition waa accepted by the committee, except the final clause, agreeing to snspend legal proceedings, under the impression at the time that it would aid us in getting at what we were appointed to ascertain, and when we tell you that up to tbia time (fonrteen days since their appointment) these two trustees have furnished us with no information or done anything that haa in tbe least furthered our efforts, you will understend something of the neture of the arrangement we were foolish enough to make by accepting Mr. Pearson's proposition.

We had hoped and expected to have been able to preaent you with such abstracts of the accounts as wonld ahow disbursemente, eto., from wbich could be deduced tbe finanoial condition of the company; but aince we cannot work up the booka, we cannot give yon these facts. We know this, however, that since thia investigation begen, counsel to fight your interest has been engaged, as followa: Two firms are paid $7,500 per year, a retainer of $250, and another of $1,000, with a further provision of $1,500; and all of these yon are paying for.

From the very best anthority we are informed tbat the mine ia worth $25 per share in thia market, and would, if managed honeatly, and by men in whom the public hed confidence, be selling for tbat to-dny.

When the inveatigation began, the stock was wortb 87½ cents per share, and is aelling to-day for — per share. This increase in price is not owing to any increased value of the mine, but is attributable wholly to the fact tbat people who know anytbing of the mine are taking the aherea largely, with the hope and expectation that the results of our investigation will be tbe means of giving the company another board of trnstees, in whom they might have confidence, wheu the stock would take its proper place npon the market and sell for nearer its troe valuation. Tbere ia uot snother stock npon the market to-day tbat ia so generally held by laboring people and in small lots as this is, and with this fact so well known by Mr. Pearaon aud his managers, it has been easier to bleed the stockholders in the way of assessments than it migbt have been otherwise. With the facts and figures we bave beén able to present you, we are satisfied that the management is fraudnlent; but we do not wish you to understand tbat we reach tbis conclusion wholly from the facta we bave presented to you to-night. We are in possesaion of such information as can only be divulged in the eoorts, and which we believe to be of sufficient importance to forever damn the present management of the Woodville Consolidated silver mining company. The air is filled with rnmors tbat another asaossment is to be levied, and that Pearson proposes aelling you out to the Justice people, etc.

The Consolations of the Action Taken.

With your co-operation we can soon pnt Mr. Pearson ont of tbe channel of levying assessments or selling to Justice the stock or property of the Woodville mine; and our labors are not to end here, aa the stand we have taken and the fight we have made have been the means of awakeniog the people to a sense of their weakness in longer anbmitting to systematic swindle by snch men as this Mr. Pearson, and in tbe many letters received by ua from nearly every town of importance in this State, as well as Nevada, we were thenked for the course we had taken, and begged to go on and carry the matter to an isane, which could not be other

than successful. Our treasnrer, Mr. Johnson, has prepared and had printed a circular letter, which explains what is necessary in order to ascertain the strength of the stockholders, and has also had printed a blank proxy, and these have been distributed throughout the State where stock is known to be held. This method seemed the best one of getting at the stockholders ont of the city, and we have good reason to believe will accomplish all that we can expect or hopo for There havo been expenses attending this investigation which to the present (if wo may except a few dollars raised at the stockholders' meeting) has been met hy the members of this committee; and in order that we may push the matter to a successful issue, and get our rights as stockholders, money must be raised to meet the expense. Various ways have been auggosted to raise the funds necessary, and the snbject is one to which your attention and consideration is called with the hope that it may be discnssod and finally arranged at this meeting.

From all our findings we are enabled to tell you that the condition of the property you are interested in (ontside the managoment) is eminently satisfactory, and assnre you that all that is necessary to place it among the first of its class is to oust the Pearson dynasty, and elect instead an honest Board of Trustees. Will you stand hy us and give us yonr aid, to the end that the property you have invested yonr money in, and which, owing to Pearson's manipulation, is next to worthless, may be wrosted from his management and placed where it belongs, and that he be compelled to disgorge all properties of the company that he has nnlawfully appropriated back into the hands of the company, thereby giving yon a chance to get a consideration for yonr money. We close this report by thanking you for your kind attention to its reading, and trusting onr efforts in yonr behalf may be correctly appreciated, and our failures kindly criticized, and sign ourselves. Respectfnlly, yours,

Michael Hayes, E. T. Kennedy, John W. McCormick, L. Summerfield, J. A. Crossman, T. Rodgers Johnson, A. P. Needles, N. P. Brook and E. A. Grow.

We concur with some of the above conclusions in the above report, but not all.—Edward Curtis, F. G. Mather.

Curtis and Mather are the two trustees selected by Pearson from the investigating committee.

The report was received with applause and adopted by a nnanimons vote. Mr. Curtis of the Committee resigned and Mr. Mather was requested hy a vote to do the same. In their stead Thomas V. O'Brien and Dr. D. S. Hutchinson were appointed and the committee continned. An assessment of ten cents per share was levied to carry the case into court, if necessary, and the meeting then adjourned to meet next Wednesday evening.

SALIVATED.—During the Virginia fire many persons who happened to be in that part of the city lying to the eastward of the Consolidated mill, at the time it was burning, were salivated by the fumes of mercury wafted through the air. Several tons of quicksilver were wafted away on the air while the mill was hnrning.

PATENTS & INVENTIONS.

A Weekly List of U. S. Patents Issued to Pacific Coast Inventors.

FROM OFFICIAL REPORTS FOR THE MINING AND SCIENTIFIC PRESS, DEWEY & CO., PUBLISHERS AND U. S. AND FOREIGN PATENT AGENTS.]

By Special Dispatch, Dated Washington D. C., Nov. 2, 1875.

FOR WEEK ENDING OCTOBER 19TH, 1875.*

TRACTION WHEEL.—William O. M. Berry, S. F., Cal.

CARBURETER.—Louis Marks, S. F., Cal.

STEAM BOILER INDICATOR.—Andrew Moon, S. F., Cal.

VERMIN EXTERMINATOR.—Valentine Schmidt, S. F., Cal.

PROCESS OF MAKING POISONOUS COMPOUNDS FOR DESTROYING GOPHERS, SQUIRRELS, ETC.—Jas. G. Steele, S. F., Cal.

GUARD STRAP FOR SHAFTS AND STRAP COUPLINGS.—Jas. Weatherhead, San Jose, Cal.

*The patents are not ready for delivery by the Patent Office until some 14 days after the date of issne.

NOTE.—Copies of U. S. and Foreign Patents furnished by DEWEY & Co., in the shortest time possible (by telegraph or otherwise) at the lowest rates. All patent bnainess for Pacific coast inventors transacted with perfect security and in the shortest possible time.

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PATENTS obtained promptly; Caveats filed expeditionsly; Patent reissues taken out; Assignments made and recorded in legal form; Copies of Patents and Assignments procured; Examinations of Patents made here and at Washington; Examinations made of Assignments recorded in Washington; Examinations ordered and reported by Telegraph; Rejected cases taken up and Patents obtained; Interferences Prosecuted; Opinions rendered regarding the validity of Patents and Assignments; every legitimate branch of Patent Agency Bnsiness promptly and thoroughly conducted.

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The shrewdest and most experienced Inventors are found among our most steadfast friends and patrons, who fully appreciate our advantages in bringing valuable inventions to the notice of the public through the colnmns of our widely circulated, first-class journals—thereby facilitating their introduction, sale and popularity.

Foreign Patents.

In addition to American Patents, we secure with the assistance of co-operative agents, claims in all foreign countries which grant Patents, including Great Britain, France, Belgium, Prussia, Anstria, Victoria, Peru, Russia, Spain, British India, Saxony, British Columbia, Canada, Norway, Sweden, Mexico, Victoria, Brazil, Bavaria, Holland, Denmark, Italy, Portugal, Cnba, Roman States, Wurtemberg, New Zealand, New South Wales, Queensland, Tasmania, Brazil, New Grenada, Chili, Argentine Republic, AND EVERY COUNTRY IN THE WORLD where Patents are obtainable.

No models are required in European countries, bnt tho drawings and specifications should be prepared with thoroughness, by able persons who are familiar with the requirements and changes of foreign patent laws—agents who are reliable and permanently estahlished.

Our schednle prices for obtaining foreign patents, in all cases, will always be as low, and in some instances lower, than those of any other responsible agency.

We *can and do* get foreign patents for inventors in the Pacific States from two to six months (according to the location of the country sooner than any other agents.

The principal portion of the patent business of this coast has been done, and is still being done, through our agency. We are familiar with, and have full records, of all former cases, and can more directly judge of the and patentability of inventions discovered here than any other agents.

Situated so remote from the seat of goverment, delays are even more dangerons to the inventors of the Pacific Coast than to applicants in the Eastern States. Valuable patents may be lost by extra time consumed in trans mitting specifications from Eastern agencies back to this coast for the signature of the inventor.

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We take great pains to preserve secrecy in all confidential matters, and applicants for patents can rest assured that their communications and business transactions will be held strictly confidential by us. Circulars free.

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Our long experience in obtaining patents for Inventors on this Coast has familiarized us with the character of most of the inventions already patented; hence we are frequently able to save our patrons the cost of a fruitless application by pointing them to the same thing already covered by a patent. We are always free to advise applicants of any knowledge we have of previous applicants which will interfere with their obtaining a patent.

We invite the acquaintance of all parties connected with inventions and patent right business, believing that the mutual conference of legitimate business and professional men is mutual gain. Parties in doubt in regard to their rights as assignees of patents, or purchasers of patented articles, can often receive advise of importance to them from a short call at our office.

Remittances of money, made by individnal inventors to the Government, sometimes miscarry, and it has repeatedly happened that applicants have not only lost their money bnt their inventions also, from this cause and consequent delay. We hold ourselves responsible for all fees entrusted to onr agency

Engravings.

We have superior artists in our own office, and all facilities for producing fine and satisfactory illustrations of inventions and machinery, for newspaper, book, circular and other printed illustrations, and are always ready to assist patrons in bringing their valuable discoveries into practical and profitable use.

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A. C. CHAMPION—Tulare, Fresno and Inyo Counties.

JOHN ROSTRON—California.

A. C. KNOX, California.

G. W. MCGEEW—Santa Clara county.

CHAS. T. BELL—California, Oregon and W. T.

D. J. JAMES—Australian Colonies.

CHAS. T. BELL—Montana, Utah, Idaho and Nevada.

C. K. LAWTON—Santa Barbara County.

SUTTER CREEK, February 26th, 1875.

MESSRS. DEWEY & CO.—I have received my Letters Patent through your Aagency. nd, for your prompt nsss, accept my thanks. Yours, S. N. KNIGHT.

At a Stated Term of the Circuit Court

of tha United States of America of the Ninth Jndicial Circuit in and for the District of California, held at the court room in the city and county of San Francisco, on Thursday, tha 30th day of September, in the year of our Lord one thousand eight hundred and seventy-five. Present—The Honorable Lorenzo Sawyer, Jndge.

Nicholas Seiberi, complainant, vs. Wm. T. Garratt, defendant—In equity.

DECREE.

This cause cama in to be heard at tha February Term, A. D. 1875, of this Conrt and was argued by counsel and thereupon npon consideration thereof, it was ordered, adjudged and decreed, as follows, viz: That defendant, William T. Oarratt, was not the first or original inventor, or discoverer of the improvement or discovery olaimad by him, in and by thosa certain raissned letters patent of tha United States, number five thousand three hundred and twenty-sight (No. 5328), for an alleged new and useful improvement in lubricators, issued to said defendant, William T. Oarratt, on the 18th day of March, A. D. 1873, and is not antitled to a patent therefor, and that said reissned letters patent, number five thousand three hundred and twenty-eight (No. 5328) are declared void and the same are hereby vacated and set aside by reason of their interference with those certain letters patent of the United States, number one hnndred and eleven thousand eight hnndred and eighty-one (No. 111,881) for a new and useful improvement in lubricators, issued to complainant, Nicholas Seiberi, on the fourteenth (14th) day of February, A. D. 1871.

It was also furiher ordered, adjndged and decreed that complainant do have and recover of and from defendant his costs and expenses to be taxed herein.

(Signed) LORENZO SAWYER,
Circuit Judge,

The shove decree has reference to "Seibert's Eureka Lubricator" for oiling the valves and cylinders of steam engines.

It has a glass gange and condensing pipe, or reservoir, with a regulating feed valve, and works as follows: As the water of condensation is admitted, under the oil, just so fast the oil passes out at the top through a pipe into the steam pips to oil the valves and cylinder.

Parties who infringe or purchase the infringed lubricators, will be held strictly responsible.

N. SEIBERT, Patentee,
125 First Street, S. F.

Mining and Other Companies.

Cloverdale Mining Company — Location

of principal place of business, San Francisco, California. Location of works, Cinnabar District, Sonama County, California.

Notice is hereby given, that at a special meeting of the Stockholders, held on the fifteenth day of October, 1875, an assessment, (No. 3) of two hnndred dollars per share was levied upon the capital stock of the corporation, payable immediately, in United States gold coin, to the Secretary, at the office of the company, No. 306 Clay street, San Francisco, California.

Any stock upon which this assessment shall remain unpaid on the 18th day of Novemher, 1875, will be delinquent, and advertised for sale at public anction, and unless payment is made before, will be sold on Thnrsday, the 16th day of Decemher, 1875, to pay the delinqnent assessment, together with costs of advertising and expenses of sale. ED. B. PARTRIDGE, Secretary.

Office, Na, 306 Clay street, San Francisco, California.

Hope Quicksilver Mining Company—Location

of principal place of business, San Francisca, California. Location of works, Cinnabar Mining District, Sonoma County, State of California.

Notice is hereby given, that at a regular meeting of the Board of Directors, held on the 2d day of Auguet, 1875, an assessement (No. 2) of Five cents per share was levied upon the capital stock of the corporation, payable immediately, in United States gold coin, to the Secretary, at the office of the compan Room 2, No. 408 California street, San Francisco, Cal.

Any stock upon which this assessment shall remain unpaid on the 9th day of September, 1875, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Thursday, the 30th day of Septemher, 1875, to pay the delinquent assessement, together with costs of advertising and expenses of sale.

JACOB HARDY, Secretary.

Office, Room 2, No. 408 California street, San Francisco California.

POSTPONEMENT.—The date of the delinquenov of the shove assessment is postponed to the 8th day of October, and the date of delinquent sales to November 1st, 1875.

By order of the Tustees. J. HARDY, Secretary.

September 8, 1875.

SECOND POSTPONEMENT.—The date of the delinquency of the shove assessment is postponed to November 9, 1875, and the day of delinquent sales to December 1, 1875. By order of the Board of Trustees.

JACOB HARDY, Secretary.

San Francisco, October 8, 1875,

Lake Mining Company — Location of

principal place of business, San Francisco, Cal. Location of works, Quicksilver Mining District, Napa county, Cal.

Notice is hereby given, that at a meeting of the Board of Directors, held on the 3d day of Novemher, 1875, an assessment (No. 4) of twenty dollars per share was levied upon the capital stock of the corporation, payable immediately, in United States gold coin, to the Secretary, at the office of the Company, Nos. 19 and 21 First street, San Francisco, Cal.

Any stock upon which this assessment shall remain unpaid on the sixth day of December, 1875, will be delinquent, and advertised for sale at public anction, and unless payment is made before, will be sold on Monday, the twenty-seventh day of December, 1875, to pay the delinquent assessment, together with costs of advertising and expenses of sale. R. F. KNOX, Secretary.

Office—Nos. 19 and 21 First street, San Francisco, Cal.

Orleans Mining Company—Location of

principal place of business, San Francisco, Cal. Location of works, Grass Valley Mining District, Grass Valley, Nevada County, Cal.

Notice is hereby given, that at a meeting of the Board of Trustees of said company, held on the 27th day of October, 1875, an assessment, No. 8, of two dollars per share was levied upon the capitel stock of said company, payable immediately in gold coin of the United States of America, to the Secretary, at the office of the company, room 8, No. 315 California street, in the city of San Francisco.

Any stock upon which said assessment shall remain unpaid on the 30th day of November, 1875, will be advertised on that day as delinquent, and unless payment shall he made before, will be sold on the 18th day of Decemher, 1875, to pay the delinquent assesement, together with costs of advertising and expenses of sale.

GEO. P. THURSTON, Secretary.

Office, room 8, No. 315 California street, San Francisco. Cal.

Peytona Gold and Silver Mining Company.

Location of principal place of business, San Francisco, Cal. Location of works, Virginia Mining District, Nevada.

Notice is herby given, that at a meeting of the Board of Directors, held on the 23d day of October, 1875, an assessment of five dollars per share was levied upon the capital stock of the corporation, payable immediately, in United States gold coin, to the Secretary, at the office of the company, room No. 11, 215 Sansome street, San Francisco, Cal.

Any stock upon which this assessment shall remain unpaid on the thirtieth day of November, 1875, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on the 18th day of Decemher, 1875, to pay the delinquent assessement, together with costs of advertising and expenses of sale. By order of the Directors. T. J. OWENS, Secretary.

Office—No. 11, 215 Sansome street, San Francisco, Cal.

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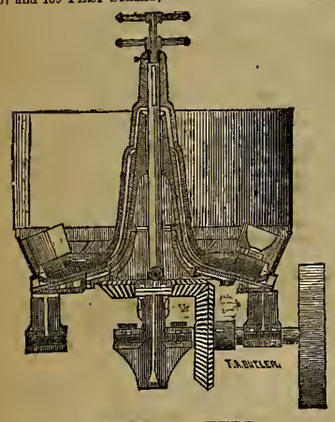

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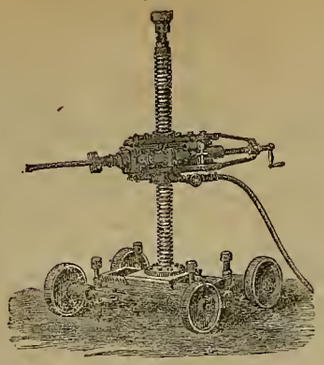

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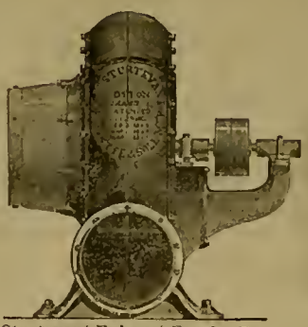

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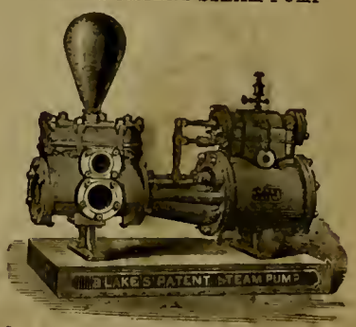

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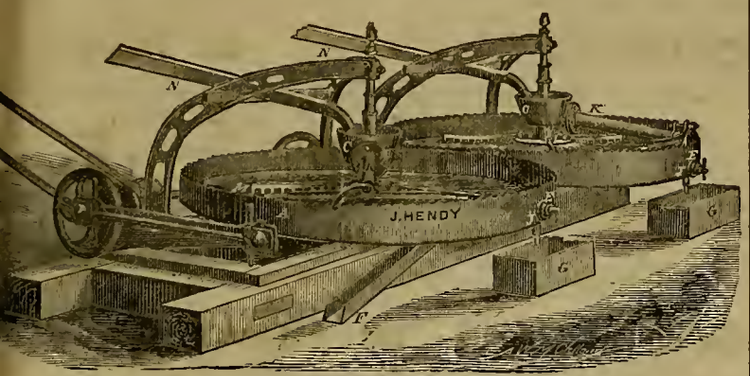

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JOSHUA HENDY, Esq.—*Dear Sir:*—As a practical miner and millman, I take pleasure in recommending the use of your Concentrators in all mills where gold or silver ores are reduced. No mills should be without them, for the following reasons:

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2d. The best Concentrator I have ever known—(the concentrated stuff only containing 5 per cent. of sand).
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I have been familiar with the workings of your Concentrators for four years past; have run them myself in the North Star Mine, Grass Valley; am familiar with their practical workings on the Empire Mine, Grass Valley, St. Patrick, Placer Co., St. Lawrence, El Dorado Co., Oaks and Reese, Mariposa Co., and most cheerfully give you this testimonial. For further information you are at liberty to refer to,

Yours respectfully, JAS. H. CROSSMAN, M. E.

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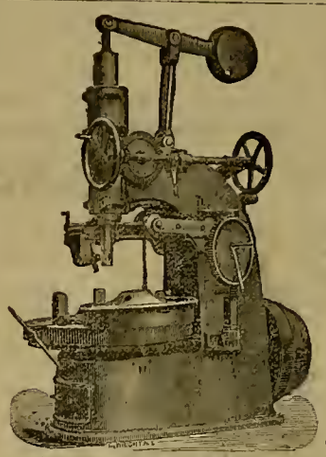

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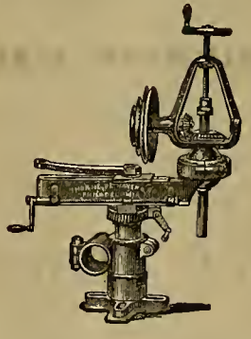

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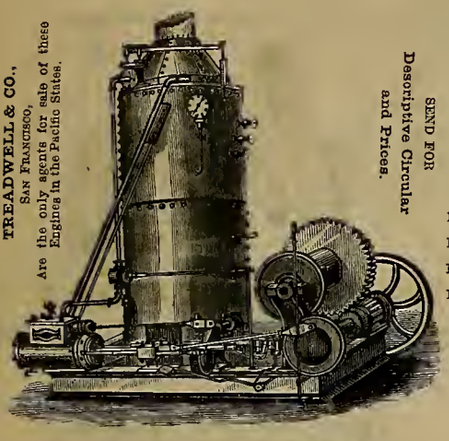

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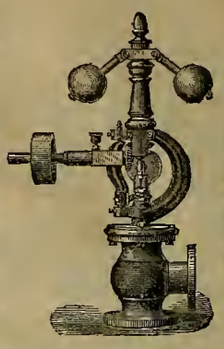

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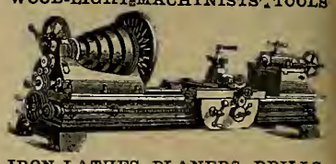

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MINING AND SCIENTIFIC PRESS.

An Illustrated Journal of Mining, Popular Science and General News.

BY DEWEY & CO., Patent Solicitors.

SAN FRANCISCO, SATURDAY, NOVEMBER 13, 1875.

VOLUME XXXI Number 20.

Small Steam Engines.

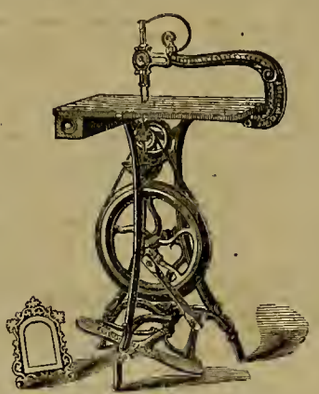
Mr. George Parr, of Buffalo, N. Y., who has spent many years in the construction of various useful tools, and especially small steam engines for light work, has constantly been making important improvements, and as a necessary consequence, has brought them to a high degree of perfection.

But the most important and useful step taken by him has been the manufacture of the different parts of small steam engines as rough castings, and their sale at low prices, so that each apprentice, young man, or even boy, who possesses a little mechanical skill, with the necessary simple tools, can easily trim and finish them without any assistance whatever. Mr. Parr thus confers a benefit upon all young men of a practical turn of mind, while many will be induced to try their hand at this pleasant as well as useful occupation. It is one of the most powerful contributions to the practical education of our youth, and Mr. Parr is so convinced of the usefulness and effectiveness of his attempts, and so willing to promote his liberal and enlightened views, that he offers to send his "Technical Guide" in most all practical trades, and which is illustrated with several hundred cuts of all kinds of tools and machinery, *free* to any young man who he thinks might be benefited by it, and even where a young mechanical genius may be awakened, also a set of these model engine castings free of cost.

We illustrate on this page three of these small model working engines. Fig. 1 is an engine and boiler complete, which is made in two sizes; the largest may be recommended as a useful and practical model, as it will drive a small lathe, scroll saw, or sewing machine; indeed, there are so many purposes to which an engine of this description might be applied, that it would be superfluous to enumerate them here. It is a horizontal slide valve engine and boiler. The boiler is of copper, and is on the vertical principle, ten inches in diameter and eighteen inches high, with steam cock, safety valve, two gauge cocks, glass water gauge, furnace and door. The cylinder is 1¾ inches in diameter, 2¼ inches stroke, connecting rod, parallel motion bars, solid forged crank, eccentric and rod, feed pump for boiler, iron fly wheel twelve inches in diameter, and brass driving pulley, planed cast iron bed plate on an imitation stone base. It may be had complete for $60, or the several parts unfinished at a lower price; the copper boiler costs $40, while the heating may be done by a spirit lamp or its equivalent.

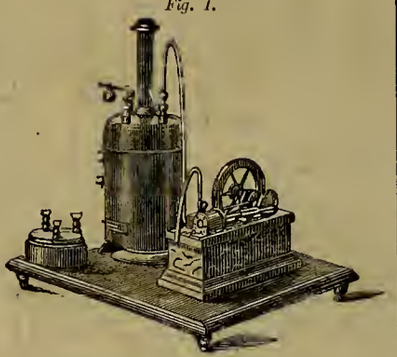
Fig. 2 represents a small working model engine, made in four sizes, the smallest of one-half inch bore and one inch stroke, the next of one inch bore and two inches stroke, and the largest of one and one-half inches bore and three inches stroke; while the complete set of castings of the smallest costs only $1, the largest, with its parallel guide-bars of brass, costs $4. Each of these sets will make the complete engine represented in Fig. 2. The castings for them are the delight of amateurs, as with very little trouble they may be wrought into the beautiful models herein described. Each part is truly proportionate, thereby rendering them, when complete, beautiful symmetrical models. They are all clean and well cast, and plain printed instructions for the guidance of purchaser will be sent with each set, and it is guaranteed that the most uninitiated will be capable of producing therefrom a good working model. They comprise the following pieces: cylinder, cylinder cover, cylinder bottom, piston, two stuffing-boxes, guide, slide valve case, two bearings, eccentric, eccentric band, forked connecting-rod, cross-head, driving-wheel, fly-wheel and slide-valve.

Fig. 3 represents a larger and more practical engine, for which the sets of castings may be had in three sizes—one and three-quarters, two or two and one-half inch bore, and three and one-half, four or five inches stroke. The engines made of these castings are compact, strong, powerful and economical, requiring no setting whatever, and are easy to manage; the iron is of the best quality and is highly annealed; the foundation plate on hollow tank, bearings or plummer blocks, two tops of the same, fly-wheel, driving-wheel, cylinder, cylinder cover, cylinder bottom, piston gear frame, two guide bars, slide-valve case, back of the same, two governors, piece for supporting the same, sliding cross-heads and eccentric are of iron; the force-pump, three glands (one each for cylinder cover), slide-valve case and pump, eccentric band, top of governor, top connecting-rod, and brushes for plummer-blocks are of gun-metal; two pulleys for governor, slide-valve, plunger for pump and throttle-valve are brass; the crank, connecting-rod, eccentric-rod, bed plate and cylinder are forgings.



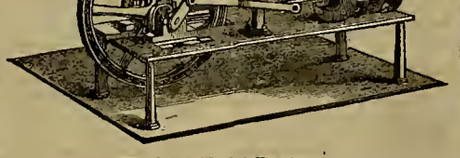
Small Foot Power Scroll Saw.

Fig. I.



Model Engine and Boiler Complete.

Fig. II.



Working Model Engine.

Fig. III.

Large Working Model Engine.

Battle Mountain.—C. W. Fraser, from Battle Mountain, informs the *Silver State* that things are pretty lively at the switch, and that the several mining camps in that vicinity are all turning out well. In Lewis district the Defiance company is putting up a fine mill. At Galena the Krom concentrator is working well, and the mines are producing a good deal of ore. In Bullion district the Eagle is proving to be a first-class mine, and Mr. Fraser thinks Battle Mountain is destined to become a great mining center, and as evidence of the faith that is in him, is building a brick store house, 30x100 feet, at that place.

A Bonanza.—Up to the evening of the 4th inst. bullion of the value of about $90,000 was recovered from the ruins of the Consolidated mill. The *News* says it is expected that this amount will be doubled when the work of clearing away the debris shall have been completed. A large quantity of quicksilver has also been recovered.

It has been found that varnish in the interior of safes generates an inflammable gas, which during the fire in Virginia City worked much injury to papers which might otherwise have escaped unscathed.

Scroll Sawing.

As scroll sawing is becoming popular as an occupation for amateurs by reason of the beautiful and practically useful results obtained, it may be well to remind them that, thanks to the inventive genius of the age, a machine has been invented which stands to ordinary sawing with a saw in the same relation as a sewing machine does to hand sewing with the needle. In the same manner that in the sewing machine the continual handling of the needle and necessary motion of the hand is superseded by the motion of a treadle with the foot, so in the scroll sawing machine the continual handling of the saw and the necessary motion of the hand and arm is also superseded by the motion of a treadle with the foot, while in both cases the hands are only employed to bring and hold the work in the right place.

We have on former occasions described various scroll saws, but they were all intended for the mechanical profession and for manufacturing purposes, and therefore large, heavy, and comparatively expensive; a small scroll saw, intended for amateurs as well as for small manufacturers, made by George Parr, of Buffalo, New York, has lately come under our notice, and we herewith give an engraving representing the same.

This machine, weighing sixty pounds and costing only $20, is claimed to do as much work and at less expense than any other scroll saw now in market.

It will saw at all times from one-fourth to one-half inch hard wood, and one-fourth to three-fourth inch soft wood, and has one inch stroke. The following articles accompany each machine, and are included in the price: One screw driver, one dozen saws, assorted, one wrench, one three-square file, handled, one oil cup and one belt to drive the machine with.

The Employees of the Consolidated and California mills were paid off the other day for labor performed during the month of October The pay rolls footed up the neat enm of $30,000. Notwithstanding the Consolidated mill has been burned down, the *News* says the pay roll for this month will probably be as great, if not greater, than last, as the force employed in rebuilding it is greater than when the mill was running.

The Woodville Mine Troubles.

We gave in our last issue a history of the Woodville Consolidated mine as drawn up by the investigating committee, and a very suggestive document it was. At the meeting at which the report was received a resolution was passed by the disaffected stockholders assessing their stock ten cents per share to defray expenses, and the meeting adjourned until the following Wednesday. Before that time, however, they were considerably astonished by the announcement that the trustees had levied an assessment of $1 per share, in the face of that very damaging report. As an instance of cheek this action stands pre-eminent, but unfortunately for the stockholders, no matter how much they may admire the cheek of the trustees, they must also pay the expenses.

Another meeting of the stockholders was held on Wednesday evening last. Mr. Hayes, of the investigating committee, said that no progress could be reported, as the committee had again been denied access to the books. He gave an account of the different shipments of bullion that had been made, showing how the receipts had fallen off under Pearson's management. He denounced the management as rotten and corrupt, and hoped Pearson and his whole clique would be brought to justice by the stockholders. Mr. O'Brien said there was no use of calling Pearson names. The only course to pursue was to take legal proceedings and bring the whole outfit into court. Mr. West was of the same opinion, and added as a consoling sentence that Mr. Pearson had been heard making the remark on the street that the present assessment would pay him, and then there would be another assessment of $1 to work the mine. As Mather, the new trustee, was in the room, he was asked to explain his action in proposing the assessment. He replied that he had been insulted at the last stockholders' meeting, and took what little revenge he could by proposing the assessment. A vote of thanks was immediately passed thanking Mather for his considerate action. Mr. Crossman stated that Woodville ought to be selling for $25 instead of $4, and that the mine was fully as good as that of Justice. He believed the stockholders ought to prosecute Pearson at once and without mercy. Mr. Hayes stated that the stockholders might expect a statement shortly from the present management, but it would be false. This assertion he made without a fear of contradiction. It could be proven in the courts. The committee were directed to commence legal proceedings against the management of the Woodville mine; a committee of twenty was appointed to collect the assessment of ten cents per share for necessary expenses.

The stockholders were very much enraged over the levying of the $1 assessment, and are particularly rabid over the fact that J. G. Mather, one of their own committee, had actually proposed the levying of the same. If present indications are any criterion to go by there will be a lively tussle before the assessment is collected. The stockholders mean to have the sale enjoined at once, and the trustees mean to have the money collected. And so the matter stands at present.

The Proposed Fire Launch.—A committee of the Board of Supervisors of this city has reported formally on the proposition to procure a fire boat. They think that the time has come when the protection of the water front and shipping demands the services of such a vessel. Besides this, it is well known that the water mains along the lower parts of the city are generally of a small size, and in case of an extensive fire are wholly inadequate. They therefore recommend that they be authorized to contract with Joseph Hepburn, mechanical engineer, to prepare the necessary plans and specifications for a steam fire launch, to throw six streams of water. The committee was authorized to make the contract at a cost not exceeding $100.

The new battery mill of the California mine, which was destroyed by the late fire, is being rebuilt as rapidly as the necessary material can be obtained.

Tunnel Law.

We copy the following letter from Wm. Teal to the Salt Lake *Tribune*, as the question concerning it is frequently asked, although we published the commissioner's decision at the time it was rendered: As the meaning of the tunnel law of May 10th, 1872, is still misunderstood, you would confer a favor on the mining community by publishing the following interpretation given to it by Commissioner Willis Drummond, in a communication to Hon. J. B. Chaffee, on Sept. 20th, 1872, and a decision recently rendered by the United States Judge, A. W. Stone. The first is as follows:

The line of the tunnel is held to be the width thereof, and no more, and that upon this line only is prospecting for blind ledges prohibited while the tunnel is in progress, and that the right is granted to the tunnel owners to 1,500 feet of each blind lode not previously known to exist, which may be discovered in such tunnel, but that other parties are in no way debarred from prospecting for blind lodes, or running tunnels, so long as they keep without the line of the tunnel as herein defined. The said line being required by our regulations to be marked on the surface by stakes or monuments placed along the same from the face or point of commencement to the terminus of the tunnel line aforesaid. When a lode is struck or discovered for the first time by running a tunnel, the tunnel owners have the option of recording their claim of 1,500 feet all on one side of the point of discovery or intersection, or partly upon one side and partly upon the other side thereof, but in no case can they record a claim so as to absorb the actual or constructive possession of other parties on a lode which had been discovered and claimed outside the line of the tunnel before the discovery thereof in the tunnel.

The following is the decision (on the main points) in Corning Tunnel Company vs. W. G. Pell, as reported by the *Mining Review:*

First—The line of the tunnel is the width of it, and no more.

Second—Tunnel owners, by virtue of this act, have the right of possession of all blind veins or lodes within 3,000 feet from the face of the tunnel on the line thereof: that is, all that exist within the actual width of the tunnel.

Third—That the right of possession to these exists independent of discovery in the tunnel, but the possession is limited to the width of the tunnel.

Fourth—That this right exists from the time of commencement of work and continues so long as due diligence in prosecution is maintained.

Fifth—When a vein is discovered, the tunnel owner's right is not circumscribed by the tunnel line, but is only limited by the laws regulating surface discoveries.

Eighth—Discovery must precede location. No mining claim can be located until the discovery of the vein or lode.

The foregoing are correct copies of both articles referred to. I would add that the interpretation given to the law by Commissioner Drummond has been sustained by subsequent commissioners.

Miners' Luck.—Miners' luck is illustrated by an incident of mining at Central City, Colorado. About two years ago two young men, with a joint capital of $400, were offered a half interest in a gold mine at Central if they would sink it 30 feet deeper. Upon each side were the Veto and other paying lodes, but these had good roads to the mills and furnaces of wealthy companies. Moreover, the mine was difficult of access; it was necessary to carry the ore in gunny sacks for a considerable distance; then to pack it upon mules: and thus by the time it reached the mills, the gold in it would not pay expenses. The young workers when they had spent all their ready money became discouraged and abandoned the contract. This year two new speculators came, and undertook to go on with the work upon the same terms. They had not sunk more than two feet in this abandoned claim when they struck ore worth $2,000 per ton.

The *Journal of Chemistry* warns the drinkers of water of wells near dwellings to beware of the typhoid poison, sure to be found sooner or later in those reservoirs, if any of the house drainage can percolate them. The gelatinous matter often found upon the stones of a well is a poison to the human system, probably causing by its spores a fermentation of the blood, with abnormal heat or fever. Wholesome untainted water is always free from all color and odor. To test it thoroughly, place half a pint in a clear bottle, with a few grains of lump sugar, and expose it, stoppered, to sunlight, in a window. If even after an exposure of eight or ten days, the water becomes turpid, be sure that the water has been contaminated by sewage of some kind. If it remains perfectly clear, it is pure and safe.

All the rats in the Ophir and Consolidated Virginia mines were killed by the gas during the late fire and not one is now to be seen in either mine. Rats take the same place in the mines that the Pintes do on top. They eat up the scraps of bread, meat, etc., that are thrown away by the miners, and which if left lying around would make the air very impure. Their presence is therefore a blessing, and it is very seldom that one of them is molested by any of the miners.

A Mining Company Held Responsible for Refusing to Transfer Stock.

Judgment has been rendered by Judge Morrison in favor of J. W. Winter and against the Belmont mining company for $1,200. The court found the following facts in the case: On the 24th of April, 1873, Winter was the owner of 150 shares of Belmont stock which stood upon the books of the company in the name of other persons, as trustees, but the certificates were properly endorsed. On the day mentioned, Winter delivered the certificate to W. R. Maurice, with permission to have the stock transferred to his name, to enable him to vote at the coming election. Maurice had the stock transferred to himself. He then endorsed the certificates as trustee, and gave them to Winter. On the 28th of the same month Maurice stole them from Winter, and on the 8th of May following he deposited the same with Poulterer & Verdinal as a margin for the purchase of 600 shares of the same stock. The next day these brokers sold in the ordinary way, to Woods & Freeborn, 100 shares of Belmont stock for $700 and delivered the stock deposited by Maurice. On the 10th of May Poulterer & Verdinal reported to Maurice that they had delivered his (as they supposed) stock to another party, but they would replace it. Woods & Freeborn obtained new certificates from the company upon the surrender of those issued in the name of Maurice. On the 3d of May Maurice sold to Lawrence Kilgour fifty shares of Belmont stock for $250, and this certificate was also transferred to another person on the books of the company. On the 14th of May, Winter, for the first time, learned that the stock had been stolen from him, and on the 21st he notified the company of his loss. At that time all the stock stood upon the books of the company in the name of Maurice, and it was not transferred until the 30th of July, 1873. On the 12th of July Winter tendered a bond of indemnity to the company and demanded a transfer of the stock to him. The demand was refused and a year ago this month Winter brought suit against the Belmont company for the market value of the stock subsequent to the demand. The court found the value to be $1,200, and gave judgment in favor of Winter, as before stated.

Lyon County.

Our patrons and the public generally who have identified themselves with the mines and mining interests of this end of the Comstock, will be gratified to learn that our Lyon county locations are just now receiving more marked and favorable attention in San Francisco than ever before. The statement is based upon numerous interviews with prominent stock dealers and mining speculators of that city within the past ten days by our associate editor, who returns from his visit greatly pleased at the present San Francisco complexion of Lyon county mining interests. Time was, not long ago, either, that it was only necessary to mention at "the hay" that a mine was situated below Gold Hill to have it sneered at as "wildcat" and worthless. For years the superstitious and foolish doubt has lingered with prominent speculators in that money center, that the genuine Comstock vein was cramped to the narrow confines of the now "bonanza" and Gold Hill mines. To remove this prejudice has taken theoretical as well as active, systematic work, it has taken years of muscle wear, the expenditure of much money, and the erection of powerful machinery for prospecting purposes. But it has been and is fast being removed. Stock operators and mine purchasers are beginning to have a doubt now to which end of the great lead will eventually prove the greater in the production of the precious metals, and no longer speak disparagingly of such mines as the Justice, Silver Hill, Niagara, Buckeye, Kossuth, Dayton, Amazon & Glasgow, Daney, Silver Central, and the many other prominent locations of this section.

Per contra, much interest is taken in the progress of the respective developments and a watchful eye is kept upon those most advanced in improvements. With the eagle eye of San Francisco capital constantly keeping tally of the good and adverse reports of these mines it needs but the "striking" (and clear demonstration of the fact) of a single vein of good paying ore on this end of the Comstock lode to place every prominent mine in Lyon county on the stock board at good figures. Does any one at all acquainted with the actual status of the mines that we have mentioned doubt that such a body of ore will soon be struck—if it has not been struck already? We do not at this time deem it wise to particularize more fully, than to say that it is our firm belief that each a body of ore to-day lies uncovered in the depths of at least two mines on this end of the Comstock ledge. Furthermore, we very firmly believe that the events of the next sixty days will place the stock of several of the mines in this county at figures that will astonish and gratify the most sanguine. With such a sure belief as this, we can but feel proud of our county's mineral wealth, and extend greeting to those who have labored so long and faithfully in bringing it about.—*Lyon County Times.*

The recent Government survey of Puyallup river, in Washington Territory, from the forks to its mouth, shows that by the outlay of a few thousands of dollars it can be made navigable for small steamers at all seasons of the year as far up as the month of Stuck river, and to a distance of twenty-five miles or more in the winter.

Grass Valley Gold Mining.

Grass Valley as a gold mining district is surely on the eve of a new prosperity. We are assured of this by all the signs of the times. We do not base our assurance on the old saying that "it is darkest just before daylight," although the darkest hour is just now upon this place, and we know that the light is promised. In Grass Valley district are hundreds of ledges of gold-bearing quartz, located years ago, and which have, to some extent, been worked. Most of these ledges assay well as to the gold they contain, but by "mill process" of working have not come up to anything like the production of gold that an assay promised. These locations on ledges are owned by men who have not the capital to erect expensive machinery for the mining and reduction of ores. The owners, however, have had faith in the future and have held on to their locations, complying in most cases with the law which retains titles. That future in which the ledge owners had the faith is about to be realized. A process is now on the eve of being perfected which will cause the most stubborn rock to give up its gold, and that process of reduction will enable the poorest miners to work ledges, although the capitalists stand aloof. We refer, of course, to the Fryer process. It has been tried somewhat and more than the greatest expectations of those interested in it have been realized. The process saves almost all the gold in the ore and is cheap to work and simple in its operations.

More than that we cannot say at the present time. When we reflect that the ores most easily worked by mill process, and with pans, concentrators and all such appliances, lose a large percentage of gold, the advantage of a process which saves even seventy-five per cent. of gold in a ledge can scarcely be estimated. It is believed, and within reason, that with all the perfection of mill machinery which Grass Valley at present enjoys, enough gold has floated down Wolf creek to pay a large part of the National debt. The new process stops the float and saves the waste. We are not saying these things for the purpose of writing up the Fryer process. There is no stock in the company for sale, and those who are backing the trial, now almost finished, have ample means of their own to carry on all experiments which they may design. So we say that with float rock here and obstinate ore that is rich, but which refuses to be milled to advantage, the new process is about to give life and vigor to this town of Grass Valley. Those who sit around and moan and groan at the hard times will be doing better by going out and driving down stakes on some ledges and then taking out some quartz to be put through the new works.—*Grass Valley Union.*

The Sewing Machine Trade.

It has been reported that several important sewing machine patents are about to expire. To ascertain what effect such an event would have upon the business, a *Tribune* reporter called upon the prominent men in several of the great sewing machine companies. The number of patents relating to sewing machine interests is large. Some have expired, and others are nearing the end of the term for which they have been issued. Nevertheless, there is a sufficient number of new patents being granted from time to time to more than counterbalance those that lapse. Inventors are continually discovering improvements, and those of any great value are caught up by the great companies, because they can afford to pay the highest price for such patents. The improvements generally are made by the workmen in different factories.

One of the members of a sewing machine company said that even if all the sewing machine patents were given up, and the right to manufacture thrown open to everybody, it could hardly pay any small company to start in the business. The large companies have made a reputation by a long and extended effort. A large expenditure of time and money would be necessary to reach any degree of success at all remunerative. The companies that might control large capital can use their money to a better advantage than in competing for a share of a trade that is now none too remunerative. The small companies would find themselves ruined before they could secure a trade. To make sewing machines so as to sell them at the present prices, the manufacture must be on a very large scale, and the experience necessary could hardly be bought. Many machines are sold to persons who expect to pay for them by their work. It is necessary that the installments should be small, and therefore the final realization of a profit is longer delayed. Under the present competition, where some agents seem anxious to sell as large a number of machines as they can, the interest on the capital expended nearly consumes the profits. Many of the companies are beginning to see this, and prefer to do a smaller business at better rates.—*N. Y. Tribune.*

A Last Resort.—President of a good assessment mine—How can we make $100,000 between now and spring? The stockholders won't stand another assessment.

Sharp Director.—Here, I have it; suppose we fall back on the mine and get out some ore.

President.—Capital idea. I'd forgotten all about the mine. I'll telegraph to the foreman to start on the pay ledge we covered up last fall. There's just as much silver there as there is in the pockets of the stockholders, but I hate the bother of working it.—*S. F. Ledger.*

Hydraulic Locomotive.

We made brief mention of this invention last week. Its origin is traceable to the introduction of flumes for floating lumber from the mountains to the valley. While the flume was and is, the cheapest transportation known for the purpose for which it was designed, the transportation of lumber, it served no other purpose. All the supplies demanded at the head of the flume, where the lumber was manufactured, had to be hauled there by teams. These flumes did nothing but transport lumber to the market. They transported nothing into the mountains; afforded no aid to travel. The flume lay along the mountain sides like a serpent basking lazily in the summer sun. The hydraulic locomotive is designed to make them serviceable in more ways than the one for which they were originally built. It is designed to travel up the flume, and it does it, too, at a lively rate. The steeper the grade the faster travels the locomotive. This may be in defiance of all former means for the transportation of freight and passengers, but the locomotive will do it nevertheless. The little wooden structure we saw on trial carried ten or twelve times its weight, and moved up a grade of about one foot to the rod at about half the speed that the current, one inch in depth, ran down the grade. Now, what the result will be when it is tried on a scale to be made serviceable for transportation of freight and passengers of course we are unable to say; but as a toy it is successful, for the little machine, weighing only a pound and a half or two pounds, carried ten or twelve times its own weight. The hydraulic locomotive is constructed with four wheels, and is designed to run on a track like the locomotive engine. The track is to be constructed on the top of the sides of the flume, which may be V shaped or otherwise. The motive power is the water passing through the flume. At either end of the car is a water wheel similar to that of stern wheel steamers. The wheels, like those of an ordinary car in use on our railroads, revolve with the axle. The axle, to which the wheels are attached, is made the shaft for the water wheel, the arms of which holding the paddles extend down into the water in the flume. The current of water in the flume furnishes the power to run the car. Of course the car must travel up the flume if it contains sufficient water to turn the paddle wheels. These paddle wheels are so arranged as to be unshipped when it is desired to run down the flume. As all flumes of this character must have a down grade, the hydraulic locomotive is supplied with brakes to regulate the speed on the down trip. We believe the hydraulic locomotive to be practical. Of course it will require a considerable volume of water to move a car of ten tons. This can be obtained near the head of Butte creek if it should prove desirable to have a flume to the timber of that region, and any volume of water necessary for one down Feather river could be had at the lower end of the Big Meadows. Of course the flume would have to be constructed with a view of having the track for the car on the top of its sides, and braced from the outside so that no ties or cross pieces would be required on the top of the flume, as that must be left open for the paddle wheels to work in. If it should cost as much to build a flume of this kind as it does to lay a railroad track the advantages would still be in favor of the flume, for the economy of motive power is much greater. Indeed, it is nothing at all after the track and flume have been constructed. It would also have the advantage of being narrow guage, which is an important consideration through a mountainous country. We hope the subject may attract the attention of capitalists and be given a fair trial.—*Butte Record.*

Riveted Joints.—The increased demand for plate and boiler work has stimulated scientific investigation, and brought out many facts of general interest. The value of a piece of plate work depends on the strength of the riveted portions. Calling the strength of an unpunched plate at 100, the strength of a double-riveted joint is reckoned at 66, a single-riveted joint at 50. Punched rivet holes, by means of the tearing and splitting caused by a smashing blow, are found to be less valuable by fifteen per cent. than drilled holes. Oval rivet holes have been tried with success. The long diameter of the rivet is placed in line with the length of the plate, thus reducing the space between the holes in its weakest direction. Sir W. Fairbairn suggests rolling plates with thickened edges, so that the line of rivet holes will be relatively stronger. This idea is now undergoing experiment. Boiler plates are also being riveted diagonally, with the joints at an angle of 45 with the axis of the boiler. As the relative strength of iron and steel plates is, iron, 50,000 pounds; steel, 60,000 pounds, many boilers are now being made of steel for the sake of this difference in strength.—*Scribner.*

Dull.—Pioche *Record*, Oct. 30: The monotonous cry of dull times meets us in every shape now-a-days in Pioche. People use and speak about it as if they rather liked the depression and where glad times were dull; this is especially so with those that have money and do not wish to pay, who screen themselves behind the expression "dull times." Times are dull and there are no doubts about it, but the cry of it eternally is the worst of the two. Such constant statement retards in a great measure the growth of better times.

SCIENTIFIC PROGRESS.

Phenomena of Earthquakes.

In the *Popular Science Monthly* for October there appears an article on the causes and other phenomena of earthquakes, by Professor Lake.

The Noises of Earthquakes

Are thus graphically described: Great subterranean noises and reports resembling thunder. These occur more or less during all earthquakes. Father Kircher describes them as "a horrid sound resembling that of an infinite number of chariots driven fiercely forward, the wheels rattling, and the thongs of the whips cracking." Sir Hans Sloane, in Jamaica, as "a hollow rumbling noise almost like that of thunder." At Colares, near Lisbon, in 1755, during the great earthquake, the sound is said to have been like "that of chariots, which increased till it equaled that of the roar of cannon;" and at Lisbon, "a rattling as of coaches in the street, with a frightful noise underground resembling the rumbling of distant thunder." At Madeira the same earthquake was preceded by "rumbling noises in the air like that of empty carriages, which died away like a peal of distant thunder." On the 16th of September, 1849, there was an earthquake at Burra-Burra, in South Australia, where the noise is said to have resembled the rolling of heavy carriages. This shock was followed by a flash of lightning that illumined the whole atmosphere.

The Effects of Earthquakes

Are vividly portrayed by Professor Lake. Another feature of the phenomena is the upheaval of the ground observed during the prevalence of most earthquakes, which is one cause of the sea retiring, another being the suction of the approaching wave when the center of the convulsion has been removed from the shore. During the great earthquake at Lisbon the bar at the mouth of the Tagus was laid bare by the upheaval, and the master of a vessel lying in that river at the time, stated that his large anchor was thrown up from the bottom, and seemed to swim on the surface of the water. Other results of the upward movement during this catastrophe were observed elsewhere. The water in a pond at Dunstal, in Suffolk, was jerked up into the form of a pyramid. At some places the water was tossed out of the wells. At Loch Lomond a large stone was forced out of the water. Rocks were raised into the air from the bottom of the Atlantic, and on board a vessel, about forty leagues from the island of St. Vincent in the West Indies, the anchors, which were lashed, bounced up, and the sailors thrown a foot and a half perpendicular from the deck, the ship sinking into the water immediately afterward as low as the main chains. At Riobamba, in South America, on the 5th of January, 1797, the bodies of many of the inhabitants were thrown, by this vertical action, upon the hill of La Culica, which is several hundred feet high, and on the opposite side of the river. During some of these convulsions in Italy, paving stones have been tossed into the air and found with their lower sides uppermost; and, at the time of a late convulsion in South America, the rising of the ground caused the sea to retire, which returned like a wall in appearance, carrying before it inland vessels that had only a few minutes before been left dry, towns and people being overwhelmed by the resistless recoil.

Vital Force.

"The prevalent opinion has until lately been," says Dr. Carpenter, "that this power, (vital force) is inherent in the germ; which has been supposed to derive from its parent not merely its material substance, but a *nisus formativus*, or *germ force*, in virtue of which it builds itself up in the likeness of its parent, and maintains itself in that likeness, until the force is exhausted, at the same time imparting a fraction of it to each of its progeny. In this mode of viewing the subject, alt the organizing force required to build up an oak or a palm, an elephant or a whale, must be concentrated in a minute particle, only discernible by microscopic aid, and the aggregate of all the germ forces appertaining to the descendants however numerous, of a common parentage, must have existed in their original progenitors. * * * * * And in like manner, the germ force which has organized the bodies of alt the individual men, that have lived from Adam to the present day, must have been concentrated in the body of their common ancestor. A more complete *reductio ad absurdum* can scarcely be brought against any hypothesis; and we may consider it proved that in some way or other, fresh organizing force is constantly being supplied from without during the whole period of the exercise of its activity.

"When we look carefully into the question however, we find that what the germ really supplies is not the force, but the directive agency." "The actual constructive force, as we learn from an extensive survey of the phenomena, is heat."—[*Carpenter, (Youmans,) page* 411.]

NEW PLANETS.—During the month of June last, three new planets were discovered, two by Professor C. H. Peters, Nos. 144 and 145 respectively, of the 11th and 12th magnitude, and one by M. Borelly, at Marseilles, No. 146, 11th magnitude.

Origin of Atmospheric Electricity.

According to M. Becquerel, solar spots, which are sometimes 16,000 leagues in extent, appear to be cavities by which hydrogen and various substances escape from the sun's photosphere. But hydrogen, which appears here to be only the result of decomposition, takes with it positive electricity, which spreads into planetary space, even to the earth's atmosphere and to the earth itself, always diminishing in intensity because of the bad conducting power of the successive denser layers of air and of the crust of the earth. That would then only be negative, as being less positive than the air. The diffusion of electricity through planetary space would be limited by the diffusion of matter, since it cannot spread in a vacuum.

That gaseous matter extends further through space than the distance which is generally assigned to the earth's atmosphere will be proved by the fact that auroras, which are due to electric discharges, are produced at hights of 100,000 and 200,000 yards, where some gaseous matter must exist.

M. De la Rive agrees with M. Becquerel as to the electrical origin of the aurora, but considers that the earth is charged with negative electricity, and is the source of the positive atmospheric electricity, the atmosphere becoming charged by the aqueous vapor arising in tropical seas. The action of the sun, he considers, is an indirect action which varies with the state of the sun's surface, as shown by the coincidence in the periods of aurora and sun spots.

In the accounts of travellers in Norway, we often read of their being enveloped in the aurora, and perceiving a strong smell of sulphur, which must be attributed to the presence of ozone. M. Paul Rollier, the aeronaut, who descended on a mountain in Norway 4,328 feet high, saw brilliant rays of aurora across a thin mist which glowed with a remarkable light. To his astonishment an incomprehensible muttering caught his ear; when this ceased he perceived a very strong smell of sulphur, almost suffocating him.—*Manual of the Natural History, Geology and Physics of Greenland.*

THE ORIGIN OF COAL.—The discovery of diatoms in coal, by Count Castracane, recently announced, is of much interest, as throwing additional light on the mode of formation of carboniferous coal. These minute forms of plant life have not been recognized in any but very modern formations; but Count Castracane has succeeded in showing that they date from the palæozoic epoch, as far back, at least, as the carboniferous period. He says: "All the forms I have been able to observe among the ashes of the coal present such an appearance that the most practised and sharpest eye could not detect the slightest difference between them and actually living diatoms: outline, structure, shape, and number of the flutings—in short, all the peculiarities which characterize the species that we meet with in the state of actual vegetation—agree exactly with those of the carboniferous period." It can scarcely be denied that the existence of these minute forms of aquatic vegetation in the substance of carboniferous coal goes to confirm the view of those who (like Professor Bischof) hold that this mineral has been formed in presence of water, and the great preponderance of fresh water forms of the diatomaceæ proves that this was fresh water; still the occasional occurrence of marine forms leads to the inference that the waters of the ocean occasionally had access to the lagoons or inland lakes.

In fine, the presence of diatoms, taken in connection with the stratographical phenomena of carboniferous coal beds, appears to bear out the views of those who hold that the mineral has been formed from the decay of successive generations of plants and forest trees, growing with their stems partially immersed in the stagnant waters of vast lagoons, these lagoons being nearly on a level with the waters of the sea, which sometimes gained access to them, and carried with them marine forms.—*Scientific American.*

COMBUSTION.—Some interesting facts have been communicated to the French Academy of Science, by M. Cailletet, who has been studying the phenomena of combustion. He finds, by means of an apparatus specially designed for the purpose, and in which he has been able to burn, not only a candle, but also a wick fed with alcohol, in highly condensed air, that the light gradually increases with the compression, finally becoming dazzling and so brilliant as to rival that of phosphorus in oxygen. But then, however, if the pressure be increased, the brilliancy of the light diminishes, the flame becomes smoky, and flakes of lamphlack are deposited. From this it is clear that the temperature of the combustion increases with the pressure up to the point of dissociation of the hydrocarbon gases of the candle.

A NOVELTY IN BRONZE.—German metallurgic science and ingenuity have resulted in a most beautiful novelty. It consists of a substance produced by fusion of gold, silver and platinum in small quantities, with bronze, with effects of color and luster which are described as gorgeously beautiful. It is cheap enough to be applicable to the embellishment of wood, leather, iron, etc., and much use may be expected of it in decorative art at no distant day. There has been a want of some metallic variety of hue and tone, especially for tints of purple. This elegant product completely supplies the want, giving a violet which is said to be quite indescribable.

MECHANICAL PROGRESS.

Chrome Steel.

The following is the paper on "Chrome Steel," read by General Carrington, of the United States Army, at the recent meeting of the British Association.

The report of the Committee on Steel invites a statement regarding the new alloy of iron with the oxide of eromium, which affords a steel having strength, ductility, elasticity, and uniformity unknown to the best of English or German steel. While the labors of Huntsmann and Heath made the crucible cast-steel to surpass old forms of blister and shear steel, the use of chrome is a still greater advance towards a perfect metal.

Chromium unites with the iron. It is a metal, while carbon is not. It has little or no affinity for oxygen, and is not affected by excessive heat. Such is the opinion of Capt. James B. Eads, engineer-in-chief of the St. Louis bridge. Its tensile strain is 198,970 lbs. to the square inch; while the greatest strength given in "Percy's Metallurgy," page 870, is 132,909 lbs. per square inch.

For forging it may be heated to almost a white heat without fear of injury; in fact, it is desirable that it be worked at a high heat, except in punching, which should be done at a mild heat. For tempering, the steel should be dipped at a low red heat, as shown in the shade. All tools forged from a large body to a small edge should be allowed to cool off after forging, and be reheated for tempering. The interior of the tool retains the heat at which it was forged after the exterior surface has cooled, and is too hot to put in the water for tempering, as it is liable to crack. For annealing, heat uniformly to a low red heat, and cover well in any of the usual annealing substances. For welding, heat, then lay the pieces together, and tap quickly and lightly, until they adhere, then gradually increase the blows until the weld is complete. To harden well is to harden at the lowest heat at which it will take temper.

A simple method for arriving at the proper heat for hardening is to place the end of a bar in the fire and heat it. Take it out, and note the different degrees of heat the whole length of the heated portion; then plunge into cold water. After cooling, break off a little at a time with the hammer, across the anvil. If the point of the bar has been too hot, the grain will show at first coarse and granular, gradually becoming finer, until you reach the point where the bar was heated to a dull red; and then the grain will be found fine and fibrous; and the steel harder, stronger and tougher than when the heat was greater. The point where the fine fibrous grain appears was at the proper heat when dipped, and that is the heat required for successfully hardening tools from chrome steel.

Exhaustive tests have been made of this steel in the United States, both at West Point foundry and at the Washington navy-yard. Chief Engineer Fithian, U. S. Navy, in a report to Admiral Goldsborough, states "that this metal performs three or four times more work than the best tools of carbon steel. It has uniform texture whether in large or small masses; it can be welded and worked with the same heat and ease that wrought iron can, and can be made into all the various forms required for machinery without danger of being destroyed by over-heating." The chromium is found as an oxide, and may be combined with ordinary iron, or with the Bessemer, and in all places and relations it gives a new and permanent value to the product. Toughness as well as hardness comes from graded heating, and it is submitted that the test of a large ingot by the manufacturers of large ordnance may lessen the weight of guns, while increasing their efficiency and safety.

CIRCULAR VS. BAND SAWS.—The German industrial papers are discussing the question of the disadvantages of circular saws as compared with hand saws: 1st. Circular saws are very dangerous to the workmen. 2d. They require a much greater power to drive them than any other kind. 3d. They make a much wider cut, producing more waste, and thus fewer products from a given amount of material. The only advantage is, that the first cost of procuring a circular saw is less than that of a hand saw; but, notwithstanding, the Mechanics' association of Mnehlhausen have already published in their yearly report the advice to abolish their use wherever it is practically possible to do so; and this is of course the case in a great majority of circumstances.

STEAM STREET CARS.—Mr. Baxter, not satisfied with his triumph on canal propulsion, has essayed that of street railroads. A Baxter steam street car is being tested in Philadelphia, upon one of the suburban horse railroads, and if satisfactory, it is proposed to adopt it generally upon all the lines. Some adaptation of steam power appears necessary upon our street railways, and that named is at present the most practicable, says a Philadelphia exchange.

METAL GLASS.—Another hard glass, to which the above name has been given, has been produced at Buntzlau, Germany. The tests withstood appear to be about the same as those to which the Bastie glass was subjected, with the exception, however, that the metal glass is indifferent to cold water when highly heated. Bastie glass breaks under similar conditions.

Substitutes for Steam.

It is known that the expansion of liquids by heat takes place with such force that practically it may be considered irresistible, while vapors being elastic, any resistance causes compression; it is true that the expansion of a liquid into a vapor causes an expansion many hundred times equal to the volume of the liquid, and that the expansion of the liquid itself by heat is very small; but in compensation for this the force developed is enormous.

This is now being applied to develop power, and experiments made in London, in which either oil or glycerine is made to perform the functions of steam by the same means—the application of heat—have excited no small interest. The heat expanding the oil placed in small cylinders, a pressure of 10,000 pounds per square inch may be obtained without the danger of steam explosions, which latter prevents the use of a pressure of more than 200 pounds to the square inch generally. In this instance an explosion would only crack the cylinder containing the oil. The application of this process appears, from the accounts published, to have been successfully made to the printing press and to machines for riveting and punching, and it is alleged that the variety of uses of which it is susceptible will be found very great.

It is known that the rapid motion of a steam piston may, by gearing and belting, be made to produce a very slow but powerful motion over a very small space, able to punch and cut iron plates otherwise requiring tons of pressure to penetrate, and it is equally evident that this operation may be inverted, and that a low and very powerful motion over a small space (as is obtained during the expansion of liquids by heat) may, by gearing and belting, be made to produce as rapid a motion as is obtained by any steam engine.

A REFLECTOR FOR MOLDERS.—A reflector for the use of molders in pouring metal is manufactured by Messrs. Jackson & Tyler, No. 16 German street, Baltimore, Md. All molders have felt the inconvenience of being compelled to pour off metal in the imperfect light of winter or dark afternoons. This difficulty, which may be said to exist more or less from October to the spring, materially retards labor, and in large foundries is a source of considerable loss to the proprietors. The reflector obviates this difficulty without cost for illumination. A concave disc of nickel plate is placed upon the ladle handle, and throws a strong light from the molten metal directly over the ladle nose upon the sprue hole. The molder is thus enabled to pour into the flask without danger of spilling the metal or allowing it to strike the sides of the hole, by which contact the metal is unnecessarily cooled. This device is easily and quickly adjusted. The eyes of the molder are shielded from the intense light and his arm protected from heat, which considerations are valuable as facilitating his work; and his ability to pour rapidly and without hesitation and guesswork, achieved by the use of the reflector, give the reflector a practical value which merits attention.

JOINTS IN CARPENTRY.—Professor Rankine sums up the principles, which should be adhered to in designing joints and fastenings in carpentry, concisely as follows: 1. To cut the joints and arrange the fastenings so as to weaken the pieces of timber they connect as little as possible. 2. To place each abutting surface in joint as nearly as possible perpendicularly to the pressure which it has to transmit. 3. To proportion the area of each surface to the pressure which it has to bear, so that the timber may be safe against injury under the heaviest load which occurs in practice; and to form and fit every pair of such surfaces accurately, in order to distribute the stress uniformly. 4. To proportion the fastenings so that they may be of equal strength with the pieces which they connect. 5. To place the fastenings in each piece of timber so that there shall be sufficient resistance to the giving way of the joint by the fastenings shearing or crushing their way through the timber.

A NOVELTY IN WATER PROPULSION.—A new Haven (Conn.) mechanic, has invented, and is said to have recently successfully tried, a new thing in water propulsion, not for speed, but for economy and for progress without "wash," adapting it especially to canals. He has a boat with two keels—these are parallel—an air-tight box being fixed between them. Air, compressed to the degree of three or four atmospheres, by a small steam engine, is introduced through this box to the surface of the water. The emission of the compressed air resisted by the water, and confined between the parallel keels, operates to propel the boat about five miles an hour without commotion of the water.

A 70-TON STEAM CRANE.—An immense steam crane has lately been set up at the Victoria Basin, Dundee. It is nominally a 70-ton crane, but the test load is 90 tons, and the makers have no fear of putting 100 tons on it. It has already carried 80 tons, lifting that load with only two-thirds of the allowed pressure of steam, and lowering on the brake with a nicety that would enable the most delicate adjustment of its load, in case of its being used in erecting marine engines, to be made with confidence. The crane will deposit its load a clear distance of 40 ft. from the face of the quay wall, or 56 ft. from the center of the pedestal of masonry on which it is fixed, and the head of the jib is 60 ft. in perpendicular hight from the coping of the pedestal.

Sales at S. F. Stock Exchange.

FRIDAY, A. M., Nov. 5.

75	Alpha	16¼	@17
160	Andes	3¾	@3½
200	Baltimore Con	1¾	@1⅝
190	Best & Belcher	39½	@39
579	Belcher	15¾	@19
130	Bullion	47½	@46
145	Chollar	59½	@61
100	Confidence	19	@20
145	Con Virginia	262½	@265
290	Caledonia	16	@15
675	California	54¾	@55
1060	C Point	28½	@28
100	...do	b 5	28½
425	Dayton	3½	@3¼
90	Exchequer	12½	@12
100	Empire	3¼	
100	Florida	3	
15	Gould & Curry	16½	
370	Hale & Norcross	31½	
270	Imperial	10	@9¾
475	Justice	27½	@28
500	...do	b 5	28½
30	...do	b 30	28¾
480	Julia	12½	@12
25	...do	b 10	12½
50	...do	b 5	13½
925	Kentuck	15	@12
380	Kosmith	3	@3½
785	Leviathan	2¾	@2¼
125	Lady Bryan	1½	
100	Lady Wash	1¾	
75	Mexican	17½	
480	New York	1¾	@1⅝
1120	Ophir	40	@39¾
50	...do	b 5	40
250	Overman	46½	@46¾
10	Occidental	3¾	
600	Pacific	1	
100	Rock Island	2½	
185	Savage	11	
410	Sil Hill	7¼	@7
100	...do	b 5	7¼
145	S Nevada	12	
160	Union	3¾	@3¼
200	Woodville	2¾	@3
40	Wells-Fargo	35	@
535	Yellow Jacket	75½	@73

AFTERNOON SESSION.

10	Advance	3¼	
25	Belmont	1	
250	Belcher	20	@21
370	California	54½	@54¾
235	Crown Point	30	
99	Con Virginia	264	@265
135	Chollar	61	@62
50	Eureka Con	11¾	@12
10	...do	b 90	14
775	El Dorado South	15	@
50	Eureka G Y	1	@1¼
135	Gila	3½	@3¾
645	Golden Chariot	1	
210	G & Curry	16¾	@16¾
50	...do	b 30	17
40	H & Nor	32	
300	Hussey	75	@
30	Imperial	10	@9¾
25	Jackson	1½	
260	Justice	28	
80	K K Con	5½	@5
630	Kentuck	15½	@16
405	Leo	11	@11¼
110	Meadow Valley	1	
775	Mansfield	10	@
30	N Belle	28	
625	Ophir	40	@39¾
10	...do	b 50	40
15	Poorman	11	
120	Raymond & Ely	21½	
50	Savage	70	
500	S Hill	1½	
35	S Nevada	12½	@12¾
1480	Woodville	3¾	@3⅝

SATURDAY, A. M., Nov. 6.

235	Alpha	17	@16¾
310	Andes	3	@3¾
635	Baltimore Con	1¾	
660	Belcher	20	@20½
20	Bullion	45	
197	Best & Bel	38½	@36
50	Challenge	5	@5½
205	Chollar	63	@62
560	Cosmopolitan	31½	@30
405	C Point	29	@30
200	...do	b 5	30
570	Confidence	21	@20½
530	Con Virginia	264	@265
1990	California	53¾	@53¾
300	...do	b 30	53¾
180	...do	b 5	53¼@52½
20	Caledonia	14	@15
285	Exchequer	11	
175	Eureka Con	12	
300	Florida	3	
145	Gould & Curry	16½	@16¼

SALES OF LAST WEEK AND THIS COMPARED.

THURSDAY A. M., Nov. 11.

75	Alpha	16¾	
225	Andes	3¾	@3½
180	Baltimore Con	2⅝	@2¾
40	Bullion	35	
230	Belcher	19½	@19
1166	California	52½	@52
500	Con Virginia	262½	@265
50	...do	b 30	245
785	Crown Point	26½	@28
150	Chollar	56	@53½
20	Confidence	16½	
60	Caledonia	14	@15
145	Challenge	3½	
80	...do	b 30	4
140	Empire Mill	5	@4½
120	Exchequer	10	@10
465	Gould & Curry	16¼	@14¾
125	Hale & Norcross	31	@29
455	Imperial	8¾	@8¾
1170	Justice	24½	@23
50	...do	b 5	24½
685	Julia	9½	@10
500	Lady Bryan	1¾	@1
70	Lady Wash	1¾	
225	Mexican	16¾	@16¾
100	...do	b 10	16¾
1035	New York	1¾	@87½
1095	Ophir	39¾	@39½
500	Overman	40	@42
250	Occidental	3	@3½
355	Rock Island	2¾	@2½
130	Savage	7	@6¾
190	Sierra Nevada	11½	@11¾
20	...do	b 30	11¾
105	Seg Belcher	65	@61
255	S Hill	7½	
100	Succor	11	
420	Union Con	7¼	@8
85	Utah	6¾	@6
1240	Woodville	3¾	@2¾
250	Yellow Jacket	68	@66

AFTERNOON SESSION.

40	Advance	3½	
350	Andes	3¾	
90	Amazon	1¼	@1
70	Belmont	1	
120	Best & Belcher	36	@36¼
360	Belcher	18½	@18¾
200	Cosmopolitan	30	
450	California	54	@52¾
115	Con Virginia	242½	@241½
180	Crown Point	27	@26
45	Chollar	56	@56¼
300	Eureka Con	12½	@13
700	Gila	3¾	@3¾
580	Golden Char	1	
100	Gould & Curry	14½	@14¾
100	Hussey	50	
125	Hale & Norcross	29	@28
900	Imperial	8¾	@8
100	Ida Elmore	50	
300	Jackson	1¼	@1¼
250	Jefferson	5	@4¾
150	Justice	24	@23½
255	Julia	10	@9¾
100	K K Con	4	
700	Leopard	10	@10¼
250	Leviathan	2¼	@2¾
80	Meadow Valley	27	
650	Mansfield	1.05	@1.10
120	No Belle	1	
50	Hale & Nor	35	
150	Imperial	9¼	@9¾
330	Justice	25	@26
110	Julia	12½	@11¾
110	Kentuck	14¾	
250	Kosmith	3	
145	Lady Bryan	1½	@1¾
1460	Leviathan	2	@2¼
270	Mexican	18¼	@16¾
200	M Star	4	
100	Meadow Valley	2¼	
2320	New York	1¼	@1⅝
930	Ophir	33½	@33¾
200	...do	s 10	33¾
180	Overman	45	@45¼
300	Rock Island	2¾	
310	Ray & Ely	21	@18
85	Savage	7	@6
205	Sierra Nevada	12	@12¼
10	Seg Belcher	62	
925	S Hill	7¼	@8
100	S R Island	50	c
25	Utah	6¾	
445	Union Con	7¼	@8
180	Wells-Fargo	80	
265	Yellow Jacket	74	@72½

WEDNESDAY A.M., Nov. 10.

20	Alpha	17½	
450	B & Belcher	39	@38¾
10	Bullion	44	
75	Mexican	21½	@20
175	Bal Con	2¾	@2¾
60	Chollar	62	@61½
1150	Crown Point	29¾	@30¼
410	Con Virginia	265	@264
65	Caledonia	14½	@15
1890	California	53¾	@53½
100	...do	b 5	53¾
50	Confidence	18½	
120	Challenge	5	
25	Empire Mill	5	
35	Exchequer	12	@11¾
215	Gould & Curry	16¼	@16¾
75	Hale & Nor	31	@33
420	Imperial	9¾	@9
810	Justice	27	@26
100	...do	b 30	27
935	Julia	11	@12
130	Kentuck	14	
255	Mexican	17	
180	New York	1¼	@1¼
2250	Ophir	40	@41
100	...do	b 30	40¾
150	Overman	47	@46¾
255	Rock Island	2¾	@3
65	Savage	7	
340	Sierra Nevada	12½	@12¾
140	Sil Hill	7¾	@8
150	...do	b 5	8
10	Seg Belcher	70	
130	Union	7¾	
370	Utah	6¾	
3350	Woodville	3¾	@4
850	Yellow Jacket	72½	@72

AFTERNOON SESSION.

130	Advance	3¾	
398	Andes	3¼	@3¼
370	Amazon	1¼	
300	Belmont	1	
117	Belcher	21¾	
375	Cosmopolitan	35	c
1200	California	53	@52½
280	Con Virginia	255	@253½
285	Crown Point	29	@29¼
130	Chollar	60	@60
345	Eureka Con	12	
55	Eureka G V	6	
370	Florida	3	@2
100	...do	b 90	2
1480	Gila	3½	@3¾
1535	G Chariot	1	
200	Hussey	62½	c
230	Jackson	1¼	
140	Jefferson	4½	
425	Justice	25	@25½
390	Kossuth	3	
815	Leviathan	2	@2¾
255	Leopold	10¾	@11¼
270	Meadow Valley	1¾	
500	Mansfield	1.14	@1.10
100	M Star	4	
85	Mexican	16½	@17
10	Northern Belle	4	@3½
600	N Carson	35	c
200	O G Hill	2	@2¼
180	Overman	45	@44
905	Ophir	39¼	@39½
30	Poorman	11	
150	Pacific	1	
60	Raymond & Ely	19	@18½
350	S Chariot	25	c
50	Savage	6	@7
210	Si Nevada	12½	@12¾
100	Tybo	12	c
1350	Wells-Fargo	11	@15

THURSDAY, A. M., Nov. 4.

647	Best & Belcher	39	@36
265	Belcher	19	@18¾
225	Bullion	45	@44
70	Baltimore Con	1⅞	@1¾
125	Chollar	57	@58
2910	California	54½	@54
100	Caledonia	14½	@15
50	Challenge	5	
665	Con Virginia	25	@254
535	Crown Point	25	@25½
145	Dayton	3½	@3¾
120	Exchequer	12	@11
175	Empire Mill	5	@5½
965	G & Curry	15¾	@15¾
1830	Imperial	9	@8¾
680	Justice	24	@24¼
410	Julia	10¾	@9¾
890	Kentuck	13	@13¼
180	Knickerbocker	1¾	@1¾
500	Lady Bryan	1½	@1¾
385	Mexican	16¾	@16¾
518	New York	1¼	@1
1020	Ophir	38½	@39
185	Overman	46	@43
215	Rock Island	2½	
320	S Hill	7¼	@6¾
15	Seg Belcher	60	
125	Savage	6	@6¾
65	Succor	11	@5c
300	Sierra Nevada	12¼	@11¾
805	Union Con	7¾	@7¼
10	Utah	6	
405	Yellow Jacket	63	@6

AFTERNOON SESSION.

400	Andes	3¼	@3¼
250	Adams' Hill	2	5c
40	Advance	3½	
480	Belmont	75	c
200	Eureka Con	12	
500	Golden Chariot	1	
800	Gila	3¾	@3⅝
100	Hussey	75	c
200	Ida Ellmore	10	c
100	Jefferson	4½	
50	Jackson	1¼	
188	Lady Wash	2¼	
100	Leopard	11¼	@11
100	Meadow Valley	3	@
100	Newark	3½	c
60	Occidental	3	
240	O G Hill	2	@1¾
100	Prussian	1¼	@1
600	Pacific	1	
190	Raymond & Ely	26¾	@23
360	Tybo	12½	
1250	Ophir	38½	@38¼
50	Pacific	87½	c
3200	Prussian	1¼	
90	Raymond & Ely	16	@16¾
280	Rye Patch	50	
90	Savage	6	@
400	Santa Rosa	1¼	
200	Tybo	12½	c
500	Union Con	7¼	@7¼
300	Utah	6	
390	Wells Fargo	16	@18c

The Mining Share Market.

Mining stocks during the past week have been inactive; sales are few and prices ountinne low, showing however, that it is difficult to get them much lower than they are at present. During two days of the week the San Francisco Stock and Exchange Board adjourned its sessions on account of the death of an old respected memher of the Board, B. F. Sherwood.

Contrary to the expectations of the "oroakers," Consolidated Virginia announced the regular monthly dividend of $1,080,000, a nice little sum to distrihute at this season of tight money markets. The scarcity of coin prevents much speculation in mining shares, and hnsiness for the brokers is therefore dull. Advices from the Comstock are contradictory in their character, hut everything possihle is heing done to hurry up the repairs to the injnred works, and hefore many weeks everything will he running as hefore. An article in another column will give an accont of what is now heing done on the Bonanza mines at Virginia.

An era of investigation among mining companies appears to have set in and some of the developments made in the companies are "richer" than those made in the mines. The indications are that stockholders are hecoming aronsed to the fact that they have something to say as well as the trustees, and if the latter do not act right they can he tnrned out. Some acconnt of the different investigations now going on will he found in another column. We regard the movement as a very good one, and sincerely hope that the stockholders will drive all the irresponsihle and dishonest trustees out of the society of decent men. A few examples would serve to. porify matters considerahly; and it is to he hoped that those who have begun this war will keep it np to the hitter end, and show that they have some rights and will msintain them.

REDWOODS RAILROAD—The Sonoma *Democrat* says: E. C. Rust called npon us on Monday. He has been engaged on the snrvey of the railroad from Fulton to Gnerneville. The survey is in charge of J. C. Des Granges, of Oakland. Bnt little grading is required on the road. The greatest degree of curvatnre is seven, and the heaviest grade is 47.100 of a foot in the 100 feet. The work on the road will he continued as long as the weather will permit. Mr. Rust informs us that the track on the railroad is laid to the Laguna bridge. The road is graded one mile heyond the hridge. The spiles for the bridge have all been driven, and they are waiting now for the stringers, which are of Oregon pine, and must he shipped from San Francisco. There is no difficulty whatever on the route, and the work will continne with all possihle dispatch nntil it is completed.

WATEB IN THE DITCH.—Calaveras *Chronicle* says: The rains have increased the water in the ditch to nearly its full carrying capacity. It is not prohahle that there will he any further scarcity this season, and there is now nothing to prevent miners from pntting on their gum snits and wading in. Even if the resnmption of mining operations don't make things livelier, it is at least a relief to know that we haven't got to endure any more growling ahout the scarcity of water for a season.

ROADS.—The roads are in splendid condition. No dust, no mnd. Teamsters are happy and there is no language strong enough to express the felicitons condition of stage drivers.

New Incorporations.

The following companies have filed certificates of incorporation in the County Clerk's Office at San Francisco:

WASHINOTON BLUE GRAVEL CO.—Nov. 5, Location Mount Pleasant district, Sierra county. Capital stock, $22,000, divided into 22 shares of $1,000. Directors—J. Rey, Henry Steinegger, J. Gantner, P. E. Croce and Lnis Jnri.

PACIFIC WOOD, LUMBER AND FLUME CO.—Nov. 9. Object: To cut and manufacture wood and lnmber, and flume the same; also, to hny, sell and trade in real estate. Capital stock, $500,000 in 1,000 shares of $500 each. Directors—James C. Flood, Wm. S. O'Brien, J. W. Mackey, Edward Barron and Geo. Wallace.

COLUMBIA G. & S. M. CO.—Nov. 9. Location: Tuolumne county, Cal. Capital stock, $5,000,000, in 50,000 shares of $100. Directors—Frederick Clay, J. W. Tburman, A. M. Starr, R. von Pfister and James Meabrum.

SIERRA FLUME AND LUMBER CO.—Nov. 10. Object: Conducting a general lumber business in the State of California. Capital stock, $10,0.0,000. Trustees—W. P. Chipman, Benj. Peart, Walter S. Hobart, A. H. Rose and Chas. E. Elliot.

PACIFIC STEAM TRANSPORTATION CO.—Nov. 10. Object: To carry on a general commercial and transportation business on the Pacific and Indian oceans, the China seas, and all tributary waters. Directors—F. W. Jones, P. R. Irwin, S. P. Beach, H. A. Kimball, and F. Chappellet. Capital stock, $500,000, divided into 5,000 shares of $100 each.

Mining Company Elections.

The following mining companies have elected officers for the eneuing year:

JOSEPHINE CONS. M. CO. Trustees—A. K. Grim, President; D. L. McDonald, Victor Fernhach, W. F. Leon; O. H. Bogart, Secretary; W. F. Leon, Supt.

HOWARD HILL G. M. CO. B. A. Becker, President; Chas. Staempfli, A. Eberhart, J. W. Wesson, and W. A. Ray, Trustees; A. E. Kennedy, Superintendent; F. J. Hermann, Secretary.

LADY-BRYAN M. CO. James Phelan and P. Connolly have heen elected trustees to fill the vacancies caused hy the resignations of Wm. McClintock and John F. Boyd.

MINING SHAREHOLDERS' DIRECTORY.

Compiled every Thursday from Advertisements in the Mining and Scientific Press and other S. F. Journals.]

ASSESSMENTS.—STOCKS ON THE LIST OF THE BOARDS.

Company.	*Location.*	*No.*	*Amt.*	*Levied.*	*Deling'nt.*	*Sale.*	*Secretary. Place of Business.*
Baltic Cons M Co	Washoe	2	10	Oct 9	Nov 13	Nov 30	Theo O Kibbe 419 California st
Baltimore Cons M Co	Washoe	10	1 00	Oct 7	Nov 10	Nov 30	C A Sankey 331 Montgomery st
Belmont M Co	Nevada	6	50	Oct 6	Nov 9	Dec 6	Frank Swift 419 California st
Bnckeye Water & H M Co	Cal	1	50	Oct 1	Nov 5	Nov 21	W H Lowden 240 Montgomery st
Caledonia S M Co	Washoe	15	3 00	Nov 1	Dec 4	Dec 23	R Wegener 414 California st
Cherry Creek M & M Co	Cherry Creek	5	25	Oct 21	Nov 29	Dec 27	D F Verdenal 409 California st
Chollar-Potosi M Co	Washoe	8	5 00	Oct 14	Nov 17	Dec 7	W E Dean 419 California st
El Dorado S Cons M Co	Nevada	7	1 00	Oct 13	Nov 16	Dec 7	Wm Willie 419 California st
Empire M Co	Idaho	11	50	Oct 23	Nov 29	Dec 20	W Willis 419 California st
Florida S M Co	Nev	3	50	Nov 5	Dec 11	Jan 3	L Hermann 330 Pine st
Gold Mountain G M Co	Cal	6	25	Sept 10	Oct 10	Nov 10	J P Cavalier 513 California st
Gould & Curry S M Co	Washoe	24	1 00	Oct 26	Nov 27	Dec 18	A K Durbrow 309 Montgomery st
Glascow G & S M Co	Nevada	1	10	Sept 20	Oct 30	Nov 22	R F Hosmer 330 Pine st
Hale & Norcross S M Co	Washoe	48	5 00	Nov 9	Dec 11	Dec 31	J F Lightner Nevada Block
Ida Ellmore M Co	Idaho	19	50	Oct 16	Nov 19	Dec 10	W Willis 419 California st
Illinois Central M Co	Idaho	4	50	Oct 12	Nov 16	Dec 7	R H Brown 402 Montgomery st
Imperial S M Co	Washoe	25	1 00	Nov 9	Dec 14	Jan 4	W R Dean 419 California st
Iowa M Co	Washoe	4	5	Sept 16	Oct 18	Nov 12	A D Carpenter 605 Clay st
Justice M Co	{$5 on old stock and $1 on new}	16	6 00	Sept 15	Oct 18	Nov 14	Jas S Kennedy Merchants' Ex
Kossuth M Co	Nevada	5	75	Oct 4	Nov 9	Nov 30	E F Stone 419 California st
Lady Washington M Co	Washoe	8	50	Nov 4	Dec 9	Dec 28	H C Kibbe 419 California st
Mansfield G M Co	Cal	4	1 00	Oct 9	Nov 17	Dec 4	J M Buffington 311 California st
Meadow Valley M Co	Ely Distriot	9	1 00	Sept 18	Oct 28	Nov 24	C W Colburn 418 California st
Mont G & S M Co	Washoe	11	1 00	Sept 7	Nov 2	Nov 24	D A Jennings 401 California st
New York Cons M Co	Washoe	16	1 25	Oct 27	Dec 1	Dec 20	H C Kibbe 419 California st
New York M Co	Washoe	7	75	Oct 27	Dec 1	Dec 20	H C Kibbe 419 California st
North Bloomfield Gravel M Co	Cal	40	1 00	Oct 21	Dec 3	Dec 20	T Derby 320 California st
North Cons Virginia M Co	Washoe	1	5	Oct 6	Nov 16	Dec 1	Joseph Magnire 419 California st
Oakland G & S M & M Co	Nevada	2	50	Sept 2	Nov 8	Nov 30	W H Watson 302 Montgomery st
Overman S M Co	Washoe	33	3 00	Oct 12	Nov 16	Dec 7	Geo D Edwards 414 California st
Raymond & Ely M Co	Pioche Dist	5	3 00	Nov 5	Dec 14	Jan 10	T W Colburn 418 California st
Rock Island G & S M Co	Washoe	9	50	Oct 7	Nov 10	Dec 2	J W Clark 418 California st
Savage M Co	Washoe	29	5 00	Oct 8	Nov 10	Nov 29	E B Holmes 419 California st
Shea S M Co	Nevada	3	10	Oct 27	Nov 29	Dec 20	Wm Shaw 260 Montgomery st
Sierra Nevada S M Co	Washoe	42	1 00	Oct 1	Nov 5	Nov 25	R Wegener 414 California st
Silver Hill M Co	Washoe	7	1 00	Oct 1	Nov 4	Nov 23	W E Dean 419 California st
Tiger M Co	Arizona	1	50	Sept 17	Oct 22	Nov 15	W Willis 419 California st
Tiger M Co	Cornucopia	2	10	Oct 29	Dec 8	Dec 28	Frank Swift 419 California st
Troy Cons M Co	Washoe		20	Oct 22	Nov 26	Dec 17	S Gilbert 325 Clay st
Union Cons S M Co	Washoe	8	50	Oct 11	Nov 15	Dec 8	J M Buffington 311 California st
Utah S M Co	Nevada	11	2 00	Oct 14	Nov 22	Dec 10	W E Dean 419 California st
Utah S M Co	Washoe	11	2 00	Oct 19	Nov 22	Dec 10	W E Dean 419 California st
Washington & Creole G & S M Co	Nev	15	75	Sept 27	Oct 30	Nov 20	F D Cleary 401 California st
Woodville G & S M Co	Washoe	12	1 60	Nov 4	Dec 8	Dec 27	W M Helman 309 California st
Woodville Con M Co	Washoe	4	1 00	Nov 4	Dec 8	Dec 27	W M Helman 309 California st
Yellow Jacket S M Co	Washoe	21	5 60	Sept 20	Oct 23	Nov 24	G W Hopkins Gold Hill Nevada

OTHER COMPANIES—NOT ON THE LISTS OF THE BOARDS.

Black Hawk Coal M Co	Cal	5	Oct 25	Dec 24	Jan 15	H A Powell	520 Montgomery st
Cariboo Hydraulic M Co	Plumas Co Cal	1	20	Nov 1	Dec 6	Dec 24	O W Reed Sacramento City
Carrie Hale H M & W Co	Cal	2	10	Sept 18	Nov 1	Nov 20	F W Van Reynegom 531 California st
Cerbat Cons G & S M Co	Arizona	2	10	Oct 5	Nov 8	Nov 27	T E Jewell 507 Montgomery st
Cons Pen M Co	Peavine Distrct	9	25	Oct 13	Nov 13	Dec 13	J H Borland Reno, Nevada
Constitution M Co	Cornucopia Dist	2	10	Oct 29	Dec 4	Dec 24	Frank Swift 419 California st
Coquille Black Sand G M Co	Oregon	1	10	June 8	Oct 13	Nov 18	F P Reynolds 111½ Leidesdorff st
Eaglo Silver M & M Co	Nevada	2	50	Sept 11	Oct 20	Nov 10	H L Byrne 533 Kearny st
East Branch M Co	Cal	2	20	Oct 4	Nov 5	Nov 23	A Martin 520 Washington st
Edith Q M Co	Cal	5	20	Sept 14	Oct 30	Nov 29	Wm Stuart 113 Leidesdorff st
Enterprise Cons M Co	Cal	5	25	Sept 29	Nov 4	Nov 30	F J Hermann 418 Kearny st
Excelsior Q M Co	Cal	3	5	Oct 8	Nov 10	Dec 2	R Von Pfister Merchants' Ex
Florence M Co	Cal	3	15	Sept 17	Oct 25	Nov 17	Scott Sutton 220 Montgomery st
Geneva Cons M Co	Cherry Creek		20	Oct 11	Nov 15	Dec 6	A Milliken 302 Montgomery st
Gold Run M Co	Cal	13	25	Sept 27	Oct 30	Nov 28	C C Palmer 41 Market st
Great Eastern Cons Q M Co	Cal	1	25	Oct 30	Nov 30	Dec 18	J G Riley 331 Montgomery st
Howard Hill G M Co	Cal	4	35	Sept 27	Nov 3	Nov 24	F J Hermann 418 Kearny st
Juniata Cons M Co	Nevada	3	25	Sept 20	Nov 1	Nov 24	Chas S Neal 419 California st
Kearsarge Q M Q M Co	Cal	2	15	Oct 4	Dec 10	Dec 30	J McGaffie 105 California st
Kelsey G & S M Co	Cal	14	5	Sept 27	Nov 17	Dec 9	J H Sayre 321 Montgomery st
Kennedy M Co	Cal	11	1 00	Nov 1	Dec 6	Dec 27	A Wissel 210 California st
Lake Mining Co	Napa Co Cal	4	20 00	Nov 3	Dec 6	Dec 27	R F Knox 19 & 21 First st
Manhattan Quicksilver M Co	Napa Co Cal	3	60	Sept 30	Nov 10	Dec 10	A Halsey 220 Sansome st
Morse & Evans G M Co	California	2	10	Sept 6	Oct 15	Nov 12	Daniel Buck 331 Montgomery st
North Fork M Co	Plumas Co Cal	9	25	Nov 2	Dec 6	Dec 23	A Martin 520 Washington st
New Coso M Co	Inyo Co Cal	1	50	Oct 28	Nov 30	Dec 23	D F Verdenal 409 California st
Oceanic Quicksilver M Co	Cal	2	50	Oct 22	Nov 23	Dec 13	O G Funk 438 California st
Ophir Q M Co	Cal	1	50	Nov 4	Dec 5	Dec 28	D Buck 309 Montgomery st
Orleans M Co	Cal	8	2 00	Oct 27	Nov 30	Dec 18	Geo P Thurston 315 California st
Owyhee Water & Gravel Co	Nev	1	30	Nov 1	Dec 15	Jan 15	J E McDonald 405 California st
Paothor M Co	Cornucopia	2	25	Oct 29	Dec 1	Dec 20	Frank Swift 419 California st
Keystone G & S M Co	Nevada		5 00	Oct 25	Nov 30	Dec 18	T J Owens 215 Sansome st
San Francisco Copper M Co	Nevada	2	10	Aug 4	Sept 6	Sept 30	R De Chairmont Front & Jackson st
Stanislaus River M Co	Cal	6	20	Oct 29	Nov 30	Dec 17	W Stuart 113 Leidesdorff st
Table Mt Alpha M Co	Cal	9	10	Oct 29	Nov 30	Dec 20	L Leavitt 401 California st
Theresa M Co	Cal	3	10	Oct 7	Nov 8	Nov 24	J W Tripp 408 California st
Union Gravel M Co	Cal	12	1 00	Oct 21	Dec 3	Dec 20	W Dewey 320 California st
Ward Ellis S M Co	Nevada	4	10	Oct 22	Nov 29	Dec 18	J M Buffington 311 California st
Young America M Co	Nevada	1	25	Oct 27	Nov 29	Dec 18	R H Brown 402 Montgomery st

MEETINGS TO BE HELD.

Name of Co.	Location.	Secretary.	Office in S. F.	Meeting.	Date.
Challenge Cons M Co	Nevada	W E Dean	419 California st	Annual	Nov 18
Chicago G & S M Co	Washoe	F P Reynolds	111½ Leidesdorff st	Annual	Nov 19
Gold Canon Cons M Co	Washoe	A A Pardow	420 California st	Annual	Nov 17
Hershey Cons M Co		Peter Dean (Pres't)	402 Montg'y st	Special	Nov 15
Kearsarge Con Q M Co	Lake Co Cal	Jas McHaffie	105 California st	Annual	Nov 20
Northerly Five Cent Hill G M Co	Cal	J M Buffington	311 California st	Annual	Nov 25
South Mountain Cons M Co	Nevada	Wm Willis	419 California st	Annual	Nov 15
St Patrick G M Co	Cal	D F Verdenal	419 California st	Annual	Nov 13
Sutro Mining Co	Nevada	W H Reynolds	434 California st	Special	Nov 11

LATEST DIVIDENDS (within three months)—MINING INCORPORATIONS.

Name of Co.	Location.	Secretary.	Office in S. F.	Amount.	Payable.
Black Bear Quartz	Cal	W L Oliver		25	Sept 13
Cons Virginia M Co	Washoe	Chas H Fish	401 California st	10 00	Nov 11
Empire G M Co	Sierra Co Cal	O Collischon		5 00	Aug 17
Empire M Co	Nevada Co Cal	D A Jennings	461 California st	50	Sept 15
Eureka Consolidated M Co	Nev	W W Traylor	419 California st	1 00	Aug 5
Excelsior M & M Co		Frank Swift	419 California st	1 00	April 10
Gila S M Co	Nevada	W Ang Knapp	116 Leidesdorff st	25	Aug 16
Indian Queen M & M Co		A K Durbrow		50	Oct 11
Jefferson S M Co		O A Sankey	331 Montgomery st	50	May 15
Leopard M Co		R H Brown		50	July 15
Lyon Mill & Mining Co	Washoe	E F Stone	Hayward's Bldg	50	Aug 18
Manhattan S M Co	Nevada	Chas S Neal	419 California st	1 00	June 15
Northern Belle M & M Co		W Willis	419 California st	1 00	Oct 15
Oneida M Co		L Kaplan	Merchants' Ex	50	Aug 21

MINING SUMMARY.

THE following is mostly condensed from journals published in the interior, in proximity to the mines mentioned.

California.

ALAMEDA.

LIVERMORE COAL MINE.—Alameda *Encinal*, Nov. 6: The works of the Livermore coal mine are ahont completed, and the company will soon commence the shipping of coal to the people hereahout.

AMADOR.

QUARTZ MILLS RUNNING.—Amador *Ledger*, Nov

LENCOE CONSOLIDATED MINING COMPANY.—Glencoe Consolidated mining company, a nt incorporation, have acquired possession he well known Lewis & Fairchild and Ash- l mines, in the Mosqaito district, and are paring to work them exteasively. The es mentioaed adjoin sach other on the e vein. Considereble work hss been done the Lewis & Fairchild, the ore extracted ding very large retnrns A shaft hss been k to a depth of ebont 70 ft and levels run, overiag one of the most promising ledges in eastern portion of the conaty. Compsra- ly little work has yet boen done upon the land. It is the intention of the new pro- tors to prospect the vein nntil the proper s for sinking a main shaft can be de- ined, and then erect snbstantial machinery siak to a depth sufficisnt to thoroughly test permanency and vslne of the lode. F. cher, Esq., an experienced nnd practical er, whose loag connection with mining op- ions in the npper country has rendered him ectly familiar with that esction, is to be erintendent of the mine. The company n business, and they certainly could not e selected a more favoreble locality for the elopment of a successfnl mining enterprise n the one thsy have chosen.

LENCOE DISTRICT.—The lower stopes of the Bruno are now yielding larger quantities re than expected, and the glittering of the ions metal leavee no donbt as to the valae. mine will require heavier machiaery in a t time. Very rioh ore has been struck in tunnel of the Joaqnin. A winze ie now g sunk to ascertain the extent of this body. Matters at the Rickman mine are factory. The machinery for the Grass- per is on the ground and will he pnt in ition ae aoon as poesible. The previone kings of the mine realized ore worth $147 ton. To judge by the yield of the ore recently hed, and general outlook of the mine, Pot- & Co. will make a fine showing in a few nths.

DORADO.

HE WOONSIDE.—El Dorado *Republican*, Nov. The ore at the Woodside continnes to look L. Improvemente are being made which enable them to extract the gold from the pharets usually let go to waste, and it is ght that enough can be realized in this way o vsry far toward paying the rnnning ex- ses of the mine. The running of an in- e from the present hoisting works to the e now being worked throngh a shaft 240 deep, and a tunnel 130 feet in length, is emplated, ae is also the addition of five e stampe. From the two olean-ups made ding the peat month, with five stamps, $4,500 e sent below. Twenty-two men are em- yed about the worke. With one or two hdred feet more depth we may expect to r of extraordinary rioh developments in the Voodside.

HE failure of the bank of California cansed saepension of negotiations nearly conenm- ed for the reopening of the St. Lawrence e, and the disastrous fire at Virginia will doubtless delay the project for some time. is ie to be regretted, as we believe that the e will prove a very profitable property if roaghly and economically worked, and give mene nt employment to a large number of n.

r ie rnmored that the Cederberg mining cpany are negotiating for the purchaee of Taylor mine, and that it is probsble that it l be sold to them. The Taylor continuee to k fine, and has every indication of being manently rich, but the machinery now in , we are told, is inadequete for the require- nts.

PA.

PAONUCT O F POPE VALLEY MINE.—Napa *Re- ter*, Nov. 6: The totnl produot of the Pope ley qnicksilver mines, so we learn from a gleman well qualified to know, has been, n the first to the presont time, about $345,- 0 worth of quicksilver. This represents a ch larger qnantity than present prices would icate, a large portion of the metal having at t been sold under contract at 45 cents per nnd.

VADA.

PROVIDENCE MINE.—Nevada *Transcript*, Nov. The owners of the Providence mine have, ce Jnly, been performing dead work moet of time, in the best part of their mine. They ve opened up new levels, stripped the ledge d left the rock ready to be taken to the eur- e when the proper time comes. Enough k hae been taken out of the other parts of mine to keep the mill running, but the onanza" portion is awaiting the completion Fryer'e works. A mining expert from San ncisco, after examining another mine upon ich he is to report, visited and paesed ough the Providence last week. We are in- med that he eays he never eaw ae pretty a ht in all the mines he ever visited. The k which lies exposed reedy to be taken out rich in sulphnrete and galena, and it glistene e fire as the lights shine upon it. The de- sit is very large, and by mill process will pay into the hundreds per ton. It ie intended work it all by the Fryor procese.

NEW YORK HILL.—*Foothill Tidings*, Nov. 6: ws from this mine is of a very favorable racter. The ledge is large and the rock of d quality. The yield of the mill for Octo- was about $19,000, a nice little nugget for omparatively new mine. Jamee Champion s recently been appointed underground nager of this mine—a most excellsnt choice.

FRYER'S PROCESS is declared a perfect sucoess, and the capitalists who backed Mr. Fryer in his undertaking to establish works here have returned to the Esst, satisfied to let the fntnre rest upon the praotical doings of these works. Mr. Fryer has, we understnnd, purchased the Glenhrook property, npon which the works are situated, and while intending to erect other works for all who wish them, will run these on custom rock.

RANDOLPH FLAT and vicinity is a fine field for the prospector nnd we hope to see many new mines opened there soon. Egan & Co. are nt work on Raudolph hill and we should jndge are tsking out good pay from their mine. We were shown a nice lot of coarse gold this week, and the boys seem to be in the best of spirits. Reese & Co. have been compelled to suspend work for the winter, on noconnt of water, but hope to he able to start in good shape in the spring. Reese is at present prospecting some new locations, with good promise of success.

KENTUCKY.—We saw some good looking quartz from the west drift this week and understand that the men who own in and also work in this mine are very much eleted at the wey the ledge is improving in that direction. The mine is only half a mile from Fryer's new reduction works.

PLACER.

NEW COMPANIES.—Placer *Argus*, Nov. 6: The work of developing the mining resoaroes of Placer oounty goes forward with vigor. Nsw minss, both quartz and gravel, are opened every week, and the production of the precious metals ie conetantly increneing. Great activity is displayed all over the county in preparing for the coming eeason. Should it be a favorable one, as now anticipated, a prosperons year is before ns. Within a week two new companies have been organized to work gravel mines in this county, both by San Francisco capitaliste.

SONOMA.

COAL.—Sonoma *Democrat*, Nov. 6: We are informed that quite a promising outorop of coal wae strack in grading for the railroad to Guerneville, on Jacob Jacobson's ranch, on Russian river.

STANISLAUS.

COAST RANGE QUICKSILVER MINES.—The *News* eaye that prospecting for qaicksilver in the Coast range, in Stanislaus county, is being pushed ahead with considerable activity. The editor has been ehown samples of ore taken from the Cristimba olaim ranging from 40 to 80 per cent. of mineral. These samplee are found at a depth of abont 30 ft from the surface. The vein containing qnicksilver is represented as being 4 ft in thickness, in only about 4 inches, however, of which the highest grade ore is found, the other portion containing a small per cent. of qnicksilver. From indications, those in charge of the works are sanguine that they will soon open out on to a solid body of splendid ore. Covert & Co. are still at work on the Waterford mine. They have already one furnace in operation. They have made trial tests, and are now confident that they can smelt out quicksilver sufficient to defray the expenses of developing their claime. These men are praotical; they own the greater part of their claims, and work the mines themselves. The other day they succeeded in retorting 2 tanke of quicksilver, which is, indeed, very encouraging to them, and causes all to hope that they will yet he rewarded for their indnstry and energy.

TRINITY.

ON THE ROAD.—Trinity *Journal*, Nov. 6: The large retorts for the Altoona quicksilver mining company reached the Davis ranch this week. Owing to the bad condition of the roads, oaused by the late rains, it is probable that they cannot be moved from there for a few days, but the oompany intende to get them to ths mines hefors another storm.

MINERS are all getting ready for the sluicing season, and town is distressingly dull. Of conrse we are sure to have a wet winter this time, so we are resting contont in expectation of the good time coming, when the boya clean up, next spring.

TRINITY Q. M. CO.—Mr. J. W. Smiley returned this week from Cinnabar, where he has been for the past fortnight, prospecting the depoeit in the Trinity company's mine. He reports the etringer to be 24 ft wide, and it hae been followed more than 100 ft in longth. The oompany havo contracted with Samuel Eggers for a new tuunel, 300 ft in length, which will tap the deposit about 100 ft below the present tunnel. Through this lower tunnel they will work next summer, by whioh time they expect to have furnacee erected and everything in order for the reduction of ore. At present the company hae some fifty tons of rich ore on their dump, taken from the upper tunnel. Smiley eays they have one of the higgest thinge in the world, and his judgment on mining mattere is oonsidered sound.

TULARE.

MINERAL KING DISTRICT.—Tulare *Weekly Times*, Nov. 6: We hear good reports from Mineral King mining district, although the work has nearly suspended for the season, owing to the inconvenience of getting in enppliee, the district being far into the mountains without a road and a large quantity of snow falls dnring the winter. Mr. G. W. Brown, the superintendent, and J. P. Ford, the recorder of the district, called on us this week, and both are confident of a great development of the mines next year. We learn from them that the company working on the White Chief are cutting down on the lead by beginning on the lower sids and makiag a cut through toward the hanging wall. They have advanced eight ft into the lead and have exposed a solid mass of galena ore 16 ft high, which assays from $112 to $220 per ton. It is believed thst the lead is 30 ft thick. The company is still at work, and will go down 30 or 40 ft on the ore this fall. Considerable work has been done on the Lsdy Frenklin lead during the summer. A tunnel has been run into ore for about 30 ft, and shows a solid vein of ore 7 or 8 ft in thickness, which assays from $50 to $150 in silver per ton. Extensive work has heen done on the Silver Wreath, McGinnis and Empire, all of which show a good development of well defined ledges of ore which assays from $50 to $500 per ton. It is a sottled question es to the smount and qnality of ore in the district; and the next move will he to erect mills and smelting works; bnt in order to do this a road is almost absolutely necessary. We expect to see a quantity of bullion coming out of this district by another year.

Nevada.

WASHOE DISTRICT.

JULIA.—Gold Hill *News*, Nov. 4: The main sonthwest drift, on the 1400-ft level, is advancing seven feet per day, the face in quartz, porphyry and ore mixed, of the most favornble description. There ie every indication that perhaps the next blast exploded will discover the main ledge and bodies of pay ore. The drift at the 1500-ft station ie in twenty-six feet, the face in the fine appearing material. The bottom of the shaft ie also in qnartz and porphyry of a fine, promising character. Work is being driveu at all points energetically, and the prospects of the Julia are growing more enconraging every day.

PROSPECT.—Fine looking streeks of qnartz are being out through by the tunnel, all of which give good aseays.

BELCHER.—The pumps are running steadily and the water is almost entirely extracted from the 1600-ft level, ready to again commence cross-cutting in that portion of the mine. Everything in and about the mine is working splendidly, and new life appears to be infused with the inoreased extraction of the amount of ore.

CHOLLAR-POTOSI.—Daily yield, 60 tone of ore. Thie ore is being extraoted from the old upper workings, which show bnt little change in any of their features. The main south drifts on the 1250 and 1350-ft levels are steadily advanoing. Sinking the new oombination shaft ie making excellent progress, the rock in the hottom blasting out finely.

YELLOW JACKET.—The north drift from the bottom of the eouth winze on the 1940-ft level ie in a distanoe of 26 ft, and the eouth drift from the bottom of the north winze on the eame level is in 56 ft, the faoe of both in good running ground and perfectiy dry.

NORTH CONE. VIRGINIA.—The work in this mine is still confined to einking the main shaft, no croes-cutting having as yet heen attempted. When a good and sufficient depth is attained, several levels can then be opened and prospected in the same interval of time that it wonld take to prospect one.

IMPERIAL-EMPIRE.—The ore breasts continne to look well and yield ahont 40 tons per day of good milling ore. Everything working finely both in and about the mine. The Kelsy mill at Silver City was started up on ore from the mine during the week.

SAVAGE.—But little has been done in thie mine during the past week, except to pump and hoiet water. The water hae been lowered in the incline 175 ft during that time, showing thnt the flow ia gradually subeiding. It will not now take long to drain the main incline, when work can be resumed successfully at all points.

SUCOOR.—The rock in the faoe of the west croee-cut is much softer, with streaks of quartz and ore coming in, furnishing strong indications of a near approaoh to the main ore vein.

OVERMAN.—The main west drift on the 1100-ft level is rapidly advancing. The south drift from the bottom of the winze on the 1100-ft level is steadily advancing, the face in soft material.

DAYTON.—The work in the mine is mostly confined to sinking the main ehaft at a very rapid and encouraging rate. The new maohinery worke with the utmost perfection, and there is little or no trouble occasioned hy the flow of water.

BEST ANU BELOHER.—Everything ie agnin in good shape, and the prospecting on the 1700-ft level ie being vigorously prosecuted as usual.

ROOK ISLANU.—Driving the main weet drift on the 550-ft level is making steady progress, notwithstanding a steady flow of water that keepa the pumps pretty busy.

SIERRA NEVADA.—Sinking the shaft making good headway. The west drift on the 1000-ft level of the new shaft ia stendily advancing, without change of valne.

SILVER HILL.—Sinking the main incline below the fourth station level is making steady and favorable headway.

BALTIMORE AND AMERICAN FLAT.—Sinking the main incline is making rapid headway, the rock in the bottom blasting out finely. No water to interfere.

MINT.—Sinking the shaft as usual, the bottom in very favorable ledge material. Tho shaft is now down 900 feet.

BUCKEYE.—Sinking the mnin inclius is making favorable progress. The flow of water is quite strong but is easily handled by the new pump.

LAUY BRYAN.—Sinking tbe shaft is going ahead as usual. The southwest drift, on the 170-ft level, is in 212 feet, the face in quartz and porphyry, mixed with occasional streaks of fine ore. Cross-out No. 5, on the 250-ft level, is egain being driven ahead, the face showing some fine ore. On the 380-ft level the main north drift is in a distance of 195 feet, following the east wall of the ledge. The main sonth drift on the 380-ft level is in 430 feet, the face in white qnartz, strongly resembling the heavy hodies of qnartz fonnd in the Ophir, Consolidated Virginia and other Comstock mines.

LEVIATHAN.—Since last week's regular report the north drift at the 420-ft lovel has rnn into a rich ore body, which is believed to be extensive. The whole fsce of the drift to-day is in rich ore, assaying up in the hundreds. This development is not unexpected, as the drift has been running for it all the time, and the same rich vein shows in the level above. When it ie cross-cut into, its width can be aecorteined.

UTAH.—The putting of the pumping machinery in good working condition is being done as fast as it is possible for it to be accomplished by foundrymen and machinists.

CROWN POINT.—Deily yield 300 tons of ore. The ore breests continue to look well and yield the nsual amount of milling ore. The Mexican mill will be also started np on ore from the mine as soon as the repairs are completed, which will be ahont the middle of November.

CALEDONIA —The dowaward progress of the shaft is about three feet per day. The pump tank etation at the 505-ft station is abont completed.

GOULD & CURRY.—Work in the mine was discontinued on account of the conflagration and flood of water from the Consolidated Virginia last week. The water has been almost entirely drained, the pump handling the flow with the most perfect ease. The lower levels have been greatly cooled and benefited by the flow of water, and work has again been resnmed at all points to a better advantage then before the flood.

GLOBE CONSOLIDATED.—The south drift from the main west tunnel, in the ore vein on the adit level shows it to be from fifteen to twenty feet in width, with spote of excellent ore. The north drift on the ledge at the 350-ft level is etill in quartz, cutting in its course fine bunches of ore.

LEO.—The work of driving prospecting drifts from the hottom of the winze is steadily going on. Drifts are still in a very favorable character of ledge matter, showing seama of good-looking quartz. Ledge large and well defined, with casings emooth and regular.

AMAZON ANU GLASGOW.—The shaft is down 350 ft, at which point a station is being opened and a drift eterted to cnt and prospect the ledge, which is not only well defined at thie point but promiees to prove itself a valnable ore deposit.

NEW YORK CONSOLIDATED.—The new machinery continues in splendid operation, draining tha shaft very effectually. The prospecting and development work of the mine will be proceeded with actively and nnder the most favorable auspicee, as one excellent seam or vein of quartz asseying $50 to the ton is already enoonntered.

SOUTH COMSTOCK.—Excellent progress is being made with the cross-cut, which is in a little over 200 ft to-day. The face is in qnartz and clay seams, and pushing at right angles across the ledge matter toward the msin ore vein.

JUSTICE.—Streaks of low grade ore continue to he met with in the south drift at the 800-ft level, ehowing nearer proximity to the main ore vein. The 500-ft level is showing still better than last week, the face of the drift continuing in fine ore.

WOOUVILLE CONSOLIDATED.—Work on the new building and machinery is making good progress at all pointe. The face of the drift on the 426-ft level is in quartz and porphyry mixed.

WEST BELCHER.—The main tannel is in 315 ft, the face in qnartz of a fine character, from whioh excellent aseays of gold and silver are obtained.

FLORIDA.—The west drift has tapped a stronger flow of water from the winzes, which are now draining oat fast.

NORTH CARSON.—A good promise for a rich mine ie being made by the indications in both the upper and lower tunnels.

SULLIVAN.—The sinking of the new ehaft, and advancement of the drift, progresses nt a satisfactory rate; both in vein matter of a most promising and encouraging character.

CALIFONNIA.—Men are again at work on the 1550-ft level as usual, the neceeeary hoisting being done through the Gould & Curry shsft. The face of the main north drift on the 1550-ft level is being steadily advanced toward the north line, the face still being in rioh ore. Sinking the winze below cross-out No. 5 on the 1550-ft level ia making good headway, the bottom also in rich ore. Sinking the C. & C. shaft is being pushed forward with all the vigor possible.

LAUY WASHINOTON.—Both pumps in full working condition. Shaft entirely freed from water and easily kept so. Sinking is resnmed to-day under the most favorable auspioes. The ponderons new machinery is working right straight along, moving easy and smooth, and with the regularity of olock work.

NEVADA.—The winze below the east oross-cut from the south drift at the lower level, is being sunk at a satisfactory rate, following a streak of low grade ore, in search of something better.

COSMOPOLITAN.—Face of main tunnel all in good milling ore.

CRIONAL GOLU HILL.—South ore body showing more extensive as further developed.

VIVIAN.—Grading new road to the miue, and also grading for hoisting works.

Micro-Mineralogy.

At a recent meeting of the San Francisco Microscopical Society, Mr. Henry G. Hanks, the well known chemist and assayer, read the following paper on micro-mineralogy:

In a scientific sense, the word "mineral" used as a noun, implies any inorganic substance having a uniform chemical composition.

As an adjective, it may also denote a mechanical mixture of two or more minerals, as for example, granite, which may be called a mineral substance in contradistinction to animal or vegetable substances. Granite is composed of quartz, feldspar and mica, each of which are minerals in the first sense. The constituents of granite are often so finely divided as to deceive the unassisted eye, and to appear homogeneous. This is frequently the case with ores, which are also aggregations of minerals.

As a rule, crystals are pure minerals, although the rule is sometimes exceptional, as in the case of arenaceous limestone, resinous fluids in quartz and topaz, specular iron in feldspar, chlorite and titanic acid in quartz and other examples. If a mineral be a pure species, an analysis of one portion will give the same result as that of any other portion. The practiced eye of the mineralogist detects at a glance any of the ordinary minerals when in large masses; but in obscure specimens the aid of the microscope is indispensable. In many cases, what appears to the eye an amorphous, uninteresting specimen, when placed under the microscope, resolves itself into beautiful crystals of one or more well known minerals. In attempting to analyze such samples, without previous microscopical examination, the chemist is at a loss to account for the result of his investigation, and too often announces the discovery of a new species. The constant use of the microscope in the study of minerals will have a tendency to make the student skeptical as to many of the nice distinctions drawn by chemists in making new species. A recent investigation is a case in point: A specimen in the University collection having the appearance and giving the reactions of vitreous copper, was found to be magnetic. To the eye it was homogeneous, but the microscope revealed its composite character. Upon this discovery being made, a portion of the mineral was pulverized, and the magnet separated a considerable quantity of magnetite. Specimens supposed to be *Calaverite*, and before the blow pipe giving all the reactions of that mineral, under the two-thirds objective are seen to be native gold in a free state, mechanically mixed with tellurium. The results of my microscopical examinations cause me to doubt if gold ever becomes mineralized in the strict sense of the term.

The modern first-class binocular microscope is admirably adapted for the study of micro-mineralogy. Low powers will generally be found best suited to the use of the mineralogist. Except for thin sections and for the study of powdered minerals, in exceptional cases, a higher power than the two-thirds will seldom be required, while for studying the various rocks, the four-inch will often be found the best.

To familiarize the student with the appearance of minerals under the microscope, a set of slides may be prepared for comparison by mounting fragments of well determined minerals, freed as much as possible from foreign substances. My method of preparing them is as follows: The slide is placed on a card of the same size, upon which a dot of ink has been made to indicate the center. A scale of shellac is held in the flame of a spirit lamp; when nearly dropping, it is touched to the glass over the dot. This insures a central position for the object when mounted. The slide is then heated over the spirit lamp until the cement is liquid and the specimen placed on the melted shellac, with the best surface uppermost. It is then gently pressed down and the slide set aside to cool. It has then only to be labeled and placed in the cabinet.

Pulverulent minerals, small crystals, concentrated washings, etc., are best mounted in cells and covered with thin glass in the usual manner.

In some cases, the dust from powdered minerals adheres to the glass cover if loosely mounted. In such cases, I find it better to coat the slide within the turned circle with gum arabic, in rather thick solution. When dry, if breathed upon, the powdered mineral will attach itself to the gummed surface. The glass cover may then be replaced and cemented.

Those minerals of which rocks are composed, as for example, albite, orthoclase, mica, labradorite, epidote, quartz, etc., should not only be mounted as opaque objects, but also in thin sections to admit of their being examined by polarized light.

The study of rocks by the aid of the microscope is growing yearly in favor, and no geologist will now decide on the character of a specimen without first submitting it to the optical test. To fully understand the rocks, which are composite, the student must familiarize himself with the optical properties of the minerals composing them. He must learn to distinguish on the first turn of the polarizer the difference between quartz and feldspar, and to decide as quickly if the feldspar be orthoclase or albite. This can only be done by careful study of minerals.

For opaque minerals I find the best illumination to be that produced by the parabolic illuminator, although the large bull's-eye condenser will be found to produce good effects when the former apparatus is not at hand. The advantage of the illuminator is that the light is thrown downward into the cavities of the specimen, which are often filled with beautiful crystals. In transparent sections in which opaque minerals are imbedded, the parabola is indispensable. The most beautiful effects are often obtained by its use.

Thin sections should also be examined by polarized light; the details of the inner structure are by this means often brought out in an unexpected manner.

The microscope can hardly be dispensed with in determinative mineralogy. If the mineralogist is called upon to decide upon the fusibility of a mineral and finds the result doubtful, he has only to strongly heat a thin fragment in the blow-pipe flame and place it in the field of his instrument. If at all fusible the thin edges will be seen to be rounded. A fragment of a mineral containing aluminum, if wet with nitrate of cobalt and strongly heated, will often show the prominent parts tinged blue under the microscope, when the unassisted eye fails to distinguish the reaction. Washings containing gold or sulphurets may be examined under a low power and their character known. Metallic beads reduced from minerals may be distinguished. Blow-pipe beads may also be conveniently examined. By the intermittent blast, technically known as "flaming," the fused bead in some cases becomes opaque from the formation of crystals. Under the microscope these may often be recognized and the nature of the substance known.

Chemical reactions may also be made on minute portions of minerals under the microscope by the aid of two pieces of plate glass. A convenient size for those plates is three inches square. In the center of one a shallow depression is made. In this cavity the fragment of mineral is placed, the reagent added, and the other plate placed over it. The double plate is then placed in the field of the instrument and the reaction observed. No fumes will escape to injure the instrument if the quantities are small. Sublimates made in glass tubes may be examined by breaking the tube and carefully picking out those portions upon which the sublimate has formed. If the tube is wrapped in a clean cotton cloth and struck a quick blow with a small hammer the pieces of glass will be cleaner, and the fragments larger than if broken without this precaution. Arsenious acid, sulphar, antimony, mercury, cinnabar, organic substances, etc., may be recognized with certainty in the sublimate.

In making quantitative blow-pipe assays of minerals and ores containing gold or silver, when the quantity of metal is small, it is the well known custom to measure instead of weighing the bead obtained by cupellation, using for that purpose the ivory scale devised by Platner. In doing so the assayer often finds it difficult to place the bead in its proper position on the scale. This difficulty is avoided by using the microscope with Jackson's micrometer. The bead is first placed on a glass slide and the number of divisions of the micrometer it covers is noted. The bead is then replaced by the scale, which is moved in the field until the distance between the lines of the sector equals the same number of divisions of the micrometer which were found to indicate the diameter of the metallic globule. At the same time the reading of the scale, giving the value of the bead, can be seen and noted. If the micrometric value of each division of the scale is determined and the results tabulated, all further use of the scale may be dispensed with.

The examples I have given are those of most common occurrence, but others will suggest themselves to the mineralogist, my experience being that the more the microscope is used in determinative mineralogy the more indispensable it becomes.

Completed and Accepted.—The new mill built on the Defiance mine, near Battle Mountain, is completed. J. S. Akin, of this place, an experienced quartz mill builder, went up last week to examine the new mill; which was built by contract, for the company, and see if it was built according to the specifications. Mr. Akin informs us that he found it all right, and that it has been accepted by the company. Attached to the mill is a Bruckner furnace for roasting the ore previous to amalgamation. Mr. Akin went up yesterday to superintend the starting of the mill, which will commence crushing to-day or to-morrow. From what we have seen of the ore and heard of what is on the dump, this new mill will turn out considerable bullion.—*Silver State.*

All metals were at some time gases, and the study of the vein system includes that of the ore both in its solid and gaseous form. The mind, in its electric thrills, must have a tilt with these gases as they existed before the mineral field was formed. Iron mountains and lead and copper veins may owe their origin to other planets which, having lost their cohesive attraction, scattered their elements in a gaseous form to build up other worlds.

The Bessemer channel steamer experiment has finally come to an inglorious end. The ship has been pronounced an utter failure and is offered for sale to the highest bidder.

Olmsted's varnish, made by melting one part of rosin with ten parts of lard, will prevent rust or corrosion on sheet iron or other metal to which it is applied.

Home Gardens.

Because the Chinese and some other foreigners have come so near satisfying our vegetable wants, many people evidently think that we should no longer cultivate gardens, and the system of supply which grew out of the necessities of our mining and lumbering camps suffices, in too many instances, for the villages in agricultural districts and even in regular farming communities. The American farmers, both men and women, have heretofore worked too hard; and anything that can lighten their labors should no doubt be looked upon as a blessing, but as this excessive work grew mostly out of the necessities of new country life, where there is much to do and little to do with, we can hardly expect a quiet, easy going system of labor, as long as there is any of the pioneer element in American life. And it is as this element disappears out of American farm life that we should look for an increase in vegetable gardening among farmers.

The competition in the sale of fresh vegetables is so great in the cities that the working people there are not likely to suffer for want of this change of diet. It is in the country, surrounded by vegetable growth, that this want is felt most. And the economy of growing garden vegetables, both in city and country, is a very complicated question. If the amateur gardener were to undertake to get his living by growing vegetables, he would, no doubt, have to succumb; but with a judicious outlay of labor and money he can add much to his vegetable store, he can enjoy many good meals, and his diet will better accord with the rules of good health than if he restricted his appetite in this direction.

Those who have come here from the East should be careful how they yield to our California notions in regard to vegetable gardening; and if our own people would cultivate a taste for cultivating gardens it would have a good effect upon young Californis. Nothing so much attaches people to the soil as working in it. Every tree, bush or flower that a person plants becomes a means of attachment to the soil.

In doing the ordinary housework of a family in a country village sufficient water is furnished which, if it were utilized, would irrigate a moderate sized garden. Encourage this economy. It will be found that nothing favors economy more than gardening.

We have called the attention of our readers to this matter thus early in order that they may include gardening in their arrangements for the winter's work.

The Monster Dredgers.

A few months since we gave our readers an account of two monster dredging machines, which had recently been imported to assist in the reclamation of Roberts' island, on the San Joaquin, near Stockton. We are happy, in referring to them again, to assure our friends that these machines have fully answered the great expectations mentioned at the time. They were put in operation about the 1st of July, and already thirty-two miles of levee have been built; leaving only seven or eight miles to complete the reclamation of the 20,000 acres. About 550 Chinamen have been employed as supernumeraries to those "leading performers." In their course they have taken from the bed of the river about 4,000 yards of material per day, which is better suited for leveeing than what has heretofore been used—namely, the dirt from the river banks. And, be it understood, it is of great advantage to retain the banks undisturbed, thus adding materially to the completeness of the job. The levee is built above the flood mark of 1862.

The hard rock in the river's bottom—almost impervious to the miner's pick—offered, apparently, no obstacles to the jaws of this monster. It takes up its huge load of hard-pan, runs it sixty feet inland on its great crane, and deposits it where it is wanted in forming the bank. It forms a channel for its own course as it proceeds. We are anticipating the satisfaction of inspecting the work of these two dredgers at no distant day, when we will lay before the readers of the Press an appreciative account of this gigantic enterprise.

Over eight thousand acres of this reclaimed land are already disposed of, by lease on the system of percentage of crops, the leasing parties being principally practical farmers from the Atlantic States; the owners of the land making all necessary permanent improvements, such as buildings, etc., on five years' time.

The great American inventions, which have been adopted all over the world, are the following: 1. The cotton gin, without which the machine spinner and the power loom would be helpless. 2. The planing machine. 3. The grass mower and grain reaper. 4. The rotary printing press. 5. Navigation by steam. 6. The hot air (caloric) engine. 7. The sewing machine. 8. The india rubber industry. 9. the machine manufacture of horse shoes. 10. the sand blast (for carving). 11. The gauge lathe. 12. The grain elevator. 13. The artificial manufacture of ice on a large scale. 14. The electro-magnet, and its practical application, by Henry and Morse. 15. The only successful composing machine for printers.

The latest thing in the way of anti-friction is the enameling of thimble skeins and axles for wagons and carriages.

The Law of the Rail.

Some one who has taken the trouble to post himself on the law governing railroad passenger travel says that extra charges for failure to buy tickets are universally sustained by the courts, but there must be a full opportunity to buy afforded by the ticket seller. Passengers must show tickets when asked for. As to stopping off, there is only one decision, which is that a passenger cannot stop off and resume his journey without the previous assent of the company. As to the obligation of the road to furnish a seat to a passenger, a decision says: "A passenger who exhibits his ticket need not surrender it until he has been furnished with a seat." A railroad is not liable for things stolen out of a passenger's seat, there being no previous delivery to the company's servants; for the same reason the company is not liable for baggage in the passenger's own care. Passengers who neglect to look after their own baggage on arrival at their destination cannot recover it if it is lost without fault of the carrier. Baggage left in station house for the passenger's convenience, after it has reached its destination, comes under a new class of rights and duties, the baggage master assuming the position of a gratuitous bailee, who only becomes liable in cases of gross negligence. The obligation of the railroad as carrier ceases when it has delivered it to its owner at the place of destination, or when he has had reasonable opportunity of receiving and removing it. It will interest sportsmen to know that they may recover for the value of dogs when they entrust them to baggage masters for hire because of their exclusion from the passenger cars.

A New Light.

Recent discoveries in medical science have demonstrated that much of what has hitherto been deemed ill temper, egotism and coarse disregard of the feelings of others or the proprieties of life, are nothing else than disease of the nervous system, and the individual afflicted by it, instead of being an object of dislike, and even hatred, as hitherto, is more properly entitled to our commiseration and sympathy. Dr. Brown-Sequard tells of a lady at the English court who had to retire from it on account of a prompt way she had of saying to any person, even the Queen, with whom she differed on the smallest matters: "You are very stupid," "What nonsense," "This is madness in you," and such light and complimentary phrases. Victoria could not stand it and so she went her way. Now, anybody but a doctor would have thought that woman was simply an ill tempered female, with a peculiarly blunt and disagreeable way of speaking her mind; but medical science stepped in and showed that she was, in reality, an angel in disposition, and only acted so because some disease with a polysyllabic name made a disastrous sympathy between her nerves of hearing and those of speech. Dr. Brown-Sequard also tells of one of his young patients who, by a somewhat similar affection, was impelled to startle people from time to time, in the course of conversation, by slowly and impressively ejaculating, "Hoo! Hoo! Hoo!" Superficial observers might have deemed that owlish exclamation idiotic, but medical science says, "No, it was only her nerves."

Which Shall Rule—Nine-Tenths or One-Tenth.—About one-half of our population belongs to the farming class. About one-quarter of our population belongs to the mechanic class. And about fifteen per cent. of our population are laborers who make their living by their muscle. Has any one ever asked himself how much legislation is done by this ninety per cent. of our population? It is not a patent fact that they have scarcely any influence in our national legislation? The truth is, the legislation of the country is shaped and controlled by less than one-tenth of the population. It is made in interest of capital, instead of the interest of the people. And this is the reason there is so much suffering among the industrial classes to-day. There has never been such a concentration of capital going on as within the past few years, and a concentration of capital brings a concentration of political and law-making power. Capital has got the people within its toils. Can they release themselves? This is an important question. This must form a great political issue. If one-tenth of the people are to govern nine-tenths, and make them subservient to their peculiar interests, it is time we were awakening to that fact. It can do no harm to bestow a little thought upon this matter.—*Rural World.*

The Gulf Stream.—The deep-sea soundings of Lieutenant Berryman confirm the prevailing theories concerning the cause of the Gulf stream. At the depth of 2,000 feet in the Straits of Florida, the temperature is only three degrees above freezing, while deep soundings on the telegraph route show a temperature of ten to fifteen degrees below the freezing point. Hence the warmer and lighter water is from the Mississippi crowded to the surface, and is forced toward the colder regions of the North, while the denser waters of the North flow south to restore equilibrium.

It is understood that railroads running to the West from New York are about to agree on a new and higher freight tariff, to go into effect on the 15th instant, on a basis of sixty cents to Chicago or fourth class freight. Several roads last Monday ordered their agents to make no time contracts.

Useful Information.

Where to Look for Defects in Boilers.

In reference to Cornisb boilers more particularly, firet look at the bottom to see that it is not damaged by being moved on common rollers. If such has occurred, there will be hollowe or flat places in the plates. Examine the man-holes; eee that tbese have not been strained or dsmaged by having "toggles" pnt acrose them for the pnrpose of moving or lifting the boiler. See that blocks or piecee of wood have not been left inside, between, or nnder the furnace or tnbes. Examine all ronnd the bottom flange of the steam cheet to see that it has not been cracked in the riveting; and examine the same inside the boiler to eee tbat it hse not been filled np with iron horinge, which ie commonly done by bad workmen to conceal a crack in the bottom flange of steam cheete, and will freqnently enable them to pass nnobeerved nnder water test, hnt generally gives way to some extent when steam ie got np. Examine the angle-iron rings ronnd the ends of the tubes, between the rivet heads, eepecially under the bottoms of the tnbee, and eee that there are not any cracke running from rivet to rivet. Next examine the gnseet-staye at the ends of the boiler, and see that the rivets are not looee, also that they are all of one size. It often happene thst theee etays are pnt in by boys or bad workmen; that the holes are nnfair; that the riveters cannot pnt the proper eized rivets in the holes, and therefore pnt in anything that will go in, thinking, ae they are ont of sight, that they are of no conseqnence. See that the water-indicatore are properly fixed, and that bits of red lead are not etuck in the holee. See that the bearing-bare are the proper length, and not likely to drop out when the boiler ie at work. Further, eee that there is room for the fire-bare to expand when they become heated; and finally eee that the blow-off cock doee not leak, and that the safety valve lever will lift np and down easily.

In looking for defecte in marine boilere, examine all the plates exposed to the action of the fire very carefnlly. Next, look at the ende of the screwed etaye; eee that they are not pnt throngh a eeam of rivets by mietake; eometimes a etay is screwed throngh a rivet hole, bnt that is no harm. Examine the ende of the tubes, and eee if piecee of hoop iron have been pnt ronnd any, where the holee have been bored too large. Alec, eee that the tnbee are not too ehort. They ehonld all project eome distance through the tube plate (abont one-fonrth inch).

See that piecee of wood or anything elee has not been left inside the boiler, and that the fire boxee are not jammed against the ehell at the back or nnder the bottom, or where the eide of the ehell begine to take a carved form. Examine all the internal etaye; eee that they are not bent to clear anything; alec, that they are not fractnred where they have been welded; and that the rivet heade in them are all one eize and not looee, or if they are really riveted. Also, see tbat all the pins are in the holes, and the keye in tbe pine, particnlarly in the bottom, and notice the etaye between the tubes, that they are "fair between" and not straining on any of them; and tbat the etaye appear to be all equally tight. If they are all elightly flexible when pulled with the hand, they will do; bnt if eome are qnite rigid and othere rather loose, they are not at all eafe.

Corn Cobs have recently heen exteneively need for fire lightere. They are first eteeped in hot water containing two per cent. of saltpetre, and after being dried at a high temperatnre, are satnrated with fifty per cent. of reeinone matter. Tbese lightere, which are eold from $2.50 to $3.50 the thousand, are employed with advantage and economy in private honeee and for lighting fnrnacee. By othere the cobs are immersed in a mixtnre of eixty parte of melted resin and forty parte of tar, after which they are taken ont and allowed to dry. They are then eubjected to a second operation, which consiste in spreading them out on a metallic plate heated tc 212 deg. Fah. They are finally aeserted according to size, and tied up in bnndles, and eold at the rate ot six or eight for a peuny. The establishment in Paris (La Societe dee Allnmettee Landaieee) for mannfacturing them employe thirty workmen, and effecte salee to the amonnt of $40,000 annnally.

The Secrete of the Factory.—Dr. Irvine, in the course of hie recent examination before the Factory Acts Commieeion at Glaegow, said: Strange thinge are done in factoriee and pnblic worke. For inetance, in the making of iron maets. hollow tnbes, etc., emall children are eelected to go into the tubee to hold the ende of the rivete; and in conecquence of the great noise the drums of the children's eare get eplit, and they become qnite deaf. The children are tempted by high wagee tc go into this employment; bnt it ie as bad ae that of the old chimney-sweepe. The children are made permanently deaf. It ie pretty mnch the eame in the caee of boiler-making, which alec impaire the hearing." In crce-examination by Mr. Brand, the witneee eaid he had not met with the casee of which he epoke in his own experience.

The dykee of greenetone trap, fonnd in mining regione, generally form the hanging walle of copper-eilver or gold-bearing veine, and are nature'e water eheds for individnal veins, dividing and draining the mineral fields.

Things Useful to Know.

Varnish brushes shonld never be allowed to tonch water, as it not only injures the elasticity of the hair, bnt a resinone substance is formed in the hilt of the brnsh, which can never be thoronghly removed, and which will work ont little by little when the hrnsh is nsed, destroying the glassy snrface which otherwiee might be obtained.

Paint intended for outside work, wbich will not he protected hy varnish, ie mixed ae follows: Crnsh the color if in lnmps, and mix to a etiff peste with linseed oil, boiled or raw—the latter is preferable; then, if a dark color, add brown Japan or gold size, in the proportion of half a pint to a gallon of oil; in a light color, nee patent dryer in eimilar quantities.

A large etick of cypress timber will rot off cypreee tenons, or tenons of any other kind of timber (if pnt together wben tbe cypress is green), if kept under shelter. Cypress will dry rot iteclf, if over fifteen or eighteen inches sqnare; and green oak of any kind, twelve incbee sqnare, will rot a dry one and one-fonrth inch pin of the eame wood, or a pin of any other wood, if dry, and driven tight to exclnde all air.

Horsee will work mnch more eaeily, and lose less of their effective force, by working abreast, than when they are placed in single file. If four horsee are to draw a load in one wagon, it is better to have a long donble whiffletree, with a span of horses on each side of the tongne, than to have one span placed before the other.

A skillful sawyer, in eawing a log into scantling, which he knowe will epring, will first mark off the ends into cnts; and then, after sawing once throngh on one side of the log, will saw a slab off the otber side, and finish in the middle. By thie means the lumber will he abont as trne ae if the timber were not inclined to spring at all.

To fasten emery to leather, boil the glne very thin, add a litttle milk, raise the pile of the leather, and put on glue with the brueh. Then eprinkle on the emery, and let it cool.

To preserve eoap-greaee, fill a csek half fnll of good strong lye and drop all refnse greaee therein. Stir np the mixture once a week.

Preventino Suffocation in the Earth.—M. A. G. enggeste that, in caees of men being accidently hnried in the earth, who freqnently snrvive some time before being completely enfocated, iron pipes, of the sort need for drive welle, should be driven down juet at the edge of the soft earth until the proper depth ie reached; when, by the application of a pump at the top, an abnndance of fresh air could be forced down to enetain life until the men could be rescued by digging.

A Massachusette man, wanting power for hie mill, which is on the river eide, hae hired an idle eteamboat, backed it np to the proper poeition, and taking off the padle wheel, holted the eteamer fast, and it furniehes him all the power he wante.

Good Health.

Sexual Longevity.

Several articles have recently appeared in print reepecting the relative longevity of the eexee, bnt none of them has, in my opinion, stated the facte in the case.

An exteneive observation will teach us, that from the time of birth till ten or twelve years of age girls are nenally more etrong and robust than boye; lees liable to diceaee and death. From the age of puberty to that of forty-five or fifty years, women are more likely to die than men. Thie ie undoubtedly owing in a large part to the artificial, unhealthy life tbey lead. And hence a man oftener buries two or three wivee than *vice versa*. But if a woman eurvives till ehe ie fifty, ehe ie more likely to live to eighty or ninety yeare even, than a man. He, etrong and vigorone at fifty-five, econ after begine to feel the infirmitiee of old age, and in another decade will have been carried off by apoplexy, paralysie or eome prevailing diceaee; while his wife eeeme, if not to have renewed her yonth, yet to have become endowed with a new and peculiar power and beanty. She is bleeeed with the experience of an Indian eummer in life, whoee soft and gentle charme correspond with the balmy, hazy atmoephere of our glorione antumn.

The wife of a olergyman in a certain town whcre I wae stopping last fall told me the ladies were propoeing to make a thanksgiving party for all the old women in the parish. "But why not for the old men?" said I. "Why do you neglect tbem?" "The old men!" ehe replied. "Why we haven't any. I do not believe there is one."—*Ex.*

Candle Wick Gas.—The smoke from the wick of an extinguished candle ie very deleterious, and breathing itin quantitiee would soon cause death. Valentine mentione a case of a company of carousere who tricked a hoy eleeping in the corner of a room, by one of their number holding to the hoy'e noee the smoke of a blown-out candle. After half an hour the boy fell into short breathing, trembling and crampe, and died in three daye. The compoeition of this emoke ie carburetted hydrogen, carbonic oxide, burnt olein, etc. When putting out a candle light before going to bed, always do it ec that there shall be no burning wick left to poieon the air of the room.

A Novel Treatment for Wounds.

Having noticed an acconnt of the somewhat novel treatment recently applied in the case of a wound, we addreseed a note of inqniry to the gentleman named, Mr. A. K. Smoot, a commiesion merchant of Baltimore, and received a reply, a portion of which, with permiesion, we copy. Mr. Smoot says, nnder date of September 22d: "On the 7th of the preecnt month I accidentally jumped from an elevation of three or four feet on to a large nail or spike, driving it abont two and a half inches throngh my foot. This happened in the morning, and toward evening tbe foot commenced swelling and the pain increasing, so much eo that it was with difficnlty my physicians, Drs. Atkineon and Warner, conld relieve me by the nse of the etrongest narcotics. I slept hnt little dnring the night. The next day tbe eame treatment wae coutinned, witb the application of a hot poultice to the wonnd. On tbat day I received a card signed 'Sympathizer,' etating that the smoke from bnrning wool or woolen rage wonld immediately relieve the pain and etop the inflammation. The directione were to smoke the wonnd twenty minntes at a time, repeating the operation two or three timee. I accordingly took a piece of woolen blanket, and after making a fire in an iron pot I emothered it with piecee of the cloth and held my foot in the smoke. This eoon relieved the pain, the ewelling went down, and np to the preeent time there has been scarcely any inflammation; a little bloody water has escaped from the eore, but that is all. My physicians approved of the treatment, and I well know it relieved me of pain and has proved of great advantage in the healing of the wonnd. I am now able to walk and the wonnd ie doing well. I applied the emoke once every day, and also by the advice of my physiciane continned the hop poultice. The treatment with the smoke ie said to be applicable to all wonnds arieing from bruisee, cute, nails and the like, and I hope it may prove beneficial to others."—*Herald of Health.*

Cold Feet.—A great deal of the ill health of women is now attribnted to the kind of ehoee generally worn. Dr. Smith, in his Treatiee on Health, saye:

There is neither health nor comfort in cold feet, as too many women know only too well. They are the fertile parents of no end of diecomfort and ill healtb. The avoidance, then, of cold feet is one of the most direct etepe to the improvement of the healtb. For snch end to be attained, the ehoes muet he fairly eubetantial and not of too eoft and porous leather. Women's boots and shoee are largely made of leather tanned with terra Japcnica, which ie far inferior to leather tanned with bark, eepecially ae regards the abeorption of moietnre. Such leather forms the eclee of all cheap hoots, to which claes women's boote so exclneively belong. When, then, ench boote are placed on a wet flagetone, or on damp roade, the leather becomee moiet and then the feet become cold at once. Leather when dry is a very bad conductor of heat, and so a stocking and a leather shoe are efficient protection for the feet in climatee eo cold that fnre are requieite for the clothing; when wet, however, heat ie quickly condncted off, and eo the damp leade directly to cold feet. Any one who hae lived much in the eaddle knows the difference felt hy the wet foot and the dry foot in reference to the iron etirrup in cold weather; when the boot ie dry the etirrup ie not felt, that ie, ae regards the eeneation of heat and cold, hut let the foot be pnt where the boot becomee moist, and then the etirrnp ie felt quickly and distinctly enough. For delicate women who are very eusceptible to cold feet, the boote ehonld be etout and large enough to admit of a cork ecle. More particularly ie such precantion necessary where there ie a clay eoil; thie remaine damp for days after rain hae ceased, and etrikee cold to tbe feet when looking temptingly dry, conecquently etont boote are aheolntely necessary on such eoils.

Medicinal Effect of Oxygen.—The *Gazette Medicale de Paris* etates that M. Tamin-Despalle, in a paper read before the Academy of Sciences, saye that a patient of his wae attacked with eevere cerebral congestion at two P. M. He fell, and on recovering himeelf fonnd that the whole of the right half of the body wae paralyzed. The pnlse was 82, and the faoe livid. He had taken a hearty meal about half an hour before. M. Tamin-Despalle thonght he ongbt not to bleed, or administer an emetic. He ordered inhalatione of pure oxygen. After the firet few inspiratione the patient felt better, and the power of motion and eensibility retnrned in the paralyzed eide. At eeven P. M., having taken in all abont eight qnarte of pure oxygen, he wae well.

Children's Summer Complaint.—Dr. Jacobi eaye of enmmer complaint: "It comee from over feeding and hot and foul air; never from teething. To avoid it keep doore and windowe open. Waeh your children with cold water at least twice a day, and oftener in the very hot seaeon. When babies vomit and purge, give nothing to eat or drink for four or six hours, but let them have all the fresh air possible. After that time a few drops of whisky in a teaepoonful of ice water, every ten minutes, but not more until the doctor comee. When there is vomiting and purging, give no milk, give no laudanum, no paregoric, no soothing syrup, no teas."—*St. Louis Med. Jour.*

Domestic Economy.

Yeast Powder in San Francisco.

Nothing is of greater interest to men than the process of manufacture of the Staff of Life—the daily food of the swarming hundreds of millions that crowd this narrow globe, and nothing is of more importance in its manufacture than Yeast Powder, without which, or something like it, Bread cannot be made. Many and various have been the means adopted to produce the same results as are now produced by this valuable compound, for Yeast Powder is a thing of modern invention, but it now promises to supersede everything in this way the world over. And as nothing is now so indispensable in this line, so there is nothing in the manufacture of which greater care should be exercised, for from bad Yeast Powder comes bad Bread, and danger to the health of the millions using it.

San Francisco is noted for her Yeast Powder factories, and at the late Mechanics' Fair the proprietors of several, in competition for the premium, necessarily exposed their products to a severe and searching chemical examination. This examination, the results of which are here given, was made by Henry G. Hanks, 617 Montgomery street:

	No. 1.	No. 2.	No. 3.	No. 4.
Weight per can.....lb	.815	.854	.711	.800
Per cent. water lost at 212°.	5.75	8.95	6.09	5.90
Per cent. carb. acid evolv'd	34	13.5	11.4	34.5
Presence of Starch.....	none.	g'd deal.	none.	much.
Presence of Sulph. acid...	none.	trace.	none.	trace.
Alum.....	none.	none.	none.	none.
Acid or Alkali in excess...	alk.	alk.	alk.	alk.
Weight of can & cont'ts. lb	1.003	1.102	.991	.992

In order to understand this it is necessary to know what constitutes a perfect Yeast Powder. This Mr. Hanks defines to be a compound composed of an acid (a harmless vegetable one) and Bi-Carb. Soda, which should when used be in chemical equivalents; that is to say, that they should be so mixed that no trace of either of the original substances should remain after the mixture is effected. To them should be added enough pure dry flour to keep the particles of each from commingling before they are wanted to do so in the Bread. From the union of the acid with the alkali the carbonic acid is evolved, which gives lightness to the loaf. It is evident, therefore, that the more carbonic acid evolved by any particular Yeast Powder the better it is, and also the cheaper. By examining the table it will be found that there was a great difference in this respect between the several samples submitted—some, as Nos. 2 and 3, only evolving about one-third of the quantity evolved by Nos. 1 and 4, from about the same quantity of Powder. The largest percentage, 34.5, was given to the Yeast Powder exhibited by E. Guittard & Co., 515 and 517 Commercial street; this, therefore, obtained the premium. The percentage of water lost indicates the tendency of the Yeast Powder to deliquesence or to absorb moisture from the air. The presence of starch indicates of course the presence of sufficient flour to keep the acid and the alkaline separate until needed. The occurrence of alum in Yeast Powder is injurious, and the presence of sulphuric acid indicates that of alum.

The manufacture of Yeast Powder in this city has of late years attained to very important proportions, and now nearly as much is manufactured as imported. The local production about equals 4160 gross per annum, valued at $86,560, and the importations 5200 gross, valued at $93,600. The total quantity sold from the city therefore equals 9360 gross annually, valued at $180,160. We have therefore something to do yet in the manufacture of this important compound, though it does give employment to five large factories, and though we export our product not only all over the coast but even to Mexico, the Sandwich Islands and far distant Australia.—*S. F. Journal of Commerce.*

A Good Soup.—When soup ie nsed ae the principal dish at dinner, instead of a first course it should be richer in vegetables and much thicker. Put tbe bone on to cook in cold water, adding salt. Let it simmer an hour or two, then boil gently two hours. One hour before serving put into the kettle cabbage and onions sliced thin. In abont half an hour add sliced potatoes, pearl barley or rice, and a handful of vermicelli. Many like the taste of parsley. Add pepper if you like. Do not throw away the bones after dinner. They will make an equally good soup the second and even a third time if cracked.

The best yeast in the world is made by pouring boiling water into sifted flour till the mixture is as thick as common paste. When cool enough add a teacupful of yeast. The next morning the lnmpe will all be gone, and the whole will be excellent yeast, without using potatoes, hops, or any other needless ingredients of the kind. To make yeast cakes, stir in corn meal, spread on a board, cut into square cakes and dry rapidly in the shade.

Many persons, in preparing potatoes for cooking, pare off a thick slice from the surface instead of digging ont the eyes. The skinning process is all wrong, as the strength of the vegetable lies near the surface—the starch growing less abundant as the center is approximated. The best way is to cconre them well, and either bake or boil them with their skins on.

Cocoanut Pie.—Half a cup of butter, one cup of powdered white sugar, four well-beaten eggs (beat whites and yolkes together), one cup of grated cocoanut, one quart of sweet milk. Mix butter and sugar together, then add the eggs and cocoanut, and lastly the milk.

MINING AND SCIENTIFIC PRESS.

W. B. EWER.....SENIOR EDITOR.

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THE ORIGINAL ARTICLES in this paper are mostly set in solid type, giving in our columns one-third more reading than is contained in ordinary leaded matter.

San Francisco:

Saturday Morning, Nov. 13, 1875

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The Mindeleff Process.

We have been favored with an examination of the report of Messrs. Smedberg and Robinson upon this process, and of the analyses by Messrs. Huhn and Luckhardt, upon which the former gentlemen base their conclusions.

We regret that it is too near the hour of going to press to give even an abstract of this important document, but may say that its verdict is as favorable as can well be desired.

It states substantially that the process yields 98 3-10 per cent. of copper from the naturally or artificialy oxidized ores by one step, and that the cost of plant is but trifling.

A previous issue has shown to our readers how frankly this most logical method is being explained; and we look eagerly for the further experiments upon the richer metals which are contemplated.

It is believed that the "Mindeleff reduction company" will be fully organized within a few days, with the primary object of developing our enormous deposits of copper.

AN IMPORTANT ENTERPRISE.—An incorporation, to be known as the Pacific wood, lumber and flume company, filed its articles yesterday in the clerk's office of the county court. Its directors are James C. Flood, Wm. S. O'Brien, J. W. Mackey, Edward Barron and George Wallace. Its object is to cut and manufacture lumber and wood and flume the same, also, to buy, sell and trade in real estate. Its capital stock is $500,000, in 1,000 shares of $500 each.

British Patent Office Reports.

The British Patent Office Reports, the first installment of which has just been received by the Mechanics' Institute, will shortly all be arranged on the library shelves and be accessible to the public. There are 3,300 volumes in all, about 250 volumes of which are in large folios. They are all bound in half Morocco, the expense of binding the whole set in England being $6,735. One hundred and seventy-one Imperial folios cost £577, or about $2,900 or $17 per volume. These are the volumes containing the drawings, all mounted on cloth and bound in securely. The others cost from 87½ cents to $12 per volume. This set is complete, running back to the earliest dates, and as the gift of the English Government, includes also those to be published in the future as well as those already received.

The directors of the Mechanics' Institute have arranged to have a separate room set apart for these and the American Patent Reports alone, access to which will be free to all. It was stipulated, when the set of British Patent Reports was presented to the Institute, that they should be free to the public. Accordingly, it is proposed to set aside a room equal to the present "Reference Room" at the Library, which is about 28x75 for these and the United States Reports, as it will require a room of that size for them all. The English Reports alone will take 600 feet of running shelf room. The cost of printing and paper alone in England of a set of this kind was $15,000, which, added to the cost of binding, will give the actual cost; but their value is beyond calculation. Reference is continually made by our Patent Office to these reports, and heretofore it has been impossible for our applicents to find out whether the references really met the case or not. It happens that in a great many cases inventions have originated in England, and have been improved upon here in many ways. Accordingly any mechanic or artisan who wishes to follow up the progress of any particular machine must have access to the records of the English patent office to get reliable data. Heretofore it has been impossible to do this here, but now it may be done. No more valuable books of reference could have been provided for the library than this set, and it is a matter of congratulation to the mechanics of San Francisco that they are now able to examine the books at their leisure and free of cost.

Considerable difficulty was experienced in obtaining this valuable work of reference from the British government. Application was made by the trustees of the Institute twice, but each time resulted in a failure. The third time, President Hallidie went ahead on the business without consulting the trustees, but obtaining the co-operation of our Senators, Hamilton Fish wrote to General Schenk, the American Minister, to use his unofficial aid in obtaining the works, which he cheerfully did; but Mr. Moran, General Schenk's Secretary, was mainly instrumental in getting the desired permission. The letter granting it was sent to Washington, and there shelved. It was by mere accident that Mr. Hallidie, President of the Institute, heard of this, and he wrote on to the Secretary of the Interior to get the letter. The Governor of the State then sent on a peremptory request for the letter, which at last arrived. Messrs. Booth and Sargent both used their influence to help the matter through, and deserve credit for their efforts.

There are now only six complete sets left in the English patent office. In the United States there is a set at Washington, one at St. Louis, one at Chicago, and one at Philedelphia; but heretofore there has been none on this coast. The Mechanics' Institute now have the whole set, as well as the abridgements and the indices. The indices are very complete, referring to date, subject matter and name of inventor. They have also the whole set of the United States Patent Reports. The Institute is now the official depository of both the American and English Patent Reports.

QUICKSILVER IN NEVADA.—The announcement was recently made through the columns of the Reno *Journal*, that an important discovery of cinnabar croppings had been discovered about four miles from Reno, Nevada. The same paper now has further news of the strike. It says the ledge has been struck, and so far as developed gives evidence of permanency and wealth. On Sunday morning, the veteran prospector and discoverer of the deposit came rushing into Reno with a pan full of the ore. It was examined critically by several mining experts, who pronounced it the finest they had ever seen. And all day long there was nothing but "quicksilver" in Reno. There can be no doubt about the matter. Washoe county has unearthed the first cinnabar ledge in Nevada!

RICHMOND BULLION.—The Eureka *Sentinel* says, that the Richmond company shipped refined bullion, through Wells, Fargo & Co., during the month of October, to the amount of $120,831.47. Considering that the lead product is not included, this is quite a handsome little sum.

THE K. K. furnace at Eureka started up the other day. The *Sentinel* says there is a sufficient quantity of ore taken out and immediately accessible to keep the smelting works running for at least a couple of months.

Mining Affairs on the Comstock.

As will be seen from our Mining Summary, everything is going on as usual at the mines on the Comstock, notwithstanding the serious setback of the fire. The damage done to several of the mines was great, as far as it affected the machinery on the surface, but no underground workings were at all injured. Crowds of mechanics and laborers are removing the debris, framing new buildings, putting in new foundations and repairing machinery. There was no delay whatever in the preparation for rebuilding. The day after the fire the saw mills in every direction were busy getting out lumber, and skilled mechanics were called into requisition to immediately repair damages. The mine which lost a million dollars' worth of property by the fire, did not even pass its dividend for the month, but when the day came announced its usual monthly dividend of $1,080,000 as if nothing had happened to impede the progress of work. For the month ending November 7th this mine *produced* $1,788,000, and has several millions of coin surplus on hand. The new C. & C. hoisting works were untouched, and the Consolidated Virginia, Californie and Ophir will soon again be yielding up their millions.

At present the Consolidated Virginia is hoisting only a few tons of ore daily through the Gould & Curry mine. The letter of the Superintendent, dated the 7th inst., says: "The water has diminished to four inches and does not hinder us any. On the surface we are at work on the main building, the foundations and all the engines and machinery. All is being advanced together. Lumber is coming in rapidly and good progress is being made in reconstruction. We have procured a few city lots adjoining the works, which we require for lumber and wood; they will also add to our safety from fire. The C. & O. works and all carpenter and machine shops are nearly completed. The large engines are running and are splendid. The main shaft has attained a depth of 790 feet.

In speaking of this mine the Gold Hill *News* says that the surface of the ground, on the site of the old works, presents a spectacle similar to that of the inside of an immense machine shop, with men occupied in almost every possible character of employment. Grading, clearing away the ruins, repairing machinery, framing timbers, laying foundations and receiving supplies, is being proceeded on every hand and with all the energy that can be given to such work. The foundations are already being laid for the hoisting works building, and the gallows frame for the shaft is being put together. Contracts have already been completed with the foundries for the replacement of the injured portions of the machinery, which will be done as fast as such work can be performed. The wreck of the mill is being cleared away and the amalgam cleaned up. A donkey engine has been erected for that purpose. The mill cannot possibly be rebuilt before next spring, as it would be impossible to obtain the necessary machinery. The California stamp mill will be speedily rebuilt and run in connection with the battery mill, which is now nearly finished. Sinking the C. & C. shaft is going rapidly ahead as usual. A small amount of ore is being hoisted through the Gould & Curry shaft, but it is evident that but little can be done toward the extraction of ore until the works are ready to again start up.

At the Ophir mine all the men that it was possible to work to any advantage during the past week have been employed in clearing away the debris, removing the injured portions of the machinery and repairing the foundations. The shaft has been retimbered so far as it was injured by the fire, and a donkey engine erected, which commenced the hoisting of water from the lower levels. The company has purchased the splendid new powerful hoisting engine of the Combination Chollar-Savage company, which will give them a much greater hoisting power than that of the old engines, and will enable them to start up again much sooner than if it had been necessary to order from the foundries. The New York pump job, a complete pattern of the old, has been purchased, so that the entire pumping machinery will be in readiness to start up at a very early day. New air compressors and a 10-horse engine to drive a lathe and run the gearing of the new machine shop have been ordered and will be erected as soon as they arrive. The shaft is all right, and everything is being done to forward the replacement of the hoisting works and machinery that is possible. The incline machinery is but little injured and will not have to be replaced. The body worke of the hoisting engines are but slightly hurt and can be easily repaired. As soon as it can be done the shaft is to be enlarged by the addition of another compartment, which will make four in all, and the largest working shaft on the Comstock.

The Sutro *Independent* of the 6th inst. makes some statements to the effect that there are several hundred feet of water in the Gould & Curry, Savage and Hale & Norcross, and that the Ophir, California, Consolideted Virginia, Best & Belcher and Chollar-Potosi are rapidly filling up. It also states that the flood of water from the Consolidated Virginia, instead of diminishing has increased with great rapidity, so that some of the mines have had to add to their pumping machinery. It states also, that a body of water measuring 35 inches has come into the 700-ft level of the Ophir, flowing south into the California and thence into other mines, still increasing the water troubles. The *Independent* says, that in these mines "there is one vast ocean of water over 4,000 ft in length, in some places from six to eight hundred feet in depth, and not a living being is able to enter the lower portions of any of these mines."

No mention of this difficulty is made in the letter by the mining superintendents, and it is hardly probable that they could keep such a matter quiet if it were true. The superintendent of the Consolidated Virginia says that water has diminished to four inches. If the reports of the *Independent* are really correct the truth will no doubt be known very shortly.

A dispatch to this city, dated the 8th inst., contradicts the above statements emphatically, and says, to-day a reporter determined to ascertain the truth of the statements made, and to take the hull by the horns. He first called upon F. F. Obiston, superintendent of the Savage. Upon learning the object of the visit, Mr. Obiston expressed a willingness to take the reporter through the mine. The descent was made, and it was found that work was progressing at the 1600-ft level, contrary to the assertion of Mr. Sutro that none of the mines were doing anything below the 1400-ft level. The 2000-ft level of the Savage is quite dry, and water is not found until the incline is descended 100 ft lower. There it is plentiful and very hot. The communication with the Gould & Curry on the 1600-ft level, the only point at which the mines connect, is securely bulkheaded, and only about three-quarters of an inch of water flows through. The flood, which at the first outbreak in the Consolidated Virginia was very heavy, has been so reduced in the Gould & Curry that work is now going on regularly on the 1600-ft level. The condition of the Hale & Norcross, it is asserted on the best authority, is equivalent to that of the Savage. The reporter had invitations to visit most of the mines, but the hour was too late to take advantage of the offers. From the highest source of information it is learned that Ophir is free on the 1600-ft level, and work is going on there. Consolidated Virginia and California are dry on the 1550-ft levels, and men are working there as usual. The pumps of the Gould & Curry and Savage are working night and day and reducing it. To-night the water is thirty feet of timbers, or 135 feet, below the 2000-ft level in the Savage.

Loss of the Steamer "Pacific."

Another of those horrors has just transpired which very naturally cause people to have still less confidence in the sea, and in sea-farers also.

On Monday afternoon a dispatch was received in San Francisco announcing the loss of the steamer *Pacific*, of the Goodall, Nelson & Perkins steamship line, when one day out from Victoria, one survivor only remaining out of two hundred reported to be on board. This survivor, Henry F. Jelly, was picked up by the ship *Messenger*. He was in a terrible plight, his knees being terribly lacerated end bruised in his efforts to keep on the raft for the thirty-six hours before being picked up.

The only account received of the disaster comes from Mr. Jelly, who was a passenger. He declares the accident was caused by a collision, but gives no definite account of the other vessel.

A break in the telegraph has been the cause of increased anxiety as to the fate of the crew and the rest of the passengers. The vague reports of Jelly are, it is hoped, of a more tragic character than the circumstances would warrant could they be known; and there is said to be a probability that the survivors will number from thirty to forty, and are comfortably on shore with the Indians, or at the agency. It would take some time for intelligence to reach Port Townsend, as there is no telegraph to Cape Flattery, communication being by occasional pilot boats. It would require a day, or perhaps more, for canoes to reach the cape from the scene of the disaster. It is 120 miles from Port Townsend to the cape. The Indians are all friendly.

Since writing the above dispatches have been received from Port Townsend stating that the revenue cutter *Oliver Wolcott*, on Monday morning, picked up another one of the crew of the *Pacific*, who had been floating on a raft since the foundering of the vessel. He states that the steamer was run into by a vessel under full sail; also, that Captain Jeff. Howell, had been on the raft but was lost overboard during the preceding night. This conforms to the statement of Jelly that the accident was caused by a collision. Steamers are now cruising near the scene of the occurrence with the hope of saving more of the passengers who may be drifting helplessly about.

MINING ACCIDENTS.—James Penrose was severely hurt at the Belcher mine this week, by jumping from the cage in fear it would be run up over the sheaves. Nathan Jones was killed on the 3d inst., at the Sierra Nevada mine; while looking down the shaft the stage came down and killed him instantly.

THE Meadow Valley and Piocbe mining companies distributed $35,000 the other day in paying up indebtedness to the first of November.

More Mining Investigations.

The Niagara gold and silver mining company is the latest one to "investigate" its officers. A meeting was held on Wednesday evening last, nearly 30,000 shares of stock being represented. On motion, Sam. J. Corbett was elected Chairman, and A. C. Moore Secretary. W. E. Hale, Esq., Vice-President of the company, was called upon and made a full statement as to the operations of the company. He would second all efforts of the stockholders in a thorough investigation of the affairs of the corporation. He was one of those who knew that the mine is a most excellent one, and deprecated the conduct of the existing management. James A. Pritchard, the President of the company, and the other directors ordered the suspension of work in the mine, and gave as an excuse for so doing that the Bank of California had failed, and that the company's money was therein deposited. Now that the bank is safe and sound and the company's money of course available, Mr. Hale saw no reason why the mine could not be worked as before.

Mr. Golden, ex-superintendent, gave a concise statement as to the original condition of the mine and its workings and inside management, up to the time of the election of his successor, Mr. Caldwell. That gentleman being present, he was requested to give the stockholders information in reference to the ground purchased adjoining the Niagara, for the uses of the company, which he fully explained. Several other gentlemen followed in free discussion, the general tenor of which was very plain and pointed, to the effect that nothing but honest management in the future would be tolerated, and a firm determination to prosecute the guilty to the bitter end, regardless of "race or previous condition."

It was moved and seconded that a committee of three be appointed by the Chair, into whose hands full power is given to examine and inquire fully into the affairs of the company, as well as the acts of the self-constituted manager, Mr. Pritchard, and to report on Tuesday next to the stockholders, at No. 415 Montgomery street. Col. Perkins and Mr. Selleck were selected by the Chair, and on motion, Mr. Corbett was elected as one of the committee.

Some pretty sharp things were said of the president by the different speakers. Another meeting will be held by the dissatisfied stockholders next week.

At the conclusion of this meeting a preliminary movement was made by those present, who were stockholders in the Phil Sheridan and Monumental mines, for an investigation of the affairs of those companies. Both these mines are under the same management as the Niagara, so some lively times may be expected.

The investigation ordered by the stockholders in the Lady Bryant mine has turned out happier than the others. The committee appointed have reported and given itemized accounts of the receipts and disbursements. The secretary of the committee, in the report, says; "From the maps in the office, which show very extensive explorations, and the vouchers on file, I am forced to the conclusion that it has all been disbursed for the company's use and benefit. I have examined every separate entry and item on the books and compared them with the vouchers, and I have found a properly receipted voucher for every bill contracted and for every entry made. The vouchers are filed in a convenient and orderly manner, and in answer to my inquiry, the secretary informed me that they are at all times in business hours accessible to any stockholder. I have made as careful an examination of the stock books as my limited time would permit, and am satisfied that there is no overissue or irregularity in that direction.

"I have read through the minutes of the proceedings of the board of directors, and find that the company was organized on the 17th day of December, 1873, with a capital stock of 50,000 shares of the par value of $100. That the officers of the company were A. P. Minear, J. W. Pearson, Edward Kennedy, C. E. Scott and G. D. Roberts and Frank Swift, secretary; that pursuant to a notice duly published in the daily papers a special stockholders' meeting was held June 8th, 1875, at which there were represented 41,060 shares out of 50,000, and the capital stock was ordered increased from 50,000 shares, par value $100, to 100,000 shares, par value $100; that the officers of the company at present are: Board of Directors—A. P. Minear, president, T. J. Shackleford, William H. McClintock, John F. Boyd and Joseph Maguire; secretary, Frank Swift, and superintendent, J. C. Schmitt. In conclusion, it gives me pleasure to express my agreeable surprise at the favorable condition in which I found the company's affairs. And I have also to thank the secretary, Frank Swift, for the courtesy with which I was allowed the freest and fullest access possible to all the books and papers of the company, and for every facility for the thorough examination which I thus have been enabled to make.

The daily yield of the Belcher mine is being steadily increased to meet the demand of the mills on the Carson river for ore, as the rise of water is gradually enabling them to increase the amount of ore reduced.

Our Home Industries.—Boiler Making.

A recognition of the innumerable uses of iron at once suggests, as conspicuous in the amount of metal annually disposed of, the manufactures of steam boilers, for marine and other purposes, an establishment of this nature becoming essentially requisite in every seaport town or city in the country.

The character of the works differ, however, in accordance to location, the larger cities on the sea board being eminently conspicuous as stations for a heavier description of work. Thus we find San Francisco endowed with numberless workshops, each capable of fulfilling a contract for any demand of boilers, the material employed being at the recognized standard. In the construction of boilers mechanical skill must be allied to the highest degree of scientific ability in order to accomplish such work as to make no possibility of doubt in fulfilling its object or purpose to the full requirement of perfect working order. The manual labor performed must emanate from skilled workmen, while the plan or device, according to character and form, must be in keeping with certain set principles. In boiler making, with exception of certain special manufactures, there is no great divergence from the general course pursued; although it must be conceded that upon the ability and skill of the maker depends the result distinctly sought. Our manufacturers in this city are located principally within the radius of one or two miles, adjacent to the water side, and throughout the seasons of the year the continuous and uninterrupted scene of busy labor affords evidence of the value of such operations and is an unmistakable elucidation of the strides our metropolis constantly makes in the essential manufactures of our country; also, corroborates us in the assertion that our home manufactures must be fostered.

As we have remarked, the boiler making establishments are contiguous to each other and situated in the southeastern part of the city. Among the number we find the Portland Boiler Works of Messrs. Moynihan & Aitken, actively engaged in the accomplishment of numerous orders. From their establishment some three months ago, emanated the largest marine boiler ever produced on the Pacific coast. It was built for the steamship *Senator*, and weighed upwards of 100,000 pounds. The gentlemen individually are thoroughly proficient in the art, having been practically educated, and with ability to suggest and plan contrivances according to urgency or the necessity of any demand. Mr. Moynihan is now engaged in superintending the work being performed on the *City of Peking*, which consists of strengthening the vessel, the addition of iron decks, box stringers, etc. One hundred and fifty-four men find employment in this occupation. Mr. Aitken now gives general attention to the establishment, located at Nos. 311 & 313 Mission street, San Francisco, the property fronting sixty feet on Mission street, and extending back 100 feet; the property being in the form of an L, having a frontage of fifty-five feet on Beale street, where are built high and low pressure boilers of all kinds, according to drawings or specifications, also sheet iron work of all descriptions. The firm has the agency for Robinson's Government Lock Valve. The gentlemen are also the oldest exclusive boiler makers in this city, and can fill any demand made upon them, as their works have a capacity sufficient for the performance of any required work in the line of boiler or sheet iron working. A late undertaking at this establishment was the manufacture of a large boiler for the naval dry dock at Mare Island.

Improved Mortising Chisel and Attachment.

A. R. Watterson, of this city, has recently patented through the Mining and Scientific Press Patent Agency, an improved mortising chisel and attachment, which we herewith illustrate. The improvement is more especially adapted to such chisels as are used on machine work, and consists of a novel construction of a chisel in two parts, so that the lower part may be removed for the purpose of sharpening, or to substitute a different width of tool, without removing the socket or upper part. It also consists in the use of an attachment for this class of chisels, by which a counter sunk ledge can be made about the mortise for the flanges of pulleys, locks, etc.

As many different sizes of chisels are used in mortising machines, it is necessary to remove and introduce chisels frequently, and this wears the stems in time that they will not fit as well. They must also be removed for the purpose of sharpening. This invention contemplates the construction of this upper part with a scarf or splice joint, as shown in the engraving. The lower or cutting portion of a number of tools of different sizes are then made with these upper ends to fit the shape of the upper part, and they may be secured to it by means of screws or bolts, as shown. In practice it will probably be most feasible to employ a quarter inch stem for all sizes of chisels up to one-half an inch, and a half inch stem will be strong enough for the remaining sizes. By this means any one can remove the chisels at any time for sharpening or to change the sizes without removing the socket piece. The inventor may be addressed for further information at No. 748 Brannan street, in this city.

UPPER FALLS OF THE YELLOWSTONE.

The Yellowstone Falls.

We give an illustration on this page of the Upper Falls of the Yellowstone river, from sketches made by Prof. Hayden's surveying party. This fall differs altogether from the lower one and does not so impress one with its height, which is 140 feet. The water running over its edge strikes a number of ledges of rock, which churns it into a mass of foam. A part of the water is projected out like a broad fan and striking the water below makes a sort of ricochet, while the main mass of water reaches the base of the fall about twenty feet from the vertical line let fall from the top. The water has cut out of the solid rock a rounded basin, from which the course of the river is almost at right angles to the course above the fall. For some distance above the fall there is a series of rapids, over which the current is very swift. The canon between the two falls is about half a mile long, and the fall of the river between these two points is sixty-eight feet. The walls of this canon vary in height from 100 to 200 feet.

WATTERSON'S IMPROVED MORTISING CHISEL AND ATTACHMENT.

Hydraulic Mining.—We give in this issue No. 5 of Hydraulic Gold Mining, by C. J. Brown, being a continuation of a series of articles written by that gentleman for the Press. The publication of this letter was unfortunately delayed by the loss of the manuscript, and it was some time before it was found. It is given now with the date at which it was written, and will be found as interesting as the previous articles.

Hydraulic Gold Mining.

[No. 5.—Written for the Press by C. J. Brown.]

In this letter I propose to speak more minutely of the Yankee claim. It has a present bank face of about three hundred feet, reaching from the easterly side of the channel toward the westerly side thereof, past the center. It will average about one hundred and thirty feet in hight, the lower forty feet of which is the blue gravel stratum, the balance is the trap slide, which I have described in my previous letters, capped with a few feet of red soil. This slide, as I have before stated, lies very much deeper upon the western rim in this channel. Strange as it may appear to one unacquainted with this kind of mining in this section, the last work done in this claim (it is now lying idle for want of water) was upon this western side where the gravel is most shallow and the trap slide thickest.

An English, or even an American stockholder, who was not familiar with this style of mining, would naturally inquire why time and money should be expended upon the least profitable portion of the claim. The object of the superintendent is, evidently, to open up a bank face across the entire width of the channel from rim to rim. No prudent miner would try to flank this slide on the east, for it is not compact like the gravel and is very treacherous. Resting, as it does, in part, upon the sloping rim rock, if its support was taken away from the east side it would, in the rainy season, when saturated with water, slide into the claim thus opened, close up and destroy, possibly, the labor of many months, and the last state of the claim be deplorably worse than the first.

If these claims are ever worked from the present line of operation—and there is no other feasible one—this slide must be removed from the front, across the whole width of the channel, at whatever cost to the company.

The expense of the Yankee claim thus far (exclusive of the first cost of Burleigh machine and compressor) is not far from $35,000. The company have taken from the ground the sum of $55,000 or thereabouts. I call this a remarkably good showing for the opening year, and is an evidence of the value of the ground, sufficient, at least, to encourage any mining company to push the work ahead with unabated exertion. It should be borne in mind by the stockholders of this company that most of this ground was drifted by the former owners, many years ago, from the bedrock up to the hight of eight, and occasionally to the hight of twenty feet. It is impossible to hydraulic this bottom stratum of gravel with satisfactory results, unless it is first pulverized with heavy bank blasts, for it is cemented by heavy pressure and is very hard. Small tunnels are run into the bottom of the gravel bank the required distance, from which cross tunnels are run, and, according to the effect anticipated, from one hundred to two thousand kegs of powder confined therein, and exploded at one blast. It is impossible to do this with ground that has been once drifted, the dirt having been extracted and the boulders piled back and left under the hill or bank of gravel. It will be seen that the drifters not only worked the richest of the ground, but left it in a bad and perplexing condition for hydraulicing. Even where the gravel remains intact, it is impossible by blasting—owing to its cementitious nature—to so pulverize it by hydraulic washing as to save all the gold it contains; consequently a certain per cent. of the gold is washed through the sluices in lumps of hard cement, and lost in the canon of Bear river. This loss cannot be avoided by any hydraulic process yet invented, and is but a repetition of the experience of every hydraulic company.

What Should the Cedar Creek Company Do?

In my opinion it should erect, at once, a cement mill in which to stamp the dirt and cement adhering to the bedrock, which, even where the ground is well blasted, will remain in solid patches from one to ten feet deep. The top of the rock itself, which in places contains much gold, should be blasted, and stamped in a mill. It may also be found more profitable to mill the gravel lying much higher above the bedrock, than to wash it by hydraulic process.

It will naturally occur to any member of this company as he reads the foregoing, "why haven't we built a mill long ago?" Because you have had no convenient place for it. "Why, we have a space three hundred feet square!" Yes, but there must be room for the lead pipes to cross it; for the giants to play unobstructed at the distance of eighty feet; space for the derrick and its machinery with a free sweep on either hand for its long boom, besides the space occupied by large piles of boulders swung back by it. The economy of space is not the least perplexing study of a true miner. Such a mill, well conducted, cannot fail to be of profit to the company, and will, no doubt, be built in due time. But, above all, it should, without any unnecessary delay, press its main tunnel to a final completion and

(Continued on Page 316.)

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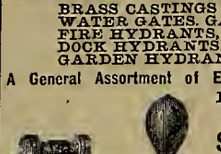

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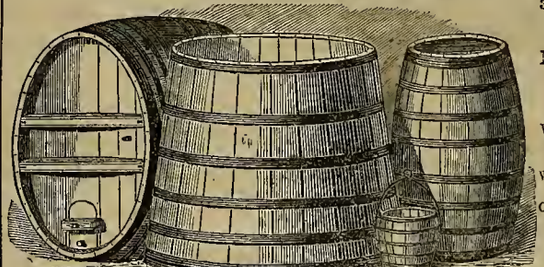

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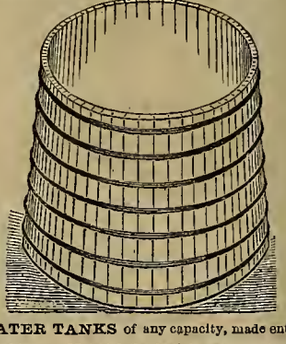

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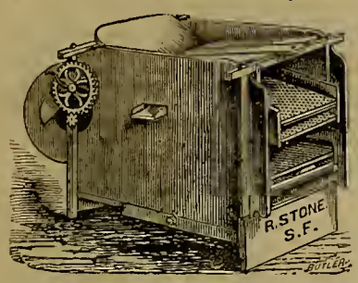

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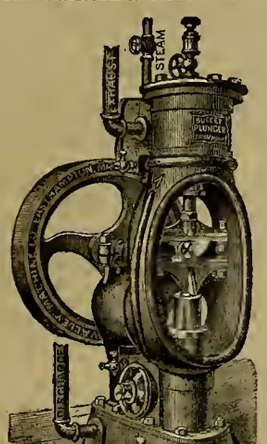

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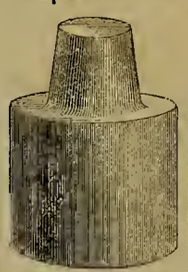
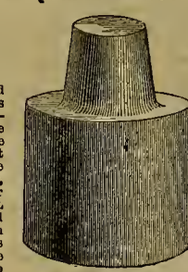


[PATENTED MAY 26TH, 1874.]
Price Reduced to 16 Cents Per Pound.
SAN FRANCISCO, November 10th, 1874.

To Supts. of Quartz Mills and Mining Men generally:

We take pleasure in stating that owing to the rapid increase in our orders, our Pittsburg Manufacturers have been compelled to add largely to their works—a new gas furnace and heavier trip hammer—and are thus enabled to reduce the cost of steel and at the same time produce SHOES AND DIES superior to any yet manufactured. We have consequently reduced the price to 16 cents per pound and solicit a trial order, guaranteeing that you will find them at least 10 per cent. cheaper than the best iron. There are no STEEL SHOES AND DIES made excepting under our patent and sold at this office, or by our authorized agents, though certain Eastern manufacturers advertise STEEL SHOES AND DIES which are only cast iron hardened by the addition of a composition. They will not out-wear two sets of common iron, though called steel. They are very brittle and are not capable of being tempered, flying from under the hammer like cast iron. Our STEEL SHOES AND DIES are in use in many of the largest mills on the Pacific Coast, and all who have tried them pronounce them cheaper and far superior to iron in every respect, even at the old price of 20 cents per pound. Their advantages over iron are cheapness on first cost, increased crushing capacity, time saved in changing and in setting tappets, increased value of amalgam by absence of iron dust and chippings, and a saving of 75 per cent. in freight. It takes 50 days to fill orders from the manufactory East. Price 16 cents per pound shipped at San Francisco. Terms liberal.



Address all orders, with dimensions, to W. R. Townsend, Secretary.

1v29-3m CAST STEEL SHOE & DIE CO., Room 4, Academy Building, S. F

STEAM ENGINES & BOILERS

From 3 to 75-horse power. Shafting, Pulleys, Hoist Gears Quartz Mills, Water Tanks, Spanish Arastras, Pumps and Pipes, Hepburn and Belden Pans, and all kinds of Machinery for sale at lowest prices by

THOS. P. H. WHITELAW,
206 Brannan street, S. F

Highest cash prices paid for all kinds of Machinery.

LEHIGH
Emery Wheels

Are the best. Try them.

All sizes new patent wheels and machines at REDUCED PRICES. Send for circular to TREADWELL & CO., San Francisco.

ROOT'S "SAFETY" BOILER

MANUFACTURED BY THE

Abendroth & Root M'f'g Co.,
BROOKLYN, N. Y.

THE ROOT WROUGHT-IRON SECTIONAL SAFETY BOILER has been improved and perfected by Eight years experience, and the sale of

Over 1,500 Boilers,

for all purposes. Is perfectly safe from Destructive Explosion, all parts easily accessible for cleaning, **Utmost Durability, Highest Economy in Fuel, Reasonable Price.** Working portion composed of **Wrought-iron Boiler Tubes, tested to a pressure of 500 pounds per square inch.** Steam from cold water in from *ten* to *twenty* minutes.

We refer to the following parties, among others, who are using the Root Safety Boilers:

H. F. Williams..... .....San Francisco, Cal
Humphrey & Mock.....Millerton, Cal.
Parke & Bowie.....Virginia City, Nevada.
Chollar-Potosi Mining Co.....Virginia City, Nevada.
Union Mill & Mining Co.....Gold Hill, Nevada.
Belcher Silver Mining Co.....Gold Hill, Nevada.
Imperial Mining Co. (170 h-p)....Gold Hill, Nevada.
J. B. Montgomery.....Portland, Oregon.

Send for Circular and Price List.

J. CURLE, Gen'l. Agent for Pacific Coast,
No. 513 Montgomery St., San Francisco.

STEEL SHOES AND DIES
FOR QUARTZ MILLS,

Made by our improved process. After many years of patient research and experiment we have succeeded in producing STEEL SHOES AND DIES for QUARTZ MILLS, which are unequalled for *Strength, Durability and Economy.*

Die. Shoe.

Will wear three times longer than any iron Shoes.

BUILDERS AND CONTRACTORS

Of Quartz Mills, Pans, Separators, Concentrators, Jigs, Hydraulic Rock Breakers, Furnaces, Engines, Boilers and Shafting, and General Mining Machinery in all its details, and Furnishers of Mining Supplies.

All orders promptly filled.

MOREY & SPERRY,
88 Liberty street, N. Y.

Examination solicited.

Averill Chemical Paint,

MANUFACTURED BY THE

Cal. Chemical Paint Co.

PURE WHITE, AND ANY SHADE OR COLOR.

This Paint is prepared in liquid form, READY FOR APPLICATION—requiring no thinner or dryer, and will not spoil by standing any length of time.

It is Cheaper, more durable, more Elastic, and produces a more Beautiful Finish than the best of any other Paint.

It will not Fade, Chalk, Crack, or Peel off, and will last twice as long as any other Paint.

In ordering White, state whether for Outside or Inside use, as we manufacture an Inside White (Flat) for inside use, which will not turn yellow, and produces a finish superior to any other White known.

Put up in ¼, ½, 1, 2 and 5 gallon packages, and in Barrels. Sold by the Gallon.

For further information send for Sample Card and Price List, or apply to the office.

OFFICE and DEPOT: 117 Pine Street, near Front. FACTORY: Cor. 4th & Townsend Sts.

3v9-eow-bp-1y SAN FRANCISCO, CAL.

SAVE YOUR HORSE'S FEET!

NO MORE RASPING AND HAMMERING TO CLINCH HORSE-SHOE NAILS. TENDER FOOTED HORSES SHOD WITH EASE. EVERY TEAMSTER HIS OWN BLACKSMITH.

The new patent implement used is an attachment to an ordinary pair of pincers. A scoop-shaped graver, or chisel, and a flattened, roughened plate, (formed in one piece) are hinged and fastened on to the handle of the pincers. When the forceps are closed the grever projects from one side of the handle, and is retained in that position by allowing the end of the plate to enter a slot between another plate on the other handle, and the handle, thus holding the grever steadily, while the forceps are grasped by both hands, and the groovee cut in the hoof below the point where the nails come through. When the grooves are cut the handles are opened, and the roughened plate turned outward, thus carrying the graver into a slot in the socket, out of the way.

To clinch the nails after the grooves are cut, the handles are opened, and the roughened plate is put beneath the hoof. The edge of a steel plate on the handle of the forceps is then placed above the nail point, and by closing the handles the nail will be bent down into the groove already cut, where it lies nearly flush with the hoof. The plate can be adjusted for large or small hoofs. The groove cut by the graver is about one-eighth of an inch long and one-eighth of an inch wide. No hammering or rasping is necessary. The foot is not bruised or scarred. Any one can learn to use it in a few minutes. Tender-footed horses can be shod with no pain to them. Further information given, if desired, by CHARLES DONNER, Inventor, or C. F. SUHL, Cor. Commercial & Drumm Sts., S. F. ecowhp

(Continued from Page 313.)

open a claim on the South Blue. (See No. 4, Sept. 18th, 1875.)

After a pit shall have been opensd at this point sufficiently roomy, six or eight giants osn bs placed in position, fscing hoth north and south, and all playing npon high banks of rich virgin gravsl nevsr yst distnrhed hy the drifters' pick and drill. Ths indispsnssbls derricks and another cemsnt mill wonld be erectsd, and a mine dsveloped the like of which has nsvsr hesn witnessed in California, snd in which the company could utilize every inch of its water.

Again, the ditchss of this compauy have a capscity of six thousand inches of water, but they will snpply this amonnt to ths minss, in avsrage seasons, for from three to four months only, each year. Its chief reliance ie in the Placer County cansl, which is ahout fifty miles long and has a ospacity of twe thonsand two hundred snd fifty inches of water, which it will furnieh—incinding the reserve from its reservoirs—for seven months each year. The reservoirs sitnated along the line of this ditch are three in number, with an aggregate capacity of 50,000 inches, which will snpply the ditch n full hesd for three weeks. It will be seen from the foregoing that thie company must, on sn average, do without water for five months each year, nuleee it resorts to some method to obtain a grester supply. This can be done in two wsye only. First, by building new reservoirs to retain enrplus water and, st the same time, enlarging the capacity of the present ones. Second, by constructing new ditches However necessary new ditches may become in the futnre, they are not needed at preseut. I wonld (gratuitonsly, of course) advise the compsuy to proceed at once to enlarge the capacity of its reservoirs, and, if possible—and I believe it to he—construct new ones which shall, in the aggregate, give a head of two thonsand inches for, at least, three months longer.

There is no donbt that one of the months from April to December ie, on an average, as valuable for hydranlic mining as the three months of January, February and March. One reason is that the days are mnch louger. True, the work goes on hoth night and day, still, much more and better work can be accomplished in the ssme number of hours by natural light than by the artificial light nsed in the minee; bnt the greatest difference is canssd by temperature. It is not only difficult and disagreeable for men to work in a hydraulic claim, especially at night, in weather when it is snowing, blowing, raining and freezing, but the qnieksilver, nsed in the sluices to amalgamate the gold, congeals in cold and snowy water, and loses, to a large degree, its amalgamating properties, resnlting in the washing away and loss of a much larger per cent. of quicksilver and gold, in the winter, than in the summer months.

Consequently a good supply of water during the summer and autnmn is, to every hydraulic mine, a great desideratnm.

Enongh! methinks I already see the slow, plodding, cautious and methodical Englieh stockholder shake his head, and hear him inquire after his yearly dividends.

I may save him mnch anxiety and valnable time, and the officers of this company much vexations interferenoe and many aggravating interrogations, by informing him that he can reasonably expect no dividends for, at least, three yeare' from date, nor then, unless, in the meantime, he comes np promptly with hie assessments. "What, aseessments!" Exactly, sir; the company needs $100,000, together with the proceede of the Yankee olaim, and three years' time to perfect the needed improvements If you are unable or nnwilling to meet the demand, sell ont to scme one who is both willing and able that the necessary work may be done in the shortest possible time. In my humble judgment a rich reward awaits him who shall hold ont to the end.

If the tenor of my letters and the sonndness of my snggestions meet the approbation of your superintendent—and from my personal observation of his policy I feel confident they mnst—I would say further to every member of the oorporation, vote all the required aid without a dissenting voice and pay your assessmonts promptly; and to the officers thereof, promptly support and second the efforts of your superintendent—and soon an enterprise will he developed which, under proper management, will gladden the heart with annnal divideuds for twenty yeare to come.

Before conoluding, I wish to ssy, in justice to myself, that I am not the owner of a foot of mining gronnd in this section, and in writing, have no personal interest to snbserve, but only the general welfare and prosperity of a town where I have lived for nearly twenty years, witnessing the failure of foolish and absurd mining enterprises which, successively, brought into ill repute and disfavor a rich and valuable section of mining lande. I owe, perhaps an apology to other companies operating in this vioinity for the time and epace devoted to so minute a description of the Cedar Creek company's property and prospecte. My excuse lies in the fact that it ie the pioneer deep-gravel hydraulic company of Dutch Flat, nndertaking the enterprise with any reasonable hopes of ultimate success, and its failnre now, from lack of meane and properly directed energy would be deplorable, and the more so, ae we all feel assured that if it fighte the battle out on this line, succese muet crown ite efforte.

Other companiee shall receive attention in due time.

Dntch Flat, Sept. 16th, 1875.

Crackers and Ship Bread.

The rapid increase in the popnlation of our oountry, and the constant augmentation to the number of inhabitants in our ohief cities have rendered necessry the establishment of bakeriss, with productive capacity of hnndreds of barrels of flour, in the form of cracksrs and bread, especially designed for nse on shipboard. This industry has incrsased every sncessive ysar, nntil its ramificstions extend to nnmerous branchss, every city and town supporting a number of smsll bakeries, devoted to the mannfactnrs of hresd for family consumption, and larger establishmeuts prosscuting the trade, thsir manufacture consisting of crackers, ship hread and, in some instancss, devoted exclnsively to making sweet cakes. The city of Ssn Francisco, being the metropolie of the conntry west of the Rocky mountains, and emulating in many respeots the industrial specialties of the Eaet; and, in addition, having scope for prosecuting the bueiness on an extensive scale, the manufnoture of crackers and ship bresd at once aesumed nn importance, in the early age of its csreer, which was destined ultimately to succeed to prominence. The city being the ohief eea port on the Pacifio slope, the congregstion here of fleets of sailing and steam vessels caused a demand for the epecies of crackers known under the more significant term of ship hread. Hence arose establishments, in different localitiee of the city, to supply the exigencies made necessary by the oonstant arrival and departure of vessels. This oity became a depot for supplies of this nature on widely different gronnds. The masters and ship owners were not slow to perceive that the qnality of the ship bread made here wae euperior to productione of the cities in the East; while the cost was also a consideration of some moment.

We can name several creditable instances of successfnl prosecution of the trade eignified by the caption of our remarks, the mannfacture of crackers and ship bread. We will fulfil our purpose by giving a short resnme of the working operations of the California Cracker Company, a joint-stock organizstion of some four years' standing. The establishment of this company is situated at Nos. 801, 803, 805 and 807 Battery street, this city—a property 100 feet square, in which ie machinery of the most improved oharacter—the latest designed—and particularly remarkable for facilitating the several processes of manufacture, The machinery consists of American and English contrivances, the effectivenese of which have been demonstrated by nlmost universsl use. In point of manufacture, this company comparee favorably with the general mannfacturers; the goods produced being eminently known for superior qnslity. This materially aided the euccessful business instituted by the founders of the establishment, and perpetuated by the present gentlemen at the head of affairs. The average daily consumption of material is as followe: 140 bbls. of flour, two tons of sugar, one ton of lard, oue ton of butter and 300 gallons of milk, besides spices, essences, etc. Every article nsed in the manufactory is of the finest qnality. They tnru out daily twenty tons of the manufactnred articles. The wood and tin packing cases cost between $4,000 and $5,000 per month. The machinery aud ovens cost abont $100,000. The works are driven by a forty horse-power engine.

The management has been efficiently maintained by the following executive officers: A. Weske, president; Frederick Clay, vice-preeident; Jas. Dunn, treasurer, and Geo. Edmunde, secretary. Mr. Jacob Deeth, one of the present direotors, was the pioneer in this branch of business in San Francisco. Mr. Dunn, treasurer, also acts in the capacity of superintendent, his many years of active, practical participation in the trade enabling him to successfully conduct a business which has for its object an almost illimitable supply to the trade, in all directione of the western country and exportation abroad, Mexico, Sonth America, Sandwich Islands, China, Japan, etc. In the praotical supervision of affairs he ie assisted by the worthy secretary, Mr. Edmunde, who has been identified with the organization since its commencement, four years ago.

Every floor presents a sceno of business activity, which prevails during all seasons of the year. The rotary and English traveling ovens and necessary mschinery, giving at once an impression of extensive operations, and the illimitable supplies necesoary to fill the conetant demands for goods of the oharaoter we name.

RICH STRIKE.—The north drift at the 420-ft level of the Leviathan mine has run into a body of rich ore of nnknown extent, which is referred to in our mining summary. The Gold Hill *News* eaye that it ie a valnable and important development, yet not by any means unexpected. Its width can only be ascertained when it ehall be considered advieable to crosscut through it, bnt it is evidently of considerable extent and n continuation of the fine ore voin developed in the level above. Snperintendent Babcock has been drifting for this bonanza for some time past, and it has not disappointed his expectations in the least, but on the contrary, is even better than he dared to hope for. At this rate the Levisthan will be shipping bullion before long.

THE artesian well at Colton, San Bernardino county, has reaohed a depth of 150 feet, and instructions have been received to continue it to a depth of 1,500 feet if necessary to reach water.

"DOUBLING UP."—The last number of the *Coast Review* is a little behind the timss in its mining article. It publishes an article on "Ths Constancia Mine, Arizona," written by William Bredemeyer, M. E., Salt Lske City, which ws rsmember having rsad a long time ago. Ths very sams article was published in the MINING AND SCIENTIFIC PRESS of Febrnary 1st, 1873—nearly three years since. It was written nt that time by the ssme person who writes it now; but that was just after his return from Arizona, where he had bssn to report on the mine in question. The article, as it appears in the *Coast Review*, of October, 1875, is precissly the same as it appeared in the MINING AND SCIENTIFIC PRESS of Febrnary 1st, 1873, except that in the first publicstion "Ehrenberg is sitnated on the Colorado river, abont 100 miles above Fort Yuma," and in the laet one it is "110 miles above Fort Ynma," having apparently been moved ten miles by the progress of time. Again, the "explored depth" in the first instance was 105 feet, and this last time it is "175 feet," ehowing some progress, but not mnch, as only seventy feet have been added to the "explored depth" in three years. A few other similar changes are made, such as deepening a ninety foot ehaft to a 150 foot shaft, but otherwise the articles are exactly alike. We do not see the necessity, however, of moving the town any further above Fort Yuma, to preserve the general fitness, becanse the shafte on the miue have been sunk further in the course of time. Some things are supposed to move with time, but in the present condition of civilization in Arizona, one would hardly expect a town to stretch itself ten miles from any given point in the short space of three years.

EARTHQUAKE IN SAN BENITO COUNTY.—A dispatch from Hollister, dated the 7th, is as follows: "The heaviest shock of esrthquake ever felt in thie vicinity visited ns this morning at 10 o'clock, and lasted fully twenty seconds. It was preceded by a harsh, rumbling noise, and commenced very elight, gradually increasing nutil it brought np with a severe shock, and then as gradnally decreased. The vibratiou was east and west. Many of the inhnbitauts were frightened and rnshed iuto the streets, presenting a horrified appearance. Many clocke were stopped, goods shaken from the ehelves in stores, and brick buildings cracked, although no serious damage wae done. This is the seoond shock experienced here within the last three months which was not felt at any other place on the coast." According to a dispatch from Gonzslee, the earthquake was felt in that section.

A NEW STEAMSHIP COMPANY.—Articles of incorporation of the Pacific steam transportation company were filed yesterday. The purposes for which the oorporation were formed are to engage in the business of inland and ocean navigation on the Paoific and Indian oceans, China and Japan seas, and to conduct a general commercial and transportation business in the States, Territories nnd countries ou or adjacent to the said waters, and for the purpoees of the business to purchase, charter and sell shipe, vessels, etc.; to deal in coal, lumber and all other kinds of merchandise, and to construct buildings, wharves, etc. The directors are F. W. Jones, P. R. Irwin, L. P. Beach, H. A. Kimball and F. Chappelle; capital stock, $500.000, divided into 5,000 shares, of the value of $100 each.—*Call, Nov. 10th.*

STANLEY THE EXPLORER.—Lettere have been received from Henry M. Stanley, whioh are exceedingly interesting. They are dated Ulagalla, in Uganda. The letters gave an elaborate and picturesqne account of the continuatiou and conclnsion of his examination of the shores of Victoria Nyanza. They also confirm Speke's views that the great lake ie one large body of water, and not a series of small lakes, as held by Dr. Livingstone. Stanley's observations and reports on this point in African geography are to be made tho snbject of a disoussion before the Royal Geographical Society on the 15th inatant.

PROSPECT CO.—Work on the old Perseverance mine still continues, and the outlook is favorable. The work of retimbering is finished and the workmen will now start to open np the ledge, which we understand looks well. The company have prepared for winter by building a good blacksmith shop and getting everything on the ontside in good shape.—*Transcript.*

IN PYRAMID LAKE dietriot work has been commenced on the old Winnemncca ledge. Specimens ehown to the Reno *Journal* will assay np in the hundreds. The company have several men to work and intend to develop the mine thoronghly, being satisfied that they have a rich mine.

LATEST FOREIGN NEWS BY MAIL.—From the latest foreign files we learn the following: The Ruesian police made a large number of arrests of Socialists recently. Several resisted and some were killed in the struggle.

THE Prince of Wales and party, while in Cairo, visited the pyramids and dined there. The pyramids were illuminsted for the occasion.

THE National railroad convention at St Louie promises to he remarkably interesting and well attended.

ATTENTION is now being directed to the copper bearing veins of the Colorado foothills.

PATENTS & INVENTIONS.

A Weekly List of U. S. Patents Issued to Pacific Coast Inventors.

FROM OFFICIAL REPORTS FOR THE MINING AND SCIENTIFIC PRESS, DEWEY & CO., PUBLISHERS AND U. S. AND FOREIGN PATENT AGENTS.]

By Special Dispatch, Dated Washington D. C., Nov. 8, 1875.

FOR WEEK ENDING OCTOBER 25TH, 1875.*

SEWING MACHINE FOR SEWING BAGS, ETC.—Howard P. Garland, S. F., Cal.

SOCKET COUPLING.—Andrew S. Wadleigh, S. F., Cal.

PADLOCK.—Bodo Wallmann, S. F., Cal.

REISSUE.

CUTTER-HEAD.—Simon P. Randolph, Tehama, Cal.

TRADEMARKS.

FOR CIGARS.—Consolidated Tobacco Company, Gilroy, Cal.

FOR TEAS.—Lee Ping and Pon Jib, S. F., Cal.

*The patents are not ready for delivery by the Patent Office nntil some 14 days after the date of issue.

NOTE.—Copies of U. S. and Foreign Patents furnished by DEWEY & Co., in the shortest time possible (by telegraph or otherwise) at the lowest rates. All patent business for Pacific coast inventors transacted with perfect security and in the shortest possible time.

General News Items.

A WASHINGTON special says the report of the Commission of the General Land Office is likely to create a sensation. He devotes mnch space to the manner in which railroads have obtained and nsed their land grants, and especially criticises what is called the California land ring.

THE National rifle association adopted resolutions providing for a series of rifle matches dnring the summer and fall of 1876, on the occasion of the Centennial, and extending invitations to riflemen of all conntries to participate.

THE steamer *City of Waco* was burned at sea on the Eastern coast this week, and thus far none of the passengers or crew have been heard from, although some may have been saved in the boats. Steamers are now eearching for the boats.

ON Wednesday last the Pacific Mail steame r *Colima* sailed from this port for Sydney on her first trip. She is the first American eteamer that ever carried nn American mail to Australia.

W. B. EWER, editor of the PACIFIC RURAL PRESS, delivered a lecture last week before the Assembly of the University of California on "The History of California Agriculture."

THE wine making season at Los Angelee ie drawing to a close, distilleries, in some cases, refusing further contracts for grapes. The vintage will much exceed 800,000 gallons.

DURING the month of October the nnmber of through passengers over the Central Pacific railroad was 10,512, of which 7,348 were bound for the West.

IT is thought that the revival work will be taken np in all the New York and Brooklyn churches after Moody and Sankey have got through.

THE epizootic is spreading rapidly, and hundrede of horses can he seen coughing and barking on all the principal streets in the city.

THE California insurance commissioner hae called npon over fifty agencies to show the condition of their companies at an early date.

NED MCGOWAN, who passed through safely the terrore of the Vigilante days, is in the city, attracted by the $30,000 race.

GOVERNOR PACHECO hae appointed Thursday, November 25th, a Thanksgiving day, and hopee every one will observe it.

LIZZIE GANNON has sued Charles F. McDermott for breach of promise. She places her damages at $100,000.

THE National Gold Bank and Trnet Company will not resume but will go into liquidation.

B. F. SHERWOON, a prominent broker and one well knowu to mining men, died in this city on Monday.

THE steamship *City of San Francisco* has just made the quickeat passage ever made from New York to Panama.

JOHN MACKEY, of the bonanza firm, is visiting San Francisco on buoiness connected with the mines.

THE telegraph informs ns that James Gordon Bennett, Jr., is on his way to San Francieco.

A LONDON dispatch says that the directors of the Emma mining company have resigned.

ANOTHER batch of revenue defaulters in Cincinnati have been indicted.

BARON ROTHSCHILD is in the city on a visit to the Pacific coast.

THEY are going to have a rifle range at Vallejo.

RUSSIA is preparing for war.

A Lady who has lost three sons by consumption writes from Hartford, Conn., to say that her only remaining child, a daughter, had been saved, she believes from a like fate by the use of HALE'S HONEY OF HOREHOUND AND TAR.

Pike's Toothache Drops cure in one minnte.

WOODWARD'S GARDENS embraces an Aquarum, Museum, Art Gallery, Conservatories, Tropical Houses, Menagerie, Seal Ponds and Skating Rink.

METALS.

[WHOLESALE.]

WEDNESDAY M., Novamber 10, 1875.

American Pig Iron, ₱ ton	38 00	@	36 00
Scotch Pig Iron, ₱ ton	35 00	@	37 00
White Pig, ₱ ton	—	@	34 00
Oregon Pig, ₱ ton	—	@	40 00
Refined Bar, bad assortmnt, ₱ lb	—	@	— 3½
Refined Bar, good assortment, ₱ lb	—	@	— 4
Boiler, No. 1 to 4	—	@	— 5½
Plate, No. 5 to 9	—	@	— 5½
Shaat, No. 10 to 14	—	@	— 5½
Shaat, No. 16 to 20	—	5½	@ —
Shaat, No. 22 to 24	—	6	@ —
Shaat, No. 26 to 28	—	6½	@ —
Horse Shoes, per keg	7 50	@	8 00
Nail Rod	—	10	@ —
Narway Iron	—	9	@ —
Rolled Iron	—	6	@ —
Othar Irons for Blacksmiths, Miners, etc.	—	@	— 4½
COPPER.—			
Brazers'	—	35	@ —
Copper Tin'd	—	37½	@ —
O'Niel's Pat	—	37½	@ 40
Sheathing, ₱ lb	—	24	@ 40
Sheathing, Yallow	—	—	@ 25
Sheathing, Old Yallow	—	—	@ 12½
Composition Nails	—	24	@ —
Composition Bolts	—	24	@ —
STEEL.—English Cast, ₱ lb	—	20	@ — 25
Andarson & Woods' American Cast	—	—	@ 16½
Drill	—	—	@ 16½
Flat Bar	—	18	@ — 22
Plow Steel	—	9	@ — 10
TIN PLATE.—			
10x14 I C Charcoal	10 50	@	11 00
10x14 I X Charcoal	12 50	@	13 00
Roofing Plate I C Charcoal	10 00	@	10 50
Banca Tin	—	@	—
Australian	—	18	@ — 20
ZINC....By the Cask	—	—	@ — 11
Zinc, Sheet 7x3 ft, No 7 to 10 ₱ lb	—	—	@ — 11
do do 7x3 ft, No 11 to 14	—	—	@ — 11½
do do 8x4 ft, No 8 to 10	—	—	@ — 12
do do 8x1 ft, No 11 to 10	—	—	@ — 12
NAILS Assorted sizes	3 00	@	3 75
QUICKSILVER, per lb	65	@	— 70

GENERAL MERCHANDISE.

WHOLESALE.]

WEDNESDAY M., November 10, 1875.

BAGS.			
Eng. Stand Wht	9½	@	10
Neville & Co's—			
Hand Sawed	9½	@	10
22x36	9½	@	10
24x36	11	@	11½
24x40	12	@	12½
Machine do 24x40	12	@	12½
" " 23x40	11¾	@	11¾
" " 22x40	11	@	11
" " 22x36	9½	@	10
Flour Sacks ¾a	9	@	11
" " ⅛	6	@	7
" " ⅛	4½	@	5
Hessian 60-in	12¾	@	14½
dn 45-in	8¾	@	9
do 40-in	7¾	@	8
Wool Sacks, 3½ lbs	45	@	50
do 4 "	50	@	52½
Sand. Gunnies	—	@	18
singla seam no	—	@	—
Bean Bags	8	@	8½
Barley Bags 24x36	11¾	@	12
do 22x40	11¾	@	12
do 24x40	12	@	12½
Oat Bags, 24x40	12	@	12½
do 28x36	—	@	13½
Detrick's "E. W."	9½	@	10
do "E	—	@	9½
CANNED GOODS.			
Assot'd Pie Fruits in 2¾ lb cans	2 75	@	3 00
do Table do	3 75	@	4 25
Jams & Jellies	4 25	@	
Pickles ₱ qt	—	@	3 50
Sardines, ₱ hx	1 65	@	1 90
do ½ hf boxes	3 00	@	—
COAL—Jobbing.			
Australian, ₱ ton	8 50	@	8 75
Coos Bay	—	@	10 00
Bellingham Bay	—	@	8 50
Seattle	9 25	@	10 00
Cumberl'd	—	16	@ — 18
Mt. Diablo	6 25	@	8 25
Labigh	—	@	25 00
Liverpool	10 00	@	11 00
West Hartley	11 00	@	12 00
Scotch	9 00	@	11 50
Soranton	13 00	@	14 00
Vancouver's Isl	10 50	@	11 00
Charcoal, ₱ bk	15	@	—
Coke, ₱ bbl	—	@	60
COFFEE.			
Sandwich Island	—	@	21½
Costa Rica per lb	22½	@	—
Onatemala	—	@	22½
Java	—	@	30
Manilla	—	@	21½
Oronnd in os	25	@	—
Oblocry	27	@	—
FISH.			
Sac. Dry Cod, new	4	@	4½
caes	6	@	8½
do boneless	8½	@	10
Eastern Cod	7½	@	8
Salmon in bbls	8 50	@	9 00
dn ½ bhls	4 50	@	5 00
do 2lb cans	2 25	@	2 30
do 1lb cans	1 25	@	1 30
Do Ool. R. ½h	5 00	@	5 50
Pick. Cod, bbls	22 00	@	—
do ½ bbls	11 00	@	—
Bos'. Sm'k'd Herr'g	40	@	50
Mack'l, No. 1, ½ bls	9 00	@	11 00
" Extra	—	@	12 00
" in kits	1 90	@	2 00
" Ex mess	3 00	@	3 50
" Ex mess, ½ bs	—	@	12 00
Pic'd Herr'g, bx	3 00	@	3 50
HARDWARE.			
Amoskeag bandled Axes $16@17; do unhandled do $13@14—less 50c in 5 case lots.			
Amoskeag Hatchets, Shingling, No 1, $7.25; No. 2, $8; No. 3, $8.25. Do do, Claw. No. 1, $7.75; No. 2, 8.50; No. 3, $9.25—less 10 per cent.			
Locke, Yale Lock Mf'g Co., discount 33½ per cent. from list.			
Pliance, Ohio Tool Co., discount 30 per cent. from list.			
Am. Tack Co's Cut Tacks 72½ per cent. discount and 5 per cent. extra. Finishing and Clout Nails 75 off list. 3d fine Nails $7.00 per keg. Ohio Butt Co's Loose Joint Butts 50 per cent. do Fast, 35 per cent off list.			
Machine Bolts, 20@35 off.			
Square Nuts, 2@3c off list.			
Hexagon Nuts 2@3c off list.			
Sheet Iron Washers, 2@3c off list.			
Lag Screws, 15 per cent off list.			
MISCELLANEOUS.			
Pulu	—	7½	@ 8
NAILS.			
Assorted size, lb	3 50	@	3 75
OILS.			
Pacific Olne Co			
Neat F'n No. 1	1 00	@	90
Pure	—	@	—
Castor Oil, No. 1	—	@	1 25
Baker's A A	—	@	1 40
Cocoannt	55	@	60
Olive, Plagrion	5 00	@	5 25
do Possel	4 75	@	5 00
Palm lb	9	@	—
Linseed, raw	80	@	—
do boiled	—	@	75
China nut in cs	60	@	67½
Sperm, crude	—	@	1 40
dn bleachsd	1 90	@	2 25
Coast Whales	47½	@	50
Polar, refined	—	@	—
Lard	—	@	—
Oisophina	—	@	28
Devoe's Bril't	—	@	—
Long Island	—	@	25
Kanka	26	@	27
Devoe'e Petro'm	25	@	27½
Barrel korosons	23	@	25
Olive	—	@	3 50
Downer Kane'e	40	@	—
Ona Light Oil	23	@	25
PAINTS.			
Pare White Lead	9¾	@	10¾
Whiting	—	@	2
Putty	—	@	5¾
Chalk	—	@	2½
Paris White	2¾	@	—
Cobre	3	@	5
Venetian Red	3½	@	5
Red Lead	10	@	11
Litharge	10	@	11
Eng. Vermillion	—	@	25
Averill Chemical Paint, per gal. White & tints	2 00	@	2 40
Green, Blue & Ob Yellow	3 00	@	3 50
Light Red	3 00	@	3 50
Metallic Rood	1 30	@	1 60
RICE.			
China No. 1, ₱ lb	6	@	6½
Japan	—	@	—
Patna	—	@	—
Hawaiian	—	@	7¾
Carolina	10	@	—
SALT.			
Cal. Bay, per ton	10 00	@	14 00
do Common	5 00	@	7 00
Carmen leland	12 00	@	15 00
Liverpool fine	—	@	22 50
SOAP.			
Castile ₱ lb	10	@	11¾
Common brande	4½	@	6
Fancy do	7	@	10
SPICES.			
Clovea	45	@	47½
Cassia	23½	@	26½
Citron	28	@	30
Nutmeg	95	@	97½
Whole Pepper	14¾	@	17½
Pimento	—	@	15½
Gr'nd Allep prdr	—	@	12½
do Cassia do	—	@	50
do Cloves do	—	@	50
do Ginger do	—	@	20
do Ginger do	—	@	30
do Pepper do	—	@	1 00
do Mace do	—	@	2 00
SUGAR, ETC.			
Cal. Cnbe per lb	11¾	@	—
Partz' Pro. Cube	—	@	12
Circle A crnshed	—	@	12
Powdered	—	@	12
Fine crushed	—	@	12
Granniated	—	@	11
Golden C	—	@	10½
Hawaiian	9	@	10
Cal. Syrup in kgs	—	@	70
Hawaiian Molasses	25	@	27½
TEA.			
Oolong, Canton, lb	19	@	25
do Amoy	28	@	50
do Formosa	40	@	80
Imperial, Canton	25	@	40
do Pingsuey	45	@	80
do Moyne	65	@	1 00
Gunpo'der, Cant	30	@	42½
do Pingsney	50	@	90
do Moynne	65	@	1 25
Yng Hy., Canton	28	@	40
do Pingsuey	40	@	70
do Moyone	65	@	85
Japan, ½ obests, bulk	30	@	75
Japan, lacquered	35	@	55
Japan, ½ and 5 lbs	45	@	67
Japan do, ½ lb bxs	45	@	90
do pl'n bx, ½ lb	35	@	65
do ½ lb paper	30	@	55
TOBACCO—Jobbing.			
Bright Navye	55	@	65
Dark do	50	@	55
Paces Tin Foil	75	@	75
Dw. " Navi	65	@	75
Light Pressed	70	@	80
Hard do	50	@	60
Conn. Wrap'r	40	@	60
Penn. Wrapper	20	@	45
Ohio do	15	@	20
Virgi'a Smok'g	45	@	1 00
Fine ct che'g, kr	8 50	@	9
Fine cut obew	—	@	—
Fine, buc'a, ₱ lb	75	@	—
Banner fine cnt	—	@	90
Cal Smoking	37	@	1 00
TURPENTINE.			
Eastarn	—	51½	@ 55

Gold, Legal Tenders, Exchange, Etc.

[Corrected Weekly by CHARLES SUTRO & CO.]

SAN FRANCISCO, November 10, 3 P. M.

LEGAL TENDERS in S. F., 11 A. M., 87¼ to 88¾.

GOLD in N. Y., 114½.

GOLD BARS, 890. SILVER BARS, 7½ and 8 per cent. discount.

EXCHANGE on N. Y., 60-100 per cent. premium for gold; on London bankers, 49; Commercial, 49¼; Paris, five francs per dollar; Mexican dollars, three to five per cent. discount.

LONDON — Consols, 93 to 93⅛; Bonds, 102¼

QUICKSILVER in S. F., by the flask, per lb, 65c@70c.

LEATHER.

[WHOLESALE.]

WEDNESDAY M., November 10, 1875.

City Tanned Leather, ₱ lb			22@23
Santa Cruz Leather, ₱ lb			22@23
Country Leather, ₱ lb			22@23
Stockton Leather, ₱ lb			23@24
Jodot, 8 Kil., per doz	85 00	@	94 00
Jodot, 11 to 13 Kil., per doz	68 00	@	79 00
Jodot 14 to 19 Kil., per doz	82 00	@	94 00
Jodot, second choice, 11 to 16 Kil. ₱ doz	57 00	@	74 00
Cornellian, 12 to 16 Ko	57 00	@	67 00
Cornellian Femalss, 12 to 13	52 00	@	57 00
Cornellian Females, 14 to 16 Kil	71 00	@	76 50
Simon Ulimo Females, 12 to 13, Kil	81 00	@	83 00
Simon Ulimo Females, 14 to 15, Kil	70 00	@	72 00
Simon Ulimo Females, 16 to 17, Kil	73 00	@	75 00
Simon, 18 Kil., ₱ doz	81 00	@	83 00
Simon, 20 Kil. ₱ doz	65 00	@	67 00
Simon, 24 Kil. ₱ doz	72 00	@	74 00
Robert Calf, 7 and 9 Kil	35 00	@	40 00
French Kips, ₱ lb	1 00	@	1 15
California Kip, ₱ dos	40 00	@	50
French Sheep, all colors, ₱ doz	8 00	@	13 00
Eastern Calf for Backs, ₱ lb	1 00	@	1 25
Sheep Roans for Topping, all colors, ₱ doz	9 00	@	12 00
Sheep Roans for Linings, ₱ doz	5 50	@	10 50
California Russett Sheep Linings	1 75	@	4 50
East Jodot Calf Boot Legs, ₱ pair	5 00	@	5 25
Good French Calf Boot Legs, ₱ pair	4 00	@	4 75
French Calf Boot Legs, ₱ pair	4 00	@	—
Harness Leather, ₱ lb	24	@	27½
Fair Bridle Leather, ₱ doz	48 00	@	72 —
Skirting Leather, ₱ lb	33	@	37½
Welt Leather, ₱ doz	30 00	@	50 00
Buff Leather, ₱ foot	17	@	⅞
Wax Sids Leather, ₱ foot	17	@	—

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The demand for this new work is steadily increasing, and the more widely that its merits are becoming known, its usefulness to everyone is becoming more fully demonstrated. The map of California and Nevada alone is worth more than fifty cents, the price asked for the work, and the fact that a glance at its pages shows the products, population, etc., of each county in the State, besides the surveys of United States Land, subject to the homestead and pre-emption laws of Congress, the laws of Congress in regard to locating and holding this land, etc., renders it of inestimable value. Orders sent to Dewey & Co., enclosing fifty cents, will meet with prompt attention, as it will be forwarded immediately, post paid.

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PASO ROBLES, CAL., October 18th, 1875.

DEWEY & CO.—*Gents*: The letters patent for the Tire Upsetter have come to hand. For the prompt manner with which you have brought the matter to a successful issue, please accept my thanks.

Yours Respectfully, JOHN H. MERTZ.

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The Quartz Operator's Hand-Book; by P. M. Randall. 1871. Revised and Enlarged Edition. Cloth bound, 175 pages. Price, $2.

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The Large Circulation of the MINING AND SCIENTIFIC PRESS extends throughout the mining districts of California, Nevada, Utah, Colorado, Arizona, Idaho, Montana, British Columbia and to other parts of North and South America. Established in 1860, it has long been the leading Mining Journal of the Continent. Its varied and reliable contents giving it a character popular with both its reading and advertising patrons.

Mining and Other Companies.

Cloverdale Mining Company — Location of principal place of business, San Francisco, California. Location of works, Cinnabar District, Sonoma County, California.

Notice is hereby given, that at a special meeting of the Stockholders, held on the fifteenth day of October, 1875, an assessment, (No. 3) of two hundred dollars per share was levied upon the capital stock of the corporation, payable immediately, in United States gold coin, to the Secretary, at the office of the company, No. 306 Clay street, San Francisco, California.

Any stock upon which this assessment shall remain unpaid on the 18th day of November, 1875, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Thursday, the 16th day of December, 1875, to pay the delinquent assessment, together with costs of advertising and expenses of sale. ED. B PARTRIDGE, Secretary.

Office, No. 306 Cley street, San Francisco, California.

Hope Quicksilver Mining Company—Location of principal place of business, San Francisco, California. Location of works, Cinnabar Mining District, Sonoma County, State of California.

Notice is hereby given, that at a regular meeting of the Board of Directors, held on the 2d day of August, 1875, an assessment (No. 2) of Five cents per share was levied upon the capital stock of the corporation, payable immediately, in United States gold coin, to the Secretary, at the office of the company Room 2, No. 408 California street, San Francisco, Cal.

Any stock upon which this assessment shall remain unpaid on the 9th day of September, 1875, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Thursday, the 30th day of September, 1875, to pay the delinquent assessment, together with costs of advertising and expenses of sale.

JACOB HARDY, Secretary.

Office, Room 2, No. 408 California street, San Francisco California.

POSTPONEMENT.—The date of the delinquency of the above assessment is postponed to the 9th day of October, and the date of delinquent sales to November 1st, 1875. By order of the Trustees. J. HARDY, Secretary. September 8, 1875.

SECOND POSTPONEMENT.—The date of the delinquency of the above assessment is postponed to November 3, 1875, and the day of delinquent sales to December 1, 1875. By order of the Board of Trustees.

JACOB HARDY, Secretary.

San Francisco, October 8, 1875,

Keystone Quartz Mining Company — Location of principal place of business, San Francisco, California. Location of works, Butte Township, Sierra County, California.

NOTICE.—There is delinquent upon the following described stock, on account of assessment (No. 5) levied on the twenty-second day of September, 1875, the several amounts set opposite the names of the respective shareholders, as follows:

Names.	No. Certificate.	No. Shares.	Amount.
C H Simpkins	37	1248	$624 00
Howard Havens	39	624	312 00
Peter Dean	45	200	100 00
Wm Dumphy	46	200	100 00
J F Groenman, trustee	38	774	387 00

And in accordance with law, and an order of the Board of Directors, made on the 22d day of September, 1875, so many shares of each parcel of such stock as may be necessary, will be sold at public auction, at the auction house of John Middleton & Son, 310 Montgomery street, San Francisco, Cal., on the 29th day of November, 1875, at the hour of 12 o'clock M., of said day to pay the delinquent assessment thereon, together with cost of advertising and expenses of sale.

LOUIS VESARIA, Secretary.

Office, north-west corner of Pine and Sansome streets, San Francisco, California.

Lake Mining Company — Location of principal place of business, San Francisco, Cal. Location of works, Quicksilver Mining District, Napa county, Cal.

Notice is hereby given, that at a meeting of the Board of Directors, held on the 3d day of November, 1875, an assessment (No. 4) of twenty dollars per share was levied upon the capital stock of the corporation, payable immediately, in United States gold coin, to the Secretary, at the office of the Company, Nos. 19 and 21 Firet street, San Francisco, Cal.

Any stock upon which this assessment shall remain unpaid on the sixth day of December, 1875, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Monday, the twenty-seventh day of December, 1875, to pay the delinquent assessment, together with costs of advertising and expenses of sale. R. F. KNOX, Secretary.

Office—Nos. 19 and 21 Firet street, San Francisco, Cal.

Orleans Mining Company—Location of principal place of business, San Francisco, Cal. Location of works, Grass Valley Mining District, Grass Valley, Nevada County, Cal.

Notice is hereby given, that at a meeting of the Board of Trustees of said company, held on the 27th day of October, 1875, an assessment, No. 8, of two dollars per share was levied upon the capital stock of said company, payable immediately in gold coin of the United States of America, to the Secretary, at the office of the company, room 8, No. 315 California street, in the city of San Francisco.

Any stock upon which said assessment shall remain unpaid on the 30th day of November, 1875, will be advertised on that day as delinquent, and unless payment shall be made before, will be sold on the 18th day of December, 1875, to pay the delinquent assessment, together with costs of advertising and expenses of sale.

GEO. P. THURSTON, Secretary.

Office, room 8, No. 315 California street, San Francisco, Cal.

Owyhee Water and Gravel Mining Company. Location of principal place of business, San Francisco, California. Location of mines, Elko county, Nev.

Notice is hereby given, that at a meeting of the Trustees, held on the 1st of November, 1875, an assessment (No. 1) of thirty cents per share was levied upon the capital stock of the corporation, payable immediately, in United States gold coin, to the Secretary, at the office of the company, No. 405 California street, San Francisco, Cal.

Any stock upon which this assessment shall remain unpaid on the 15th day of December, 1875, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on the 15th day of January, 1876, to pay the delinquent assessment, together with costs of advertising and expenses of sale. By order of the Trustees. JOHN E. McDONALD, Secretary.

Office, 405 California street, San Francisco, California.

Pauper Mining Company — Location of principal place of business, San Francisco, Cal. Location of works, Owyhee County, Idaho Territory.

Notice is hereby given, that at a meeting of the Board of Directors, held on the 9th day of November, 1875, an assessment (No. 6) of twenty cents per share was levied upon the capital stock of the corporation, payable immediately, in United States gold coin, to the Secretary, at the office of the company, room 1, No. 402 Montgomery street, San Francisco, Cal.

Any stock upon which this assessment shall remain unpaid on the 15th day of December, 1875, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Thursday, the 6th day of January, 1876, to pay the delinquent assessment, together with costs of advertising and expenses of sale. By order of the Board of Directors.

W. F. BOGART, Secretary.

Office, Room 1, No. 402 Montgomery street, San Francisco, California.

Peytona Gold and Silver Mining Company. Location of principal place of business, San Francisco, Cal. Location of works, Virginia Mining District, Nevada.

Notice is hereby given, that at a meeting of the Board of Directors, held on the 23d day of October, 1875, an assessment of five dollars per share was levied upon the capital stock of the corporation, payable immediately, in United States gold coin, to the Secretary, at the office of the company, room No. 11, 215 Sansome street, San Francisco, Cal.

Any stock upon which the assessment shall remain unpaid on the thirtieth day of November, 1875, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on the 18th day of December, 1875, to pay the delinquent assessment, together with costs of advertising and expenses of sale. By order of the Directors. T. J. OWENS, Secretary.

Office—No. 11, 215 Sansome street, San Francisco, Cal.

UNITED STATES
Mineral Land Laws, Revised Statutes,
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We have just issued a pamphlet containing the general mineral land laws of the United States, with instructions of the Commissioner of the Land Office The contents of this pamphlet comprise all of the Government laws with relation to mineral lands of interest to the mining community, as follows: Mining Statute of May 10th, 1872, with Instructions by the Commissioner of the Land Office; Mining Statute of July 26th, 1866; Mining Statute of July 9th, 1870 Forms required under Mining Act of May 10th, 1872, as follows: Notice of Location; Request for Survey; Application for Patent; Proof of Posting Notice and Diagram of the Claim; Proof that Plat and Notice remained Posted on Claim during Time of Publication; Registers' Certificate of Posting Notice for Sixty Days; Agreement of Publisher; Proof of Publication; Affidavit of $500 Improvements; Statement and Charge of Fees; Proof of Ownership and Possession in Case of Loss or absence of Mining Records; Affidavit of Citizenship; Certificate that no Suit is Pending; Power of Attorney; Protest and Adverse Claim; Non-Mineral Affidavit; Proof that no Known Veins Exist in a Placer Claim, etc. There is also given the U. S. Coal Land Law and Regulations thereunder. The work comprises thirty pages, and will be sold, post-free, for 50 cents. It should be in the hands of every one having any mining interests. DEWEY & CO.,

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ANY PERSON receiving this paper after giving an order to stop it, may know that such order has failed to reach us, or that the paper is continued inadvertently, and they are earnestly requested to send written notice direct to us. We aim to stop the paper promptly when it is ordered discontinued. tf

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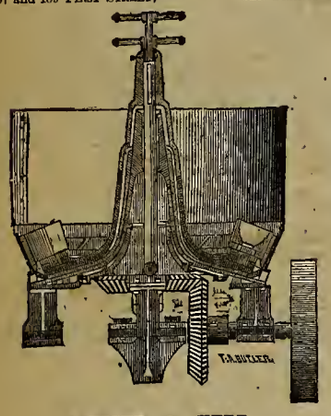

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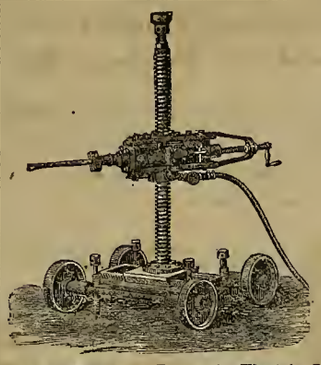

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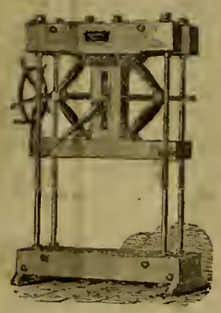

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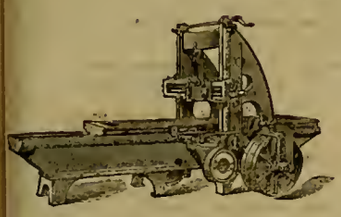

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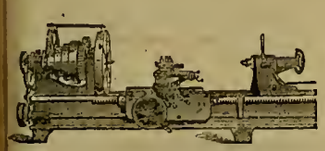

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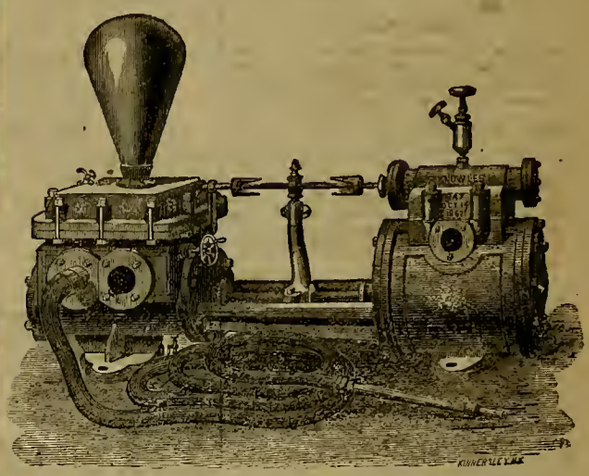

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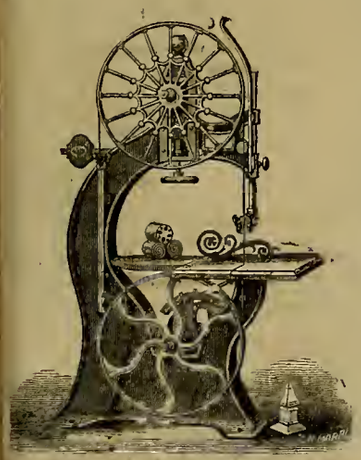

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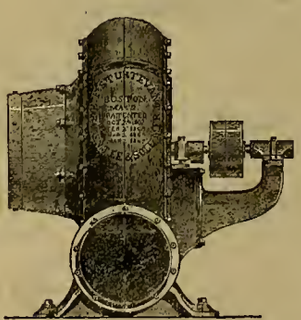

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of the United States of America of the Ninth Judicial Circuit in and for the District of California, held at the court room in the city and county of San Francisco, on Thursday, the 30th day of September, in the year of our Lord one thousand eight hundred and seventy-five. Present—The Honorable Lorenzo Sawyer, Judge.

Nicholas Selbert, complainant, vs. Wm. T. Garratt, defendant—In eqnity.

DECREE.

This cause came in to be heard at the February Term, A. D. 1875, of this Conrt and was argued by counsel and thereupon npon consideration thereof, it was ordered, adjudged and decreed, as follows, viz: That defendant, William T. Garratt, was not the first or original inventor, or discoverer of the improvement or discovery claimed by him, in and by those certain reissued letters patent of the United States, nnmber five thousand three hundred and twenty-eight (No. 5328), for an alleged new and useful improvement in lubricators, issued to said defendant, William T. Garratt, on the 18th day of March, A. D. 1873, and is not entitled to a patsnt therefor, and that said reissued letters patent, number five thonsand three hundred and twenty-eight (No. 5328) are declared void and the same are hereby vacated and set asido by reason of their interference with those certain letters patent of the United States, number one hnndred and eleven thousand eight hnndred and eighty-one (No. 111,881) for a new and nsaful improvement in lubricators, lasned to complainant, Nicholas Selbert, on the fonrteenth (14th) day of February, A. D. 1871.

It was also further ordered, adjndged and decreed that complainant do have and recover of and from defendant his costs and expenses to be taxed herein.

(Signed) LORENZO SAWYER,
Circuit Judge.

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BY DEWEY & CO., Patent Solicitors.

SAN FRANCISCO, SATURDAY, NOVEMBER 20, 1875.

VOLUME XXXI Number 21.

Thanksgiving Day.

Tha day appointed by the President of the United States and the Governor of California as a day of pnblic thanksgiving, occnrs on Thursday, November 25th, before the next number of the PRESS reaches its many readers. It is not for us to suggest the manner in which a grateful people shonld express their dependance npon and thankfnlness to the great Dispenssr of Gifts, for His kindness in bestowiag the bountios of His providence upon them during the past yesr.

The observance of the day, from a small colonial beginning, amid the frosts and snows of New England, has finally extended its influence so wide as to bave given to it a chsracter but little less than national; and we hops that every farmer, mechanic, mannfactnrer and miner, and our whole people, will return thanks for the prosperous year through whicb they have passed.

Governor Pacheco, in bis proclamation, grscefally words it as follows: Recognizing and respecting a form of reverence that is nniversal in acceptance, is common to all religions creeds, and is admired for its simple besuty by thosa who profess none; following the only custom of sectional origin that has become nationsl by willing adoption, and in accordance with the proclamation of tha President, I, ROMUALDO PACHECO, Governor of Cslifornia do bereby proclaim, and appoint Tbursday, November 25th, next, a day of thanksgiving; and do earnestly recommend to the people of our Commonwealth that they devote that day to a thonghtful recognition of our blessiags and our prosperity; to the exercise of the nohlest faculties; to individnal or collective worship, alone or in accustomed sacred places, and to charity and active good will; suspeading all ordinary basiness pursnits and usual occupations. Remembering that the annnal observance of such a day was instituted during a time replete with more than ordinary trials and distress, and hy a people who perpetnated it when everything except their own strong faith seemed lost, it becomes ns as a commnnity to properly recognize that the record of our closing year is an attractivs one, presenting no featnre graver than a happy escape from tbreatened general misfortnne; that onr State is in every way prosperone, peaceful and abondiag in happy homes, so that we have abundsnt reason to observe the day in the spirit in which it was fonaded.

In testimony whereof, I have hereunto set my hsnd and caused the great seal of State to be affixed, at the city of Sacramento, California, tbis 8th day of November, 1875.

[Seal.] R. PACHECO, Governor.

Attest: DRURY MELONE, Secretary of State

The following is the proclamation by the President of the United States of America:

In accordance with a custom at once wise and beautiful we have been accustomed, as the yesr is drawing to a close, to devote an occsion to tbe humble expression of oar thanks to Almighty God for the ceaseless and distinguished benefits bestowed apon ns as a nation and for his mercies and protection during tbe closing year.

Amid the rich and free enjoyment of all onr advantages, we should not forget the source from whence they are derived, and the extent of our obligations to the Father of all Mercies.

We have full reason to renew onr thanks to Almighty God for favors bestowed npon us dnring the past year.

By his continuing mercy civil and religious liberty have been maintained, peace has reigned within our borders, labor and enterprise have prodnced their merited rewards, and to His watchfnl providence we are indebted for security from postilence and other national calamity.

Apart from national blessings each individual among ns hss occasion to thoughtfnlly recall and devoutly recognize the favors and protection be has enjoyed.

Now therefore, I, Ulysses S. Grant, President of the United States, do recommend that on Thnrsday, the 25th day of Novembor, tbe people of tbe United States, abstaiaing from all secnlar parsuits and from their accustomed avocations, do assemble in their respective plsces of worship and in sach form as they may deem most appropriate in their own hearts, offer to Almighty God tbeir acknowledgements and thanks for all His mercies, and their humble prayers for His continaance of His divine favor. In witness whereof I have hereunto set my band and caused ths seal of the United States to be affixed.

Doae at the City of Washington, this 27th day of Octoher, in the year of our Lord one thousand eight hundred and seventy-five, and of the Indepsndence of the United States the one hundredth. U. S. GRANT.

WHITE PINE.—Work has been stopped on the Ward Beecher, Original Hidden Treasure and Msmmoth mines, in this district. A number of men will be thrown out of employment, and altogether it is bad for White Pine district.

The San Rafael *Journal* says "work on the line of the Nortb Pacific Coast railroad from Tomales to Rnssian river is to he resnmed in March. Tbe compsny aro now getting ready for the iacreased basiness to be opoaed by the extension. They expect to ran six through freight trains per day, and have already ordered from the East 250 flat cars, 60 box cars, 4 passenger coaches and 6 engines, which will arrive early in the spring. The rolling stock will then consist of 15 engines, 12 coaches, 100 box and 400 flat cars.

SINCE tho beginning of the year the direct shipments of three coal mines—Seattle, Renton and Talbot—to Ssn Francisco aggregate 56,738 tons, of which their respective portions are as follows: Seattle, 46,589 tons; Talbot, 1,899 tons. Sixty-seven vessels, either partially or entirely, have gone loaded witb this coal.

CAPTAIN DAY has been superseded in the superintendency of the Raymond & Ely mine at Pioche by D. M. Tyrell, who was formerly superintendent of the Meadow Valley. Captain Day has been superintendent of the Raymond & Ely since December, 1872.

THE Arizona *Citizen* claims tbat the yield of gold for the Territory last year was $1,500,000.

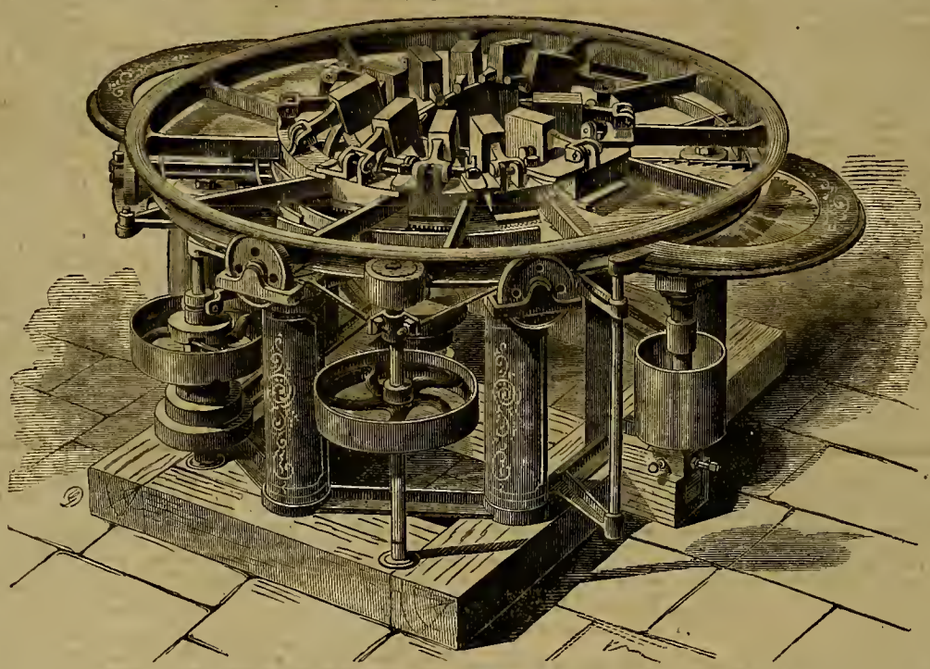

FIG. 1. EVARTS' PATENT ROTARY TWELVE BLOCK SHINGLE MACHINE.

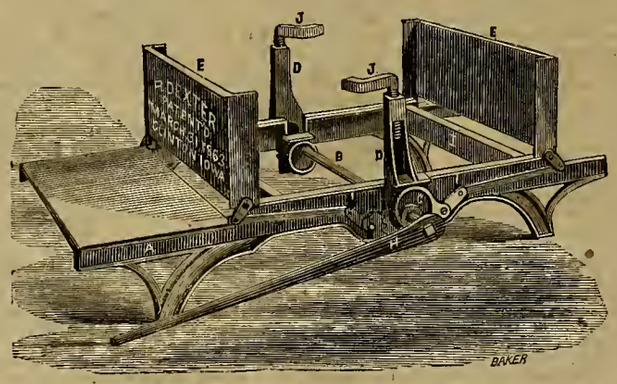

FIG. 2. DEXTER'S PATENT SHINGLE PRESS AND BUNCHER.

Improved Shingle Machinery.

In our accompanying engravings on this, as well ss on page 329 of this issae, are illnstrsted machines for the manufacture of shingles and beading by the most modern, rspid and economical methods. With the growth of tha conntry and constsnt increase in the amount of bailding annnslly undertaken and trade carried on, it is necessary thst the processes by which the materials for such enterprises are furnished shonld be correspondingly improved, else the supply would very soon fall hopelessly behind the demsnd. Fortnnstely, by an irresistible law of nature, these matters are almost perfectly self-regulating, and the need of new mschinery or devices for any purpose speedily calls into exercise the skill required to meet the emergency.

In Figure 1 is shown a twelve block rotary shingle machine, Evarts' patent. It consists of a frsme about seven feet square, having on esch of two sides an upright shaft carrying a horizontal saw, while shove the saws is mounted a circulsr csrriage, some eight feet in diameter. The csrriage is divided into twelve spaces, and while it is ia motion a block to be cnt into shingles is placed in each space. As fast as the blocks are worked up, new ones are snpplied. The two friction rollers which drive the carriage give a steady and uniform feed snd prevent bscklasb. The motion is positive and continnous, there being no springs or other gear to get out of order. The dogs are simply weights raised by an incline plane to drop off the end and fasten the block while the saw is passing through. It is claimed that this machine will saw donble the quantity of shingles in a given time that csn be turned ont by an ordinsry two-block machine, and four times as many as any hand-fed one-block apparatns. Its capacity, with two saws, is stated at 20,000 shingles per honr, or 150,000 per dsy, in ordinary white pine or cypress timber; with one saw, 75,000 per day. It will saw shingles from 16 to 18 inches in length, sawing tbe blocks np as close as any other machine, leaving very small slabs or spalts, and making scarcely any clip shingles. One man csn perform the work of placing the bolts in the revolving carriage, and a hoy can easily remove the slabs from the opposite side. No danger or loss of time is inourred in taking ont, tarning, or replacing the holts, as they are nndogged, except when nassing over the saw. The tables heing fixed in opposite directions and not tilted, the shinglos are mado evenly as well as smoothly, and if the blocks vary in leagth the shingles do not vary in thickness.

Fignre 2 represents a very useful, ecoaomical and neat machine for hnnching shingles. With this simple machine a suitable number of shingles may readily be adjusted and compactly bound together in a neat and convenient bnndle so they csn be easily bandled and safely transported. In this machine the pressure is applied at both top and bottom of the bandle, thereby preserving the shapa of the bnndle and firmly hinding them together. By means of this improvement *inexperienced* hands and hoys can bunch shingles quicker, neater and more completely than experienced bunchers can without its aid.

Messrs. C. S. & S. Bnrt, of Dunleith, Ill., are tbe manufacturers of the machines above desoribed, and in fact of every kind of machine required in the manufactnre of shingles and heading. In addressing inquiries to them, onr read-rs will oblige us hy mentioning this paper as the source of their information.

THE Humboldt mill and mining company are making regular shipments of bullion two and three times a week,

Lower California Mines.

David Turner, the American consul stationed at La Paz, recently arrived in this city on the Colorado River steam navigation company's steamer *Montana*, and furnishes the *Bulletin* some very interesting information on matters connected with Lower California. He is enthusiastic in his account of the condition and prospects of that isolated Mexican province. The popular idea that Lower California is barren and unproductive is, according to Mr. Turner, altogether erroneous. While there are large tracts of land which are incapable of producing any agricultural products, and contain, so far as known, no mineral wealth, there exists enough arable land throughout the province to support a very large population, and capable of producing corn, sugar, tobacco, rice and tropical fruits. Although the rainfall is light and flowing streams not numerous, water is obtainable in large quantities at a depth of from twenty-five to thirty feet, which can be used for irrigation through the agency of windmills or other pumping apparatus. In some parts of the province, as for instance at Todos Santos, an abundant supply of water is obtained for irrigating purposes from natural artesian wells, from which voluminous streams emerge. There is a tract of about one thousand acres thus cultivated at Todos Santos, on which heavy crops of sugar cane are being raised and manufactured into panoche.

The Silver Mines of La Paz.

The city of La Paz, the capital of the province of Lower California, is dependent upon the pearl fisheries of the Gulf of California and the products of the mining districts in the adjacent mountainous regions. The silver mines in the vicinity of La Paz not only hold out well, but the ledges increase in width and the ore in richness with the increase in depth of the explorations. The Hormigum mine, in which some leading San Francisco capitalists are interested, is now producing a larger quantity of ore than it has ever done before. For some time the production of the mine has been much greater than the capacity of the mills to reduce, and an immense quantity of ore has accumulated on the dumps. At present there are between four and five hundred men employed in the mine, the force having been relieved to give the mills an opportunity to catch up. A new process of reduction, known as the lixiviation process, is about to be introduced, which is much more thorough than that of the pan and barrel, which has been in vogue heretofore. By the lixiviation process no quicksilver is employed, and the silver obtained is 100 fine, finer than that obtained through the old process, while the percentage of metal extracted from the ore is much greater. The lixiviation process has been used with success throughout the silver mining districts of Mexico, where the ores are rebellious, like the ore of the Hormigum mine, in which the silver is combined with antimony, zinc, and other metals. The new process has also the advantage of being much cheaper. The greatest depth reached in any of the mines in the vicinity of La Paz does not exceed four hundred feet, and the ledges vary from four to ten feet in width.

Ore-bearing ledges have been discovered recently near Cape St. Lucas, and a company of prospectors left this city for the new mining district, with a view of thoroughly testing the ledges.

The New Copper Mines of Mulega.

The copper mines of Mulega are represented by Mr. Turner to be looming up. During last year the shipments of copper ore from these mines aggregated 6,000 tons, which would average twenty-five per cent. copper. These mines are paying well, and the exports to England will be much greater this year than last.

Orchilla.

The orchilla business is in a flourishing condition. Between 3,000 and 4,000 tons of this commodity, most of which was gathered at Magdalena bay, has been shipped thus far this year to England. Some of the orchilla is shipped direct to its final destination; but a considerable quantity is forwarded to San Francisco for transhipment. Large quantities of orchilla are gathered in the immediate vicinity of La Paz. The business is at present in the hands of Joseph P. Hale, of this city, and Cobos & Monroy of Ecuador. There are between 200 and 300 men employed in the work of picking and baling for shipment. The average price of orchilla at Liverpool during the past season has been $160 per ton. The supply along the Lower California coast is said to be inexhaustible, and the quantity now gathered and shipped from La Paz and Magdalena bay is sufficiently large to control the market.

Towers and Bells.—Six months after the completion of a tower bell-ringing may be safely allowed, as the mortar would have sufficiently set by that time. If the framework of the belle is constructed independently of the walls of the tower, resting on corbels instead of being inserted in the walls, the vibration caused by ringing would have little or no injurious effect.

A New Fish Bait.—A French scientist has invented a new fish bait. A bottle is lowered into the water and lighted by electricity, and the fish are to follow it into a net. But this is a method already employed in the open air over in New Jersey.

California's Financial Condition.

We do not promise any startling disclosures under this heading. No attempt will be made to prove that we are "on the brink of a terrible financial crisis," nor shall we muster into service all the figures and ciphers in the printers' cases, presenting in review a grand army composed of numerical platoons, each of which represents millions of dollars that are apparently impatiently waiting to be "developed" out of "the resources of California." But it must be apparent to every man of ordinary observation that the present financial situation of this portion of America is a peculiar one. The East, South and Northwest have endured several years of trials and tribulations, incident upon, or, to put it more plainly, the natural consequence of *their* way of doing things; and the manner in which they are slowly and safely emerging out of their difficulties is quite as characteristic of their established habits and customs. All honor, say we, to the patient, careful, far seeing men who are thus working their way into clear water, where they may reasonably expect fair sailing for another long term of years. But while we freely grant them this praise, we have no patience with that numerous class of political economists who represent that nothing is financially right in the Atlantic States, only as it corresponds with the English type, and who are just as rigid in their attempts to make California conform to Eastern rules and habits.

Such teachings are decidedly reprehensible. They are ridiculous, but the term ridicule hardly suffices; for the influence, as far as it goes, is dangerous. It distracts the attention of those who give ear to it, and while they are preparing, or at least looking, for troubles almost local, we might say, in their character, they become involved in difficulties to which they have given no thought, but which may properly be considered as partially, if not wholly, climatic.

For California to "right about face," and conform to any Eastern or foreign type, would not be sensible or prudent even. Her situation is not precarious. Even newspaper philosophers cannot make it appear so. Her present outfit of principles and practices is peculiarly suited to the emergencies of her course.

We are not so given over to the worship of agriculture as to be unable to recognize California's indebtedness to the California miner; not only for the gold with which he has enriched her, but for the character which he has stamped upon all other pursuits. This character is in every sense a product of our mines, growing out of their necessities and requirements. It is striking in its outlines and possesses a fineness of detail which is far from being appreciated as yet. Without both these bold and fine points of individuality it could not thus have impressed itself upon the general character of the country. Other callings in California have been rendered particularly impressible by reason of their pursuits partaking more largely of the nature of mining than do the same pursuits in other countries. And if farmers, especially, would realize this, and take the California miner instead of the Eastern or foreign farmer as a guide in industrial operations, it would perhaps be quite as well for them.

There is one great principle of California mining which even now constitutes a vital organ in the system of California farming. We allude to the faith—not blind, nor yet demonstrated—which does not hesitate to invest labor and money in the possibilities of the gravel bed, the quartz ledge and the farm. Without this faith and this willingness to "take chances," neither the mineral nor the agricultural wealth of this country would have been developed.

This faith has not only sustained the miner and the farmer in their labors and ventures; it has led the merchant, banker and manufacturer to contribute of their goods in aid of these great industries. We see no indications of a weakening of this faith in any quarter, and we look upon this as the saving power which will carry us through any difficulties that may seem imminent.

For any one to deny that money is at present unusually scarce in California, or that credits are restricted, would be an indication of foolhardiness, to say the least; and to say that this condition of things is the result of the withdrawal of confidence in any of our resources would be quite as discreditable to his discernment.

Agricultural enterprise, as usual, needs credit. It is well known that certain sources upon which it has largely relied heretofore, are at present closed against it; but we do not apprehend that the farming operations of the coming year will be perceptibly crippled on this account. Other sources of credit will be opened; for, to the living faith in the wonderful possibilities of our farms, and in the ability of their owners to reduce them to certainties, is added the assurance that millions have been added to their value by way of tangible improvements, constituting the best possible security.

Bankers and merchants in the mining districts are free to admit that it is not considered "good business" to withhold their accommodations from prospectors and owners of undeveloped mines; for the parties asking accommodation may in the course of a few months become bankers and merchants. The same turning of the tables is liable to occur in the agricultural districts, though less suddenly perhaps.

Although we do not anticipate any further demands for accommodations on the part of our farmers than legitimate business would supply, we do not doubt that favors, even in advance of this, would be duly appreciated and would undoubtedly meet with a suitable return.

Los Angeles Homes and Enterprises.

[From Pacific Rural Press.]

Messrs. Editors:—Whenever one visits Los Angeles, breathes its pure invigorating air, enjoys its equable and genial temperature, and looks upon its beautiful orange and other orchards, he cannot wonder at the enthusiasm of its fortunate people, when they speak of its varied advantages. It is, indeed, a charming portion of our splendid State.

The yield of their specialty,

Semi-Tropical Fruit,

promises this season to be larger than ever before. Their English walnut crop has been diminished by the heavy frosts of last spring, just as were our peaches and almonds. Yet a considerable quantity of these are being shipped. Col. Ed. Kewen, who has near San Gabriel Mission, some sixteen miles from Los Angeles, one of the best and most beautifully improved ranches of the State, had shipped over eighty sacks of these Madeira nuts, before the end of October. It so happens that this place has a fine southern exposure, and is protected by a ridge from any cold and blighting winds of the north and northwest. It is, for these reasons, less subject to hurtful frosts than some other localities in the county.

In truth, when any wish to see a rare type of utility, beauty and general attractiveness, embraced in a well regulated farm, let them visit Col. Kewen's home in San Gabriel valley, and we can safely say they will realize some of their ideals of a life time, when riding or walking over his 400 acres or more. It has fallen to the lot of the writer to visit many of the finest ranches of California, places which well deserve their wide spread reputation, but in no other one place has he seen such a variety of attractive features combined in charming array as within the moderate limits of this

Model Farm.

Besides his fine supplies of barley, corn and vegetables, think of his avenues and groves of most beautiful orange trees, over sixteen years old, and some of them loaded with four thousand oranges. Think of the profusion of lemon, lime and Madeira nut trees in full bearing, his large vineyard loaded with grapes, his miniature fish pond and lake, his nursery of young trees, including even the hickory and pecan trees of the Southern States. Picture to yourselves the beautiful approach by winding and well graded "walks" to an old castle-like home, embowered in trees and trailing vines; on each side of you, handsome and fragrant flower beds; here and there a tall and graceful olive tree full of ripening fruit; occasional orange, lemon and lime trees with their rich glossy leaves, and golden burden; even a date palm growing near by and ready to hear, and testeful arches of rose bushes, under which you pass just before entering the hospitable mansion. It is, indeed, as nearly like an enchanted scene as any you can witness in America.

And when you remember that the surface is rolling enough to give a pleasing variety, and that the eye looks upon all these charming objects through a crystal atmosphere as pure and clear as any that Italy or Eastern lands can boast of, while you see at no great distance the mountains towering 5,000 feet high, which help to give us this pure air, you can understand that as you feast your mind on so rare a combination of the beauties of nature, you seem for the time to be almost lost to material existence, and to have suddenly passed into such a scene of beauty and luxury as we find described in the Arabian Nights.

The Old Mansion

Itself is a remarkable one. Its adobe walls, six feet through, were erected about a century ago by the old padres of San Gabriel Mission. At one corner of the building, from an arched structure, several feet in diameter, runs a stream of clear, pure, cool water from a natural spring. The walls now stand much as they were left by these early Jesuit founders of our Missions, so that, to its many attractive surroundings, is added the charm of antiquity, and that too, in a State looked upon until recently as so new and wild.

Nov. 9th, 1875. J. W. A. Wright.

The Language of Colors.—The following is said to be the French method of the meaning attached to colors, but it appears to us to smack rather of the laboratory than of genuine sentiment. They hold out that violet is analogous to friendship, blue to love, as suggested by blue eyes and azure sky. A bunch of violets would, therefore, tell a lady's suitor that friendship is all that he has a right to expect. Yellow is paternity, or maternity; it is a yellow ray of the spectrum which causes the germ to shoot. Red signifies ambition; indigo, the spirit of rivalry; green, the love of change, fickleness, but also work; orange enthusiasm; white, unity, universality; black, favoritism, the influence exerted by an individual. Certain persons have the gift of fascinating all who approach them; and black, which absorbs all the rays of the spectrum, is the reverse of white, which combines them in one. Besides the seven primitive colors, gray indicates poverty; brown, prudery; pink, modesty; silver-gray (semi-white), feeble love; lilac, (semi-violet), feeble friendship; pale pink, false shame.

A Mining Swindle.

The Sacramento *Bee* of the 11th inst. says: Wm. Garrison, a gentleman lately arrived in this State from Southern Kentucky, and who returns to-day to his home in the valley of the Mississippi, relates a sad tale of the vanity of human expectation, and the prevalence everywhere of moral turpitude. He tells the following story of his experience, in the hope that it may prevent others from falling victims to similar wiles: About six years ago, Alex. Wilson, an old classmate of mine, left our neighborhood and came to California. For a long time we heard nothing of him; but two years since he began to write to his acquaintances at home that he had gone into mining extensively and was in a fair way of making a fortune. This pleased and piqued all his neighbors, and while many of them sold out their farms and left for the land of gold, those who remained at home were anxious to get an interest in a gold mine. Meanwhile the letters were coming regularly from Wilson, until at last he announced his final triumph, and declared his intention of returning to

Visit the Scenes of his Childhood,

The friends of his schooldays, etc., and about six months ago he put in an appearance at Hickman, where he spent some time in circulating around. As he was very free with his money, the innocent country people believed that he had struck it rich, while his glowing account of future prospects made them desire to share his luck. According to his assertions the Bank of California or the Pacific railroad would be nothing in a few years compared to his wealth. He claimed to have the richest mine on the coast, but was willing to let his friends have an interest in the enterprise, as it was big enough to give something to everybody. Thinking that this was an opportunity which could offer but once in a lifetime, a number of the farmers in that vicinity clubbed together and purchased one-fourth of the Raccoon ledge, in Inyo county, and chose Mr. Garrison as trustee to represent them in the company. As soon as the arrangement was effected and the money paid in, Wilson announced that it was necessary for him to return to California to attend to some business connected with the mine, and asked Mr. Garrison to accompany him, which invitation the latter gladly accepted. When they arrived here Wilson took the new trustee to the company's office at San Francisco and introduced him to another gentleman, who was supposed to be the superintendent of the mine. This individual informed Wilson that his arrival was opportune, as the water had commenced coming in on the workmen and nothing could be done until pumps and machinery were erected, and that the improvements would cause a considerable outlay. After the subject was discussed, it was determined that

An Assessment Should be Levied

At once in order to get the mine in working order again. When news reached Kentucky that the shareholders must pay an assessment instead of receiving a dividend, considerable surprise and dissatisfaction was expressed, but this all wore away under the assurance that the money would all be paid back, with interest, in the course of two or three months, as the ore was there and nothing remained for them to do but to extract the metal. The Kentucky stockholders paid up their assessment, and Wilson went to the East to purchase the pumping and hoisting apparatus, Mr. Garrison remaining at San Francisco in charge of the company's affairs, while the superintendent left for Inyo county, in order to look after the mine and see that everything was in readiness to commence operations upon the arrival of the machinery. After these officials had been gone some three weeks, and no letters had been received from them, Mr. Garrison began to feel a little uneasy, especially as a bill for two months' office rent had just been sent to him and he could nowhere find company funds with which to meet the demand. He settled the account out of his own private purse, but not without some misgivings that all was not right. Although he visited the postoffice daily for a couple of weeks longer, he failed to receive any word from the absent parties. At last he determined to go to Independence and learn the true state of affairs. Upon arriving there he was horrified at discovering that

There Was no Raccoon Ledge,

And that the men he spoke of were entirely unknown in that neighborhood—in fact, that he and his friends had been swindled. He returned at once to San Francisco, made inquiries about the missing operators, and found that he had undoubtedly been sold. Becoming convinced that the swindlers had gone to parts unknown, and having no desire to spend money simply for the sake of punishing them, he concluded that the best thing he could do under the circumstances would be to go back to the bosom of his family. As he had not the slightest hope of recovering the stolen money he would not waste time in an endeavor to bring the confidence men to justice, and thus another pair of graceless villains are allowed to run at large. Mr. Garrison knows of only $20,000 which they secured as purchase money and assessments, but seems inclined to believe that the total amount of their steal will reach a much larger sum, as he has reasons for thinking others were swindled in the operation as well as his friends.

A Useful Rule.—Three times the weight in pounds per fathom equals the working load in hundredweights of good hempen rope.

SCIENTIFIC PROGRESS.

Solar Disturbance and Rain.

The apparent size of the sun, as demonstrated by Secchi in Italy, varies in such a way that when the diameter is smallest, the number of spots and protnherances is largest. The spots seen on the surface will, when turned toward the edge of the snn by its revolution aronnd the axis, show protaherences above them, They appear in tha greatest nnmber along and aronnd the solar eqnator and are scarce at its poles. The appearance of these spots and protnberances above them indicate great solar storms, and these are of a violence of which we on our quiet earth can form no conception. Imagine jets of incandescent hydrogen ef 100,000 miles high projected out of the dark opening in the solar atmosphere which forms a spot. Snch a so-called dark spot is in faet not dark at all, possessing as it does a luminosity greater than white hot iron; it is only dark if compared with the intense lnminosity of the rest of the surface of the solar orb. If, dering a solar hurricane, oat of these spots or holes the aun is ejecting hydrogen, its diameter diminishes; when free of spots and comparatively calm, its diameter is larger.

It has been snggested that this ejected hydrogen could reach onr earth, and he the cause nf rain-storms here; bnt when we consider that onr distance from the sun is a thoasand times the greatest hight reached by this ejected gas from the snn, and that the solar gravitation at that hight is over twenty times greater than the gravitation to onr earth on its snrface, and a thousand times greater than the attraction of onr esrth to the moon, it is olear that there is no possibility of this gas reaching us; aad the cause nf tbe recent rains must he looked for among complicated disturbancea in our own atmosphere, of snch s natnre that simply some regions got more rain at the expense of others which got less.—*Ex.*

The Electric Light in Telegraphy.

The roof of the Siemens-Halske factory at Berlin, was recently the scene of a seriea of experiments with the electric light, which filled all the streets in lhe vicinity with a crowd stariag with astonishment at a snpposed wouderfnl natnral phenomenon up in the clonds. The apparatus, which gave a light so powerful that ordinary writing could be read by its illnmination at a mile distance, was arranged with an inclosed mirror, so that the rays were projected against the clouds, which served as a screen. In front of the mirror the signals were made, and these were repeated, of conrse on a gigantic scale, in the olouds.

These experiments will be read with interest in connection with an article in the adjoining column, under the head of "Solar Telegraphy." For military, snrveying, and other purposes it is otten found desirable to commnnicate between distant atations where there is no electric telegraph; and it is by tbe use of snch means as are described in these two articles that such a desidcratnm may he accomplished, the mode described above being applicable to night telegraphy, and the other for day. Both devices are now being adopted in the military aa well as civil services of the different European governments, and to some extent in our own; and may very properly he classed among the progressive steps of practical science.

METALLURGICAL FURNACES.—Mr. A. Parkes, of Erdington, England, has devised a furnace which consists ssentially of a chamber or generator in which gaseous fuel, consisting mainly of earbonic oxide, is generated, the gaseous fuel being conducted over a hollow bridge or hot air flue into a reverberatory chamber in which copper is smelted, or the pnddling of iron or other like metallurgical operation is carried on. The hot air from this bridge or fine, mixing with the gaseous fusl, effects its combustion and produces an intense heat in the reverheratory chamber. The air supplied to the hollow bridge or hot air flue is heated hy passing through the walls of the generator, whieh are reticnlated or honeycombed. The waste heat from the reverheratory chamber may he utilized hy being passed to a second or cementing chamher, and from tbence to a boiler for the generation of steam. The gas generator and hot air bridge may be applied to steam boiler and other furnacee unconnected with metallurgical furnaces.

PRECIOUS STONES ARTIFICIALLY PRODUCED.—The oxide of alaminium-hae long heen known to chemists to constitute, in crystalline forms, the sapphire, ruby, emerald, etc., and it was rightly concluded that the discovering of practical meane of isolating and crystallizing alumina wonld make the production of all manner of geme, with few exceptions, ont of the mud of any olay conntry road a very simple bnsiness. The different colors of the natural geme—red, green, purple, etc.—come from the slight admixture of other metallie oxides, as of iron, snlphur, etc., the easiest thing to do. It is claimed that this remarkable discovery hae bsen made. It was recently made the anhject of a most lucid and satiefactory address of Prof. Archer, hefore the Royal Scottieh Society of Arts, Edinhurgh. A Parisian chemist hae artificially prodnced all gems of whioh oxide of aluminium is the constituent.

Solar Telegraphy.

It is a matter of common observation that the rays of the snn are brilliantly reflected to enormous distances from glass huildings or from polished surfaces. Take, for instance, as a familiar illustratinn, the san's rays, falling npon a ridged roof at a snitable angle, when they are reflected many miles away and are clearly visible even when the huilding is only dimly discernible through miles of intervening smoky atmosphere.

Considering this, it might appear somewhat remarkable that advantage has not heen takea of the circumstance to found a system of telegraphy thereon. Not that such a system could always be relied upon for use in climates where sunlight is capricious. Bnt in countries where snnshine is not so fitful such a system would serve the most useful purposes. As a matter of fact, the rays of the sun have heen utilized for signalling purposes at intervals for centuries past. The fleet of Alexander the Great is said to have heen guided slong the Persian gulf hy mirrors, on his returu from invading India. On the prairies, too, the Indians still carry on signalling hy means of snn flashes, and a similar method was adopted hy the Russians at the siege of Sebastopol. Bnt the principle appears never to have heen reduced to a system; arhitrary sigas have been hitherto made to work ont a perfect code of signals and to devise an instrament of apparatue which shall represent them.

Sun-flashing has, however, been of essential service in extensive surveying operations, although even there it is only made to convey very limited information—to signal only, in fact, and not to converse. Towards the close of the last centnry General Roy was engaged in connecting the meridians of Paris and Greenwich, and he employed sun-flasbing in his operations. Later, in the early years of the English trigonometrical survey, Bengal lights or Argand lamps were burned at night on the distant points, the hearings of which it was desired to take. But this gave a very limited range and involved other practical difficulties, which led to the invention hy Captain Drnmmond of the light which hears his name. This enabled ranges of from thirty to forty miles to be obtained; even these distances were soon exceeded when, in 1822, Colonel Colby designed an apparatns for signalling hy flashing tbe snn's rays, which proved very successful. Snbsequently Captain Drnmmond improved upon Colonel Colby's instrument hy the iuveation known as the heliostat, which was an instrnment consisting of an adjustable mirror as a reflector, worked in connection with a combination of telescopes. This apparatus, at first somewhat complex, was afterwards greatly simplified. Professor Gauss also introduced a similar instrnment, which proved of great service in facilitating the work. The heliostat is now a recognised adjunct of all trigonometrical surveys, and by its aid triangles having sides of 100 miles in length have heen formed even in Great Britain—notably that formed hy Sca Fell in Cumherland, Slieve Donard in Ireland, and Snowdon in Wales, the sides of which are respectively 111, 108, and 102 miles in leagth.

But the heliostat does no more than permit of an arhitrary set of signals heing exchanged; it does not allow a conversation to be carried on. To hriag the beams of the sun into subjection in this respect and to utilize them as a means of freely interchanging ideas was left for Mr. Henry C. Mance, of the Government Persian Gnlf telegraph department, to accomplish. This he has succeeded in effecting hy means of a very simple apparatns, which is known as tbe Mance heliograph, or sna-telegraph, which aonsists of a light tripod stand aboat foar feet long when folded up for transport. On this tripod is screwed a circular mirror, varying in diameter according to whether it is designed for field or fixed observations. If for the former purpose the mirror is abont four inches in diameter; while if for the latter it is ahout nine inches. The mirror is hung in a frame so as to revolve ahout a horizontal axis, and it is adjnsted to the reqnired angle of incidence with the snn hy means of a telescopic connecting rod. The horizontal circular traverse of the instrument is obtained hy means of a tangent screw gearing into a small horizontal wormwheel, with the center of which the mirror is connected. By means of the tangent ecrew and tbe vertical ecrewed rod, the rays of the sun can bo made to fall npon any given point with the utmost precision. In adjusting the instrument to commence signalliag, the rays are directed to a point slightly before the distant observer'a level, hut npon depressing the connecting rod, tho flash is raised to the level of the observer and he sees it. The observer at the distant station having seen ths bright starlike appearaace in his mirror, sets his instrnment at the point at which they appear, and acknowledges the fact hy signal. If now the longths of these flashes he varied and grouped, they can he made to represent letters, and so worde composing messages can be epelt ont, precisely as is done hy sound reading with the Morse alphahet.

LIGHTNING *vs.* COLOR.—A Scotch granite monnment at Cambridge City, Indiana, was recently struck hy lightning, the current following the shaft to the limestone hase, taking ont every particle of red color, and leaving a white zig-zag strip ahont an inch in width. The monnment was not injured. The color, no donht, consisted of mineral paint which was a good conductor of electricity.

MECHANICAL PROGRESS.

Cleaning Steam Boilers.

A correspondent of the *Colliery Guardian* says:—Boilers are much easier to clean, and give less trouble when allowed to cool down gradnally. A thin scale, say ahout the thickness of a coat of whitewash, is a valnable preservative of the plates, and is often produced artillcially to protect boilers which are intended afterwards to work with water, from surface condensers. The apparent corrosion caused hy the scale is really dne to the damage caused hy the scaling hammer or similar means nsed to remove the incrustalion. Take a hoiler plate, snd ent or scratch through its natnral "skin," and leave it exposed to the weather for a short time, and the parts thus damsged will he fonnd very much more corroded than where the natnral protection is left on. Next, examine the interior of a hoiler which has heen "sealed," and the surface will he found partly protected hy a thin scale still adhering, hnt scarred and nicked in namerous places hy tho chisel or hammer employed, Every one of these places is a nucleus for corrosion.

But there is a still more importantreason why boilers shonld not he hlown off until cool. The nneqaal coatraction caused hy the snlden changes of temperature exercise a most iajurious effect on the boiler, and is a frequent cause of scam rip. Some years ago, when I had some fifty egg-ended hoilers ander my charge, I was much troubled by those in one particular groap, where seam rips, often extending half roand the circnmference, were of frequent occarrence. Suspecting that the practice of hlowing off while hot was at the bottom of it, I taxed the stoker with it, hut was met by a positive denial. Soon afterwards, I detected him in the act of hlowing off the momeat the fire was drawn and then settiag opon the damper and fire doors, thus passing a carrent of cold air directly nnder the hoiler. As soon as the boiler was fit to enter I discovered, as I expected, a very fine specimen of seam rip. After this the practice was pnt a stop to, and though no other change was made in the workiag of the boilers, I had no more trouble from seam rips, while the facility for cleaning out far counterhalanced the loss of a few hours before tbe boiler could he again set to work.

Though scale does not "eat into" the plates of a hoiler, it is a fraitful source of damage to them through rendering them liable to he overhoated. This may be specially noticed in the fire-hox plates of locomotive hoilers.

In conclusion, I wish to draw attention to the corrosive action of damp mortar in contact with hoiler plates. I could name several iastances in which I have noticed a slight leakage from a pipe or other fitting into the hrickwork snrrounding a hoiler, and have subsequently fonnd when examining the hoiler internally, that the plating at that point was so thin that a hole conld he knocked through it with a very few hlows of a hammer. No mortar shonld he used in coutact with a hoiler; hut fire-clay, properly prepared, should be substituted.

Cement Walls in Salt Water.

Great consternstion was recently causcd among the dock commissioners of New York by the discovery that the supposed "great improvement" in the mauner of constructing cement walls on the river front, introduced by the late chief engineer, General Graham, is a lamentsble failure. Some of the new halkheads, after an examination from beaeath by sahmsrine divers, were discovered to he ornmhliug in pieces, threatening the whole work with speedy destruction. It is only a few weeks since General Graham presented to the commissioners a most encouraging report of his success with the aew system. Instead of lowering costly and cnmhersome blocks of stone by the aid of expensive derricks and machinery, he built up great monoliths of heton concrete *en masse*, manufacturing it on the spot. Tbe saviug in expense by hnilding on this system was said to he $67.77 per foot rnn, or over $350,000 per mile. The discovery that the wall is grsdnally being disintegrated came upon those in charge most nnexpectedly, just as they were congratulatiag themeolves npon the entire success of the new system. Work was immediately stopped, and the new engineer, Mr. G. S. Greene, Jr., made a carefnl examiaation which satisfied him that the plan of huilding bulkheads of conerete placed under water *en masse*, can not he depended npon. The mayor immediately appointed a board of engineers of high standing in their profession to examine the work, and we may expect within a few days to learn what coarse of aetion will be pnrsned.

PAPER WATER BUCKETS.—The real possihility and advantage of the varied and extending usos of paper pulp are illnstrated in the manufacture of such articles as water pails, barrels, etc., which are now made in large nnmhers of this material. In the old way of making pails, the separate parts or staves are cut, one at a time, from a log of wood, and in making them, all the chips and smaller pieces are wasted, so far as the real object of the mannfactare is concerned. In making a paper pail, the fibrous material is wholly ntilized, and if the original stock is wood, as in part it may be, then that which would he wasted in chips and fag ends is entirely saved. Those who make paper tell us that they have thus far barely entered on some of their new lines of product.

Furniture Manufacture.

To one familiar with the furniture trade of this country, its change and growth within the past twenty years must seem wonderful indeed.

It is only about twenty years since woodworking machinery began to he used; at first quite rude in constrnction, and fitted only to perform the rougher portions of the labor of a cabinet factory, bnt improvements were made with each succeeding year, and now there are one or more machines adapted to each of the several parts of the cabinet work of all articles of furnitnre; and no manufacturer for the trade, of the smallest pretensions, hut runs several of these labor saving inventions.

The snbstitution of these skilled appliances for manual mechanism has tended to greatly increase the production of furnitare of all varieties, and a shop employing fifty hands with a proper outfit of the "most approved machines" can turn out a stock of goods in one month that would have heen a year's work tor the same hands without machinery. Dariag the latter years of the war and for the immediate succeeding seasoas the supply was hardly eqnal to the demand; and under the influence of this lively demand at heavy profits, large cabinet factories were built on every hand, and machinory was utilized that would accomplish the labor of half a score of men.

An article of furnitnre not being needed fresh every season, as a hat or cost, the general depression of trade has necessarily affected this line of business more than many others, and important manufacturers in tho Eastern States with largo aad expensive factories upon their hands, are put to their wits' ends in their attempts to run their bnsiness with profit.

IRON RAILWAY CARRIAGES.—It is believed that the iron safety railway carriage will yet be generally introduced, as a means of alleviating the horrors of a collision when such a cssaalty occnrs. It is well known that the spliaters of an ordinary carriage, when it is smashed, do almost, if not quile, as much harm to passengers as the shock of an accident. In fact, the idea has been snggested, and we think patented in the United States, of employiag papier mache as a constructive material, on the special ground that it would do but little damage in accidents. Mr. Massey, an English inventor, proposes to construct the framework and partitions of a carriage of iron hoops, put together in a manner which must be seen to he understood, hut which reminds us more of an iron bedstead of intricate pattern than anything else. An elastic framework is provided which will certainly withstand a considerable pressure, hut experiment and calculation alone will decide how far it will resist the shock of a collision. Of course, it is to he encased and finished with some other material more pleasant to come in contact with than "cold iron." The inventor, hesides claiming increased safety for this carriage, is confident that it is stronger and more economical than those of the present pattern.

ROLLING STEEL SCRAP.—The Indianapolis *Journal* of October 7th says: "A large namher of iron workers of the city visited the Indianapolis rolling mill yesterday forenoon to witness a new process hy which steel can be welded or restored. A mass of scrap steel was successfully welded and afterwards rolled into a fine steel rail weighing sixty-five pounds to the yard, thirty-two feet in length. Although the rolls were adapted only to iron rails, and the mill hands were not familiar with the process, enough was done to prove conclnsively that the patent flux as applied will accomplish all that is claimed for it, viz: To work up scrap and refuse steel into a merchantable article, and also put worn ont steel rails into a condition that they may be rerolled into rails that are as good as new. The test was highly satisfactory to all who witnessed it, and the managers of the rolling mill are so favorably impressed with the manner the work was done that they will probably arrange their mill to go into the business of manufacturing steel rails on an extensive scale."

IMPROVED ENGINEER'S MACHINE.—This is an ingenious apparatus, which has heen introduced in some of the English workshops with great satisfaction, for trimming off wrought iron locomotive wheels. It is a curvilinear slotting machine, and is mounted in a holder provided at one end of a vibrating lever—the other end of this lever heing slotted and fitted with a sliding block, into which the pin of a disk crank enters. As the crank disk revolves with its upper edge approaching the fulcrum of the lever, the effect of the arrangement is to give the tool holder a slow downward and a quick return stroke. The point of this machine describes, of course, an arc of a circle struck from the center of the vibration of the lever, thereby producing a convex form of the inside of the tire, and so giving additional strength to the rim. The wheel hed plate is revolved by suitable automatic mechanism, somewhat similar to the devices ordinarily employed in planing machines. Provision is made hy crank and screw for wheels of any diameter.

RUBBER TIRES FOR WHEELS.—The movement for the introdaction of noiseless tires for vehicles has been revived in London. In Berlin the experiment is said to have heen entirely successful. The rnbber manufacturers declare themselves able now, by improved processes, to afford a tire cheaper than iron, of longer wear, and in every other respect, of course, much better.

Sales at S. F. Stock Exchange.

FRIDAY, A. M., Nov. 12.

25 Alpha.....13
450 Baltimore Con.....24@25
605 Best & Belcher.34½@33½
50 ....do.....b 5..34
50 ....do.....b 10..34
420 Belcher.....17@18½
160 Bullion.....36½@36
215 Chollar.....52½@51
30 ....do.....b 10..51½
20 Confidence.....340
441 Con Virginia.....236@240
45 ....do.....s 30..235
110 Caledonia.....13½@14
2250 California.....50@53½
100 ....do.....b 30..50½
200 ....do.....s 30..50¼
900 C Point.....25½@25
55 Challenge.....24
130 Exchequer.....10@10½
70 Empire M.....4¾
635 Gould & Curry..11@13¾
105 Hale & Norcross..28@29
240 Imperial.....7½@8
350 Justice.....2½@2¾
845 Julia.....9¾@11½
425 Kentuck.....11½@12
50 ....do.....b 5..12
50 Kaiserbrooker..1¾@1½
50 Leo Bryan.....1½
285 Mexican.....15½@16
50 ....do.....b 5..15½
1085 New York.....37½@37¾
1635 Ophir.....37½@38
545 Overman.....40@41
20 ....do.....b 5..40
300 Rock Island.....60½@62
140 Segregated.....2
305 Sil Hill.....70@65½
30 ....do.....b 30..72½
240 S Nevada.....1½@1¾
225 Union.....2¾@2¾
135 Yellow Jacket..64@62½

AFTERNOON SESSION.

25 Advance.....3
600 Andes.....1
50 Alpha.....14
50 Amazon.....1½
210 Belmont.....15
70 Bullion.....38@39
195 Best & Bel.....34¼@35
50 ....do.....b 30..35½
50 Cosmopolitan.....35c
410 California.....50@53½
100 ....do.....b 30..53½
475 Crown Point.....27½@27
100 ....do.....b 30..27¼
60 Con Virginia..238@236½
140 Chollar.....52@53
200 Eureka Con.....12½@13
10 Eureka G V.....6
685 Gila.....3¾
830 Golden Chariot..16@87½
185 G & Curry.....14
500 Hussey.....50c
200 Imperial.....8¾@8½
100 Jackson.....1¼
255 Justice.....2½@2¾
110 Julia.....11@10½
50 K K Con.....4
70 Kossuta.....1
30 Kentuck.....12
200 Leo.....80c
200 Leviathan.....3½
150 Lady Wash.....1½
860 Leopard.....1½
115 Meadow Valley..2¾@2¾
60 Mansfield.....1
100 M Star.....4
210 Mexican.....16@16½
50 Nelle.....29
680 Ophir.....37¾@37½
25) O G Hill.....1¾
50 Occidental.....3
200 Overman.....40@41
1020 Prussian.....1½
455 Raymond & Ely....15@14
50 ....do.....b30..14½
5 Seg Belcher.....65
100 S Central.....25c
305 Union Con.....7½@7¾
200 Wells-Fargo.....16c
1655 Woodville.....3¾@3¾

SATURDAY, A. M., Nov. 13.

60 Alpha.....15
300 Andes.....2¾@3
200 Baltimore Con.....2
267 Belcher.....19@18½
60 Bullion.....38
1020 Best & Bel.....34½@34
50 ....do.....b 5..34
50 ....do.....b 10..34
100 Challenge.....4
265 Chollar.....50@49½
30 ....do.....b 10..50
1295 C Point.....27@25½
570 Confidence.....21@20½
150 Con Virginia..236½@238
1570 California.....50@53½
110 Caledonia.....13½
20 Empire M.....4¾
29 Eclipse.....3½
55 Eureka G V.....6
20 Eureka Con.....13
50 Golden Chariot.....87½c
6 Hale & Nor.....28½
129 Imperial.....17½@8
625 Justice.....2½@2¾
50 ....do.....b 30..25
350 Julia.....10¾@11½
50 Jackson.....1¼
200 Kentuck.....11½@11¾
50 K K Con.....5
200 Leviathan.....2¾@2¼
50 Leopard.....9¾
55 Mexican.....16½@16¾
30 Meadow Valley..2½@2¾
560 New York.....1
650 Ophir.....37¾@37½
20 ....do.....s 5..37¼
100 ....do.....b 5..37¾
50 Occidental.....3
175 Overman.....40@39
10 ....do.....b 10..40
160 Phil sher.....25c
100 Rye Patch.....2
225 Ray & Ely.....14@14½
50 Savage.....63@64
515 Sierra Nevada.....10@9¾
25 Seg Belcher.....65
189 S Hill.....70@8¾
150 Succor.....50c
975 Union Con.....7½@7¾
850 Wyoville.....1
90 Yellow Jacket.....64@65

MONDAY, A. M., Nov. 15.

50 Alpha.....14
89 Andes.....2¾
100 Bullion.....38@37
890 Best & Bel.....32¼@33½
265 Belcher.....19@18½
435 Bal Con.....2½@2
565 Crown Point.....25½@26
50 ....do.....b 5..25
230 Con Vir.....239@240
100 Caledonia.....14½
100 Confidence.....2¾
180 California.....52@52½
325 Chollar.....52¾@52½
100 ....do.....h 30..51¾
100 Caledonia.....1
100 Confidence.....2¾
300 Julia.....10¾@11
100 ....do.....b 30..11
50 Kentuck.....11¼@12
200 Knickerbocker.....2
100 Kossuth.....2
185 Leviathan.....2½@2¾
380 Mexican.....15½@15¾
110 ....do.....b 5..15½
200 New York.....1
187 Overman.....40@41½
1235 Ophir.....36½@36¾
25 Occidental.....3
300 R Island.....2½
60 Sierra Nevada..10¼@10½
25 Savage.....63
200 Sil hill.....65½@71¼
100 Utah.....6¾@6½
1070 Union Con.....7½@7¾
4705 Woodville.....3¾@3¾
1000 ....do.....b 30..4
110 Y Jacket.....60@62

AFTERNOON SESSION.

230 Advance.....3¾
105 Alpha.....15
15 Belmont.....1
30 Belcher.....19½
300 B & Bel.....35@34
10 Chollar.....57½
45 Con Virginia..246@247½
10 ....do.....s 10..247
750 California.....53½@53¾
495 Crown Point.....27½@28
80 Eureka Con.....13@13¾
5 Eureka.....6
600 Gila.....3%
430 Golden Chariot.....87½c
150 Gould & Curry.14½@14¾
230 Jefferson.....4½
470 Justice.....2¾@2½
15 Challenge.....b 10..4½
485 Julia.....11@10¾
50 K K Con.....5
10 Kentuck.....12¾
1050 Leopard.....10½@9¾
125 Meadow Val.....2¾@3
715 Opbir.....38@38¾
150 ....do.....b 5..38¾@38½
230 Overman.....44@45
75 Ore Patch.....1½
720 Rae & Ely.....14½@15¾
225 South Chariot.....20@25c
40 Savage.....67@68½
110 S Hill.....7¼
160 Silona.....2
1050 Woodville.....3¾@3¾
760 Woodville.....4¼@4¾
100 Y Jacket.....66@65½

TUESDAY, A. M., Nov. 16.

100 Amazon.....1½@1
270 Andes.....3½@3¾
389 Best & Belcher.35¾@36¼
130 Belcher.....19¾@19¾
20 ....do.....b 5..19¾
100 ....do.....s 40..41
125 Balt Con.....2¾
80 Chollar.....57@58
365 Crown Point.....28@27½
78 Caledonia.....14½
50 Confidence.....18¾
205 Con Virginia..255@257½
1995 California.....55¼@55
150 ....do.....s 10..55
20 ....do.....b 5..55¼
20 Challenge.....3
50 Dayton.....3½
50 Empire.....4¾
5 Exchequer.....11½
50 Florida.....2
505 Gould & Curry.15½@15¾
60 Hale & Nor.....30@31
120 Imperial.....8
185 Justice.....2½@2¾
125 ....do.....b 5..26
30 ....do.....b 30..27@26¾
325 Julia.....11½
165 Kentuck.....12½@12¾
50 Kaiserbrooker.....1¾
350 Kossntb.....1
30 Lady Bryan.....1
30 Lady Wash.....1
500 Leo.....80c
275 Leviathan.....2¼@2
265 Mexican.....16¾@16¾
200 N Carson.....30c
100 New York.....1@1¼
610 Opbir.....39¾@39¾
10 ....do.....b 5..39¾
50 ....do.....s 10..39½
255 Overman.....44¾@43
125 Occidental.....3
130 Rock Island.....2¾
360 S Nevada.....11@10¾
35 Savage.....70@69
200 Sep Belcher.....65
135 Sil Hill.....72½@73
525 Union Con.....8
30 Utah.....6¾
4990 Woodville.....4¾@5
100 ....do.....b 5..5
1200 ....do.....b 30..5c47½
170 Y Jacket.....69@68½

AFTERNOON SESSION.

200 Advance.....3¾@3⅞
2 Belmont.....1½
555 Best & Bel.....34¾@34¾
120 Crown Point.....27¼@27¾
12 Con Virginia.....255@252½
515 California.....53¾@53¾
75 Chollar.....56
165 Eureka Con.....13¾@12½
25 Exchequer.....11
80 Gila.....3¾@3¼
75 G Cbariot.....75c
80 Gould & Curry.14¾@14½
325 Hussey.....50c
130 Imperial.....7¾@8
200 Jackson.....1¼
530 Justice.....2¼@2¾
50 ....do.....b 5..24
250 Jefferson.....4¼@4¾
195 Julia.....10@9¾
50 K K Con.....5
1055 Leopold.....10@10¼
340 Meadow Valley..2¾@2¾
150 Mansfield.....1.05
270 Ophir.....37½@38
20 ....do.....b 10..38
10 ....do.....s 10..37¾
310 Overman.....43@44
950 Prussian.....1½@2
75 Rye Patch.....75c
635 Ray & Ely.....15½@16¼
25 Savage.....66
50 Union.....7¾
1970 Woodville.....4@4¾
5 Y Jacket.....65

WEDNESDAY A.M., Nov. 17.

100 Alpha.....15½@16
460 Andes.....2⅞@3
50 Amazon.....1¼
390 B & Belcher.....35½@36
5 Belmont.....40
90 Belcher.....19¾
165 Bal Con.....2½
50 Chollar.....58
160 Crown Point.....27¾@28
310 Con Virginia.....253@256
100 ....do.....s 30..253
90 Caledonia.....14
1670 California.....54½@55
50 ....do.....s 10..54½
55 Eclipse.....5
215 Gould & Curry.....14½@15
100 Hale & Nor.....30
100 Imperial.....7¾@8
980 Justice.....2½@2¾
555 Julia.....11¾@11½
150 ....do.....h 30..11¾
110 Kentuck.....12@12¾
80 Knicker.....1¾
170 Kossuth.....2½@2⅞
100 Lady Bryan.....1
100 Leopold.....1
370 Leviathan.....2¾
150 Mexican.....16¼@17
25 ....do.....h 30..17
725 New York.....1@1⅛
100 N Carson.....30c
340 Ophir.....38@39¼
100 ....do.....h 30..39½
90 Overman.....44¾@45
300 Rock Island.....2½
60 Savage.....67@65½
60 Sierra Nevada..11½@10½
10 Sil Hill.....7¾
10 Seg Belcher.....67
110 Sil Con.....50
230 Union.....7⅝@8
85 Utah.....6¾
5330 Woodville.....4½@5
2200 ....do.....b 30..4⅞@5
200 ....do.....b 5..5
20 Yellow Jacket.....67½

AFTERNOON SESSION.

220 Advance.....3¾@3⅞
50 Belmont.....1¾
630 B & Bel.....37@38½
900 Coso Con.....1½
375 Cosmopolitan.....35c
1430 California.....56¾@58
50 ....do.....s 5..56¾
50 ....do.....h 5..57½
1410 Con Virginia..262½@263
295 Crown Point..28¾@28¾
50 Chollar.....61@60
75 Eureka Con.....13½
700 Gila.....3¾
60 H & Nor.....31
210 Imperial.....8@8¼
50 Julia.....11⅝
80 Jefferson.....5

SALES OF LAST WEEK AND THIS COMPARED.

THURSDAY A. M., Nov. 11.

75 Alpha.....16½
225 Andes.....3¼@3¾
180 Baltimore Con..2½@2¾
40 Bullion.....38
230 Belcher.....19¾@19
1166 California.....52@52¾
500 Con Virginia..242½@240
50 ....do.....b 30..235
285 Crown Point.....26¾@28
150 Confidence.....16½
60 Caledonia.....14@14¾
45 Challenge.....3
80 ....do.....h 30..4
140 Empire Mill.....5@4½
120 Exchequer.....10¾@10
465 Gould & Curry.15¾@15¾
125 Hale & Norcross..31@32
455 Imperial.....8¾@7¾
1170 Justice.....2¾@2½
50 ....do.....h 5..2¾
50 ....do.....b 5..2¾
145 Challenge.....3½
80 ....do.....h 30..4
140 Empire Mill.....5@4½
120 Exchequer.....10¾@10
465 Gould & Curry.15¾@15¾
125 Hale & Norcross..31@32
455 Imperial.....8¾@7¾
1170 Justice.....2¾@2½
50 ....do.....h

but few cases were known until the first rain set in, and then there appeared suddenly quite a number of cases. No good has yet come to the miner from what has fallen; it only admonishes him to set his house in order, for the winter is at hand and his golden harvest draweth nigh.

CALAVERAS.

WORK BEGUN.—Calaveras *Chronicle*, Nov. 13: There is now water enough in the ditch to admit of the working of two or three hydraulics in this vicinity, and piping is actively going on. Veith, the Tunnel ridge hydraulicer, is piping steadily, employing a large force of hands in and about the mine. The derrick lately put up in the claim works admirably, greatly assisting in disposing of the boulders with which the gravel abounds. During the dry season the mine has been put in splendid shape, and it will give a handsome account of itself this winter. Duryea, proprietor of the famous "Shaw" claim in Chile gulch, is also actively engaged. He has seven or eight men employed in what is known among miners as "bottoming"—in other words working out a depression in the bedrock that cannot be hydrauliced to advantage. The gravel has to be picked, carried into dump boxes and washed. The process is slow, but the deposit cannot be well reached in any other way and the gravel is rich. We understand it is he his intention to resume hydraulicing at an early day. Other claims in the vicinity are in readiness to commence piping and will do so the moment the water supply is sufficiently increased.

MOSQUITO GULCH MINING ITEMS.—Quartz operations in the Mosquito district are, to use the language of market reports, "lively." Work is being pushed with unusual activity for the purpose of getting out and hauling as much rock to the mills as possible before the rainy season fairly opens. At the San Bruno mine operations are progressing finely. Over 200 tons of ore are in the dumps, and a number of teams are employed hauling the rock to Garland's mill. The quartz taken out and now being mined is first grade. Crushing is to be commenced next Monday. Rock is being hauled to the mill from the mine of Herrybausen, Saudermier & Co., located a short distance from the Cold Spring house. The company have out about 100 tons of ore, which good judges say will yield an average of $50 per ton. The stamps will be set at work upon the rock next Monday. The machinery to be erected on the Grasshopper mine is nearly set up, and will be in readiness for use in a few days. Good rock is obtained from the Albers mine, and developments so far made are of the most flattering character. First grade ore continues to be taken from the Rickman mine. No crushing will be done until the stopes now opened are exhausted; then look out for a monster clean-up. Potter & Co., proprietors of the rich vein lately discovered, are again at work taking out rock. Developments are of the most promising nature. Both batteries of Garland's 18-stamp mill will be set in motion on Monday morning next, and there is rock enough out and being hauled to keep them employed for several weeks.

WET POINT DISTRICT.—Pryor & Co. extracted 50 tons of high grade ore from the "Billy Williams," which is now being hauled to a custom mill. Cheeno main shaft is down 102 feet. The bottom of the shaft is now in very favorable looking vein matter, some three feet in width. The rich ore shute lies immediately south. The new main incline of the Josephine is down 40 feet. Building to cover hoisting works completed. Machinery is being put in position. Mina Rica, sinking in bonanza. The Constanoia begins to show up well. Lone Star looks better than ever. The Champion has been enabled by the recent rains to resume work. The usual rich ore is coming out lively. The dumps are beginning to look comfortable.

GLENCOE DISTRICT.—Forty tons of coarse gold ore are available at the Rickman mine. Stopeing. The new hoisting works of the Grasshopper will be completed in a short time. The recent strike in the Joaquin holds out well. The owners of the Good Hope contemplate to resume operations at an early day. Preliminary work going on at the Glencoe Consolidated. A decided, permanent impetus has been given to the district by the excellent results of all the deeper workings.

EL DORADO.

THE DITCH.—El Dorado *Republican*, Nov. 11: We are told that with fifteen days more of favorable weather the new ditch will be completed, and this section assured 5,000 inches of water next season. There will yet be a few weeks' work for 200 or 300 men in enlarging the ditches this side of the main trunk, which can be completed in the spring in season to supply all demands. It is to be hoped that all who contemplate taking water will be in readiness to receive it when it comes, as otherwise it may be so diverted as to render it difficult to secure a supply when wanted. These works have cost an immense amount of money, and no one should complain if the company show a disposition to use the water themselves, if others do not stand ready to take it.

INYO.

CERRO GORDO.—Inyo *Independent*, Nov. 6: It is an admitted fact that the pending case known as the "Big Mining Suit," or the Sao Felipe Co. vs. Belshaw & Co., has a material influence upon times in Cerro Gordo. As it is now passed till another term the prospects for active work on the Hill and consequent lively times are lessened that much, and "that much" is considerable, we are constrained to believe.

THE CUERVO MINE.—This mine, originally located as the Promontorio, Darwin district, is one of the most noted and promising, as regards surface indications and quality of ore, in the district. Its development has been kept back somewhat by threatened litigation, but as all danger from that source is now happily ended, by proceedings in the present district court, work will go on. Mr. G. P. Cornell, superintendent, has been here during the week, and started for Darwin this week. He informs us that he has all the machinery on the ground for the furnace, with lumber for the building on the way, and that he will have the furnace completed and running just as soon as the work can be done, which will be within a few weeks. The furnace will be located at the head of Main street, Darwin, which is about one and a half miles from the mine, with an easy road. Altogether, we think this both an important and gratifying piece of news, and will say that, in our opinion, the Cuervo mining company, the owners of the property, have an excellent boss in Mr. Cornell.

MENDOCINO.

MINE.—Mendocino *Democrat*, Nov. 12: We have been informed from what we deem pretty good authority that the claim of Hagan, Sullivan, Cleaveland and some others, close by the big rock on the new road to Cloverdale makes a promising exhibit for the finding of quicksilver.

NAPA.

POPE VALLEY MINES.—St. Helena *Star*, Nov. 13: We were in conversation with Mr. Dan Patton, the energetic superintendent of the Phœnix quicksilver mine, and we learn from him that the mine had never so good an outlook as at the present time. They have a ledge seven feet thick of good cinnabar, and several small veins, from eight to ten inches in thickness, all good paying ore. Messrs. Staudiford & Wells have bonded their mine to a rich company in San Francisco for the sum of $30,000. We hope they may have good luck and do well; they are both honest, hard working men, and deserve something for the work that they have done in the prospecting line for the past several years.

OAKVILLE MINE.—The Oakville and Bella Union mines are now in a flourishing way, under the able and gentlemanly superintendent, Mr. McQuaid. They are turning out more ore, and more of the pure metal, than ever before in the history of the mine.

THE mine lately located by Mr. John Sellinger, to the south and west of the Bella Union, has proved to be rich in the extreme; and we hear that he has been offered, and refused, $5,000 for the claim as it stands.

NEVADA.

NEW MILL.—Nevada *Transcript*, Nov. 9: We are informed by Jay Parsons that he has completed the contract of building a new quartz mill for Hamilton McCormick out on Gold flat. The mill has eight stamps, and is one of the most complete structures of its size in this vicinity. It has eight stamps, and will be run with water power. It will be used for crushing the rock in the ledge owned by Mr. McCormick. He has 150 tons of rock out and ready for crushing, and it is estimated it will pay thirty or forty dollars per ton. Good judges are of the opinion that Hamilton has got a home stake in this mine. We hope so, for he has labored under difficulties in opening it up and building the mill, that would have discouraged most men. He is deserving of success, and from all accounts he has it in hand now sure.

THE GOLD SPRING COMPANY.—The contractors who have been engaged in running the incline for the Gold Spring gravel mining company, whose mine is located about two miles east of this city, adjoining the Harmony ground, completed their contract yesterday. The incline is now down about 450 ft. The company will now commence a tunnel from the bottom of the incline, with a gradual raise, in order to strike the pay channel, which runs under the ridge. This work they expect to accomplish in two or three weeks, when the course of the pay channel will be fully determined. A number of claims located along the ridge are at present idle, waiting development from the Gold Spring company, and as soon as the direction of the channel is known, work will be commenced on all of them. So that considerable importance is attached to the working of the Gold Spring mine, about this time, by those who own claims on each side. Messrs. Isoard, Rolfe and others are the owners of this mine, and their perseverance entitles them to reward for their labor, which we hope and believe will be a golden harvest.

WE hear of several new prospecting companies being formed in this and Grass Valley townships, with a view to test some of the numerous ledges with the Fryer process. There are hundreds of them that will, without doubt, pay if all the gold in the rock can be saved.

THE survey of the new ditch which is to be run from the South Yuba to Smartsville, is about completed, and the projectors propose, if possible, to have it completed by June next to Indian Springs, where it will connect with one already running to the mines at Smartsville.

PLACER.

THE SEASON.—Dutch Flat *Forum*, Nov. 11: The rain has been falling copiously yet gently for about two weeks, and the rainy season may be said to have fairly set in for the season, and the prospects for a continuance until the earth becomes saturated is flattering. So that the supply of water to fill the ditches for miners' uses will soon be abundant.

PLUMAS.

GOOD RESULTS.—Plumas *National*, Nov. 6: The Indian Valley mine, near Greenville, has recently been turning out some first-rate rock, and the last two runs of the mills have been "eminently satisfactory." Messrs. Whitlock & Hall have the mine in charge at present. The Major was in town on Monday evening, and showed us a bar of bullion worth $3,100, the result of twelve days' run of the mill. The twelve days preceding this netted $2,630. There is plenty of the same kind of rock in sight, and the prospects are first-rate. We are glad these gentlemen have made the mine pay, for it has been on the "non-paying" list for a long time before they took it, and as usual, there were plenty of "croakers" to predict that they had a bad speculation on hand.

FALSE REPORT.—A report was in circulation, a few days ago, to the effect that a portion of the new Caribou ditch had slid or caved away, and the rumor stated that about a half-mile had gone down the hill. We are glad to be able to contradict the story, and we have it on good authority that only a very slight break occurred, and that the damage has been already repaired.

SIERRA.

A BONANZA.—*Mountain Messenger*, Nov. 6: Van Wagner and Eastman recently found some very rich rock in Caribou ravine. Not long since they took out, in one day, upwards of $1,000 worth of gold.

ORO.—Rich rock has just been struck in the Oro.

WATER.—The Bald Mountain company got a little water during the late storm, amounting to three or four reservoirs per diem for a few days.

SISKIYOU.

WILL SOON BE READY.—Yreka *Union*, Nov. 13: The mill of Cornish & Co. is expected to be ready to start up the coming week. E. Ramons, who was over making the wheel and otherwise repairing the mill, got through on Saturday, and ere long the thump, thump of the stamps will be resounding through the canons of Humbug, and coin will jiggle in the pockets of the fortunate owners, and their workmen.

TRINITY.

WATER SUPPLY.—Trinity *Journal*, Nov. 13: There was some water in the ditches hereabouts during the rain a few days ago, but when it stopped raining the water stopped. There is no water for sluicing yet, the only beneficial result from the rain being that it soaked the ground some. The present season commences just as the last did, but we will have more water and a better winter if the united prayers of the placer mining fraternity avail anything. Miners have their claims in good condition and with a reasonable water supply good results are anticipated.

TUOLUMNE.

GOLDEN GATE.—Tuolumne *Independent*, Nov. 13: At the Golden Gate extensive works are contemplated. Several new Hendy concentrators are on the road and will be put in next week, in addition to those already in use. Experiments made during the past summer justify these improvements. If these are a success, as is confidently expected, the company intend to erect new hoisting works, put up chlorination apparatus, enlarge their dam, and make other additions to their valuable property, which will enable them to work their mine on a large scale. At a depth of 200 feet they find rock worth $30 per ton, rich in sulphurets. Mr. H. G. Wetmore has been recently appointed superintendent, and we believe the Golden Gate will prove all its many friends hope for.

THE water in the Tuolumne Hydraulic M. Co.'s ditch has been increased seventy-five inches by the late rains. The company have been making repairs on their lower dam, and everything up there is now in fine condition. Next week they will commence repairing flumes on the line, which will take about two weeks. M. B. Harriman, the general agent, and local agent on the Sonora and Shaw's Flat line, is an energetic, live man, just such an one as a work of this kind needs.

THE Dry Arroyo gravel claim is being reopened under the management of Mr. James Parsons. The company propose sinking a shaft where they left off last season—at which place it paid 5 or 6 ounces a day, some days working but 4 or 5 hours.

JAS BURNS & Co. cleaned up in the Main gravel digging last week $261. Mr. Burns said it was a small week's work, and didn't care to have the reporter notice it. Those poor divils in large cities with nothing to do this winter, on short allowance, would consider it a "big week's work," were they fortunately thrown in the way to do it.

THE owners of the Omega Table Mountain mine have secured a United States patent for their 3,600 feet of Table mountain, in this county. Work will be resumed as soon as the rains furnish the necessary water. The company have large deposits of rich gravel, and have run their tunnel 800 feet into the mountain. This claim is next south of the Alpha and the T. M. Blue Gravel.

VENTURA.

NEW DISCOVERY.—San Buenaventura *Free Press*, Nov. 9: Some time since the discovery was made of a large ledge of a mineral somewhat similar to that found in the Ventura soap mine, as it is called. This new deposit is located near the residence of Don Jose Arnaz, about 6 miles from this place up the San Buenaventure river. In appearance it somewhat resembles common soap. It washes well, making a fine lather, and removes all kind of grease and dirt, and is no doubt a valuable discovery. This ledge is a large one, and the material can be easily extracted, for it is mostly above the ground and can be loaded from the ledge immediately into wagons. No doubt it will prove a valuable discovery and one which will add wealth to this county.

Nevada.

WASHOE DISTRICT.

NEW YORK CONSOLIDATED.—The new machinery works as well as could be desired, the water is all out of the shaft, and the bottom being reached once more at the depth of 800 feet from the surface, sinking deeper is about being resumed. At the same time a station is to be opened and a drift started to prospect a promising streak of quartz which was passed through before sinking the shaft was suspended, in order to put in the present new machinery. It gave very good assays at the time, and a deposit of good ore is expected to be found in it. At the 600-ft level work is resumed at a lively rate, advancing the main north drift along the west wall of the ledge. More and more streaks of quartz are met with, and the prospects at this point are very favorable.

LADY BUYAN.—The main north and south drifts on the 380-ft level are steadily advancing. Another cross-cut, No. 2, has been started west, 380 feet south of the shaft, in the main south drift. This cross-cut is now in a distance of 25 feet, the face in fine appearing quartz and ledge matter. The main south drift on the 250-ft level is steadily advancing, without any valuable change to note.

AMAZON AND GLASGOW.—The shaft is sunk 250 feet below the surface, at which point a station has been opened in the hanging wall immediately adjoining the ledge. As soon as the vein was reached the course of the drift was changed northward, and it has now penetrated the ledge a distance of 25 feet, all the way in ore that gives an average assay of $55.60 per ton. The character of the ore is a white sulphuret, free milling and easily worked. Dumps are now being built, and the extraction of ore for milling is to be commenced in a very short time.

CALIFORNIA.—The battery mill is being rebuilt with all the speed possible. Sinking the C. & C. shaft is progressing at the rate of four feet per day. Sinking the winze below cross-cut No. 3 on the 1550-ft level is making fair headway, the bottom still in rich ore. The face of the north drift on the 1550 ft level is steadily advancing toward the Ophir line, still in rich ore. Everything is being done that can be to replace the mine in its former prosperous condition, and there is but little doubt that by the 1st day of January next it will be yielding up at least a portion of its immense treasures, and adding materially to the wealth and prosperity of the Comstock.

SULLIVAN.—Sinking the shaft is discontinued by reason of its being inexpedient to sink deeper with a hand windlass, and the requisite grading for steam hoisting works is now in progress. Meanwhile the tunnel is in 165 feet. Less than 150 feet will bring the tunnel to a connection with the shaft, and, from the assays obtained, a good ledge of pay ore should be found within that distance.

CHOLLAR-POTOSI.—Daily yield, 80 tons of ore, the average assay value of which is about $28 per ton. Sinking the new combination shaft is making excellent headway, the bottom still in soft working material.

IMPERIAL-EMPIRE.—Daily yield, 40 tons of ore, which is taken from the ore stopes between the 1850 and 2000-ft levels. The ore breasts continue to look well. The average assay of car samples is about $50 per ton. The character of the quartz and ledge material encountered in the main drift on the 2000-ft level is much more favorable, and is fast assuming the same looks and make as that encountered on the level above before penetrating the ore body.

YELLOW JACKET.—On the 1940-ft level the drift south, from the bottom of the north winze, is in a distance of 81 ft, the face perfectly dry and still in fair working ground. The face of the north drift, from the bottom of the winze on the 1940-ft level, is in 36 ft, also in dry ground.

JULIA.—The bottom of the shaft is almost entirely in a fine character of quartz, showing conclusively that the main ledge can not be far distant.

BULLION.—The new air machinery on the 2000-ft level is working splendidly, and is making material difference in the progress of the work.

GLOBE CONS.—The south drift from the main west tunnel is steadily advancing, the ledge growing steadily firmer and the quartz of a much better quality as the drift advances to the southward. Some much needed repairs to the shaft are being made.

WOODVILLE CONS.—The stone foundations for the pumping machinery are completed, and the carpenters and millwrights are making good headway on the timbers and frame work of both the building and machinery. The face of the main drift on the 420-ft level is again in hard blasting rock.

LEVIATHAN.—The whole face of the north drift at the 420-ft level still continues in splendid ore, assaying high up in the hundreds. Cross-cutting is to be commenced

(Continued on Page 333.)

History of California Agriculture.

[We give below some extracts from a lecture delivered before the Assembly of the California State University, on Friday, November 5th, 1875, by W. B. Ewer.]

The history of agricultnra in California commences with tha establishment hers of tha early Catholic missions. In establishing a nission, the Fathers took along, among othar things, all the utensils necessary for cultivating the soil; also fruit, vegetabla and flowsr seeds, trees, roots and vines for the orchard and garden, besides a good supply of wheat snd corn, wherewith to seed tha fields. Horses, horned stock, sheep, hogs and poultry, also formed an essential part of thair outfits. Tha first lessons of industry taught the nativas wera thosa counected with agriculture. Thus the aarly missionarias hsre wars tha first farmers iu California—their farming, moreovar, was on quite an extensive scals.

A mission alwsys hald actnal occupancy of a cantrsl tract of choica land from five to fiftaen miles squsra, a small portiou of which only was placed under sctual cultivation, ths lsrger part baing devoted to pasturags. But, thsoretically, ths boundaries of each mission touched ths extrsme limits of its naighbors on the south and north, while east and west tha sea and ths Sierras were the only aoknowledged limits. Afts putting their seed into the ground, a church, a comfortable dwslling, snd a suitshla storahouse wera at onca erected, and for precsution, a oitsdel or presidio was also constructed, which wss garrisoned by a few suldiars in govarnment pay.

Many of these soldiars, whan the tims cams for their discharge, having becoms attached to tha country, sought and obtained the privilege of remaining near tha missions, with permission to cultivate a smsll tract of land and keep a few cattla and horses. They also, as a usual thiug, selected s convarted Indian womsn for a wife. The home govarnment soon began to realiza tha importance of thus ancouraging parmanant settlars in tha country, and building up hara a non-calihata population, of a secular chsracter and with progressiva ideas. To this end it early adopted tha policy of giving a title to dischargad soldiars for snch tracts of land as would enable them to secura for themselves and familias a comfortahla living, aocording to their simpla habits and desiras. It was in this way that land grants originated in California—the first ona being recorded November 27th, 1779, in favor of a soldier at the Mission of Ssn Carlos. In after years this class of settlers was largely supplemented by tha influx of peopla from Mexico and other parts of the world who sought Cslifornia as a dasirable placa of rasidence. The missions wera thus gradually circumscribed in limits and ovarshadowed in nnmbers and political importauce hy the puablos.

The trouhle that had loug been anticipated by tha mission Fathars, finally came upon them in full force in 1834, when by government decree they wera deprived of the greatar portion of their flocks and hsrds, and all but a mere moiaty of their lands, which were held for the benefit of immigrants as they might oome in from tima to time.

Thus in effect was andad tha mission system of Califoraia, which, whatever may hava bsen its faults, at least preparad the way for a battsr oivilization, one more in accordanca with the prograssiva spirit of tha aga, and ona infinitely hettar calculated to develop the agricultural rasources of the country.

Tha stories which ware carried East and to Enrope about this time hy tha tradiug ships whioh visited this coast, created, wherever they were told, a most lively intarest in regard to California. It was pronounced a wouderful country, whara men could live and grow rich without work; whare the cereals, vegetables, the viue, tha oliva, the oranga and other fruits graw and flourished in a most remarkabla manner. It was said that Jacob's cattla in Padan Aram wera scarcely mora prolific than wera tha herds of California. The climate was pronounced unequaled; flowers bloomed all tha year round, and cattle naver raquired shelter or cultivatad grassas. Tha land, in fact, was a goodly inheritance, broad and inviting, aud to be had for tbe mere asking. The affect of these reports was to send great numbers of peopla hera, not only from our own States, but from Europa as well.

It is estimated that thero wera five hundred foraignars in California in 1830. In 1840 this number was increased to over one thousand, while tha half-hraeds numbered about four thousand. In 1846 Mr. Larkin estimated that thera were about two thousand American citizans here, and about six thousand of othar nationalitias, in addition to the half-hreads. Thia would giva a prohabla total population, at tha time the American flag was raisad at Montaray, in July, 1846, of at least fourtaen thouaand, exclusiva of Indians.

The discovery of gold crated a new ara iu the history of California agricultura. The whaat fields woro left to be destroyad hy neglected cattla. Hides and tallow were forgotten, and the ships which ware to have takan away thosa products were doserted by their crews. All joined in the gonaral stampede for the miues. The agricultural interasts of tbe country wera, of course, paralyzed for a timo; but tha check to that industry was merely temporary and preparatory to a new phase of prosperity, such as has produced au astonishment throughout the world, second only to that brought about by tha wonderful discovery which lad to its apparent calamity.

Notwithstanding tha minss constituted tha great magnat which draw thither the teeming thousauds who crossed the ocean and plains in '49 and '50, msny of thosa early comars soon became hsartily tired and discouraged with gold diggiug. Under thess circumstances, many called te miud tha reports whioh thay had heard of the wonderful productiveuess of ths soil of Californis, and resolvsd to ascsrtain, from practical sxpsrience, whathar tha plow and ths hoe would not giva tham a hetter living than could be obtained by tha usa of ths pick snd tha shovel. Accordingly, during tha summsr of 1850 and 1851, scores and hnndreds of littla vslleys in ths foothills of tbs Sierras, and farther np the monntains, aven, were fencad in and planted with vegstables and roots of all kinds. Tha product found a ready sals and high prices at tha mining camps in tha immadiats vicinity. Many also want into agricultursl operations on a larga scala in ths valleys of the Sacramanto and San Joaquin, and in tha old mission grouuds near ths coast, a returu to wheat growing snd cattls raising forming an important portion of tha industry in the valleys. Ths success of thoss who went into sgriculture at this time was most satisfactory, aud such as to induce msny othars to follow their axamplo within tha two or threa succeeding ysars. Tha result of this tillage wss the almost total cassstiou of our imports of vegetables, and an important reduction in that of brasdstuffs—for both of which, on tha sudden influx of population here, we had hsen obliged to rasort to South America, to Oregon aud othar plaoes.

Notwithstanding thera was a comparatively large and constantly increasing amount of wheat and otbar produce raised in California, from 1852 to 1855, the first reliabla report of ths amount of such product commences with the crop year of 1855–6. Tha whaat yisld of that ysar was set down at 5,833,000 bushels, of whioh ws had to spara for export 567,000 hushels. The produotion for the succeeding three or four years was somewhat reduced, in consequence of the continuous drouths of those years; and that, too, notwithstanding there was an annually increasing amount of aoreage seeded. Duriug those yeara we note the singular fact, that whila we ware importing flour in larga quantitiaa we were exportiug wheat in still larger quautities. Tha annual avarage of flour importad was about 20,000 barrels, while the average of wheat exported—when converted into flour—was fully 60,000 barrals. Tha importations ware from Oregon, Chile and New York. We were thus sending our grist a long way to mill; hut the necassity grew out of the lack of mill facilities hera, which wera tardily providad in consequenca of tha high price of labor and mschinery. It was not until 1862 that our importations of flour finally ceased.

From an export of three and a half millions of hushels in 1862, this great source of incoma to the State has gradually increasad nntil it reachad its culminating point of naarly eighteen millions of bushels in 1873, or enough to load about 550 first-class ships! The total yield of wheat during tha sama pariod advanced from eight to thirty-fiva millions of bushels. The valua of tha wheat crop aloua, for 1867, was more than half that of all tha gold taken out in tha Stats; whila the total value of tbe agricnltural products exported that year reached an aggragata of seventeen million of dollars—mada np from some twanty or thirty different articles, for which the Stata was, a few years before, dependent upon othar countries for har own supply.

The highest price paid for wheat, subsequent to tha era of high prices in '49 and '50 was in 1858, when it reached $6.75 per hundred pounds. Tha lowest price was in November, 1860, when it touchad $1 par cental.

The yield of barley has inoraased from 9,000 hushals in 1862 to npwards of 11,000,000 in 1874. Wool from savan to forty million pounds, and wina from $28,000 in valua in 1862 to over ona milliou in 1873.

Tha number of neat cattle in California in 1850 was estimated at 300,000—a graat reduction having taken place partly through neglect snd pillaga, but mora largely parhaps from the suddan increasa of demaud for beef during tha two previous years. In 1856 thair number had again increased to over ona million.

The present value of the live stock in the State may be sat down at $40,000,000; the valua of agricultural implements, $6,000,000, and of farms and improvements at $160,000,000—making a grand total, exclusiva of the valua of products on hand, of $206,000,000. Tha number of peopla actually engaged in agricultural operatious must be something over 50,000—aside from the women and children depandent upon tham. Tho numbar of grist mills required to furnish the paople of tha Stata with flour and to meat tha demand of our axport trada for that articla is 152.

Tha wool product of the Stata is fast approaching in importance to that of wheat. Duriog the most palmy days of the missions thair flocks navar exceedad au aggregate of 1,000,000. They now exceed 6,000,000. The estimata of tha wool clip for last year was set down at 34,000,000 pounds—about oua-half of tha prodnct of all the other States in the Union five years ago.

Next in value to wool aa an article of export is our product of wina. California has already bacome one of the wine producing countrias of the world, and bids fair in a short time to hold the same relation to America as a wina making Stata, that Frsnce holds to Europa. This industry first bsgan to figura prominsntly in tha axport trada in 1868, during which ysar about 10,000 gallons were sent abroad. Tha amount shipped in 1874 was 1,000,000 gallons. Tha product of this year is astimated at 9,000,000 of gallons, valued at $4,000,000.

But fruit is, perhaps, after all, tha particulsr article of our agricultural products in which Californians most delight, and in regard to which they sntartain the grastest pride. Tha racent rapid iucreasa in tha Esstsrn demsnd for this articla spaaks mors aloquently than words can axpress the estimatiou in which the products of our orchards and vinayards are regarded abrosd. The first fruits and vinas, as already sean, wera introducad hare by tha aarly missionaries; but they paid very little attention to quality or variety.

Tha first trees introduced iuto Califoruia, ontsida of the missions, wsrs received from Oregon in the spring of 1853, and were set out in a nursary, comprising forty acres, in San Jose, by Mr. John Lewelling, now of St. Helena, in connectiou with Mr. E. L. Beard. From this nursery were derived ths millions of trees with which the gardens and orchards of Califoruia have sinca been filled. Tha parsnts of thasa trees wera taken ovsrland from the Mississippi valley to Oregon in 1848. Thsy wsrs sat out in a wagon body filled with a prapared compost, cut back to within thres inchss of tha earth, snd in that condition transported across the plains. They commsnced to grow as soon as they left tha Missouri rivar, and continued to thrive until their arrival in Oregon, whera thsy wera trausferred to a nursary.

Tha missiou Fathsrs came hither with but ona variaty of the grape. Tha number introduced sinca 1849 cannot be less than ons hundred. Tha product of grean fruit in 1874, aside from grapes, has been set down at abont fiva million pounds, and dried fruit about one million. Tha incrsase in gresu fruit over ths pravious year was abont 25 per cent.; and that of drisd fruit mora than fifteen hundred per cent. And yat the fruit business of the State is still in ita infancy.

Tha culture of the sugar beet hera has now fairly passed its experimental seasen, and may be sat down as an astablished iudustry, capabla of indefinite expansiou. I hava been informed within a few days, by partiss intsrested in this industry, that sugar is now being manufactured iu Sacramento at a cost which will parmit of its shipment to New York at a handsoma profit. This fact, if such it is, is ona of the most important connected with the agricultural industry of the State. It looks to possibilities which can scarcely ba estimated—exceeding in valua and importance even those of our great ceraal staple. There are several other promising interests connected with agriculture to which allusion might be made did time permit.

In 1850 it was astimatsd that there were not more than 15,000 acres of land under cultivation in tha State; six years latar tha amount had increasad to 500,000; while to-day—twenty-four years later—wa hava not less than 2,700,000 acras under cultivation, and nearly half as much more enclosed for othsr purposes.

Your spaaker, who is not himself a practical farmer, may ba pardoned in this connsction, in claming for California agriculturists as a class, a decided superiority in many respects over their brethren in othar portions of the world. As a general thing brokeu down psopla do not come to California—they lack tha energy for such a trip. Our people hero are mostly from the uccessful ranks. They come hera because they think they will have a batter opportunity to employ thair ganius than can be found among the slow going people of older communities. Our farmers may not be ovar industrious in the way of manual labor, for our genial climate, fialds comparatively weedless, and a soil easily cultivated are conditions which greatly lighten the necessity for toil. They may not ba as aconomical in their habits as their brethran in most other countries, for cheap lands, high prices and oomfortable incomes ara not calculated to angender picayuish habits of economy. But if our farmers make light work with their hands in the field, they keep thair brains husy, wherever they may ba. This fact is axamplified in many ways maka light work with their hands in tha field, they keep thair brains busy, whorever they may be. This fact is examplified in many ways, and notably in the extraordinary activity, novalty and practicability which is manifested in tha way of agricultural improvemants and inventions in California. Evary yoar of our history since 1862 has added one or more new and important labor saving machines to the list of agricultural improvements, the invention of some practical California farmer. Nearly every agricultural machiue which has been introduced hara from the East, has been mora or less modified and improved, and such improvements hava ganerally bean adopted at tha East. Most notahly has this haen tha case with tha plow, the header and tha threshar. Tha plow haa bacoma almost au entire naw instrument in the hands of California iuventors, aud so has tha headar. Tha gang plow, first introduced on the prairias of Illinois, was a bungling, impracticable instrument, which was discarded thera and sent to California aa to an out of tha way placa, whare it might ba possibly made to do some sarvica. Our inventors took hold of it, romodeled and so improved it, that it is now an indiapensable instrumant on avary farm, and to-day the California gang plow is as popular in the Mississippi valley as on the Pacific coast.

Notwithstandiug the favorable conditions of climate and soil, thoss who ambarksd in agricultural operstions at an sarly day after the discovery of gold hers, had to work thair way upwards and onwards against many obstacles and not a few powerful combinations. Agriculture was at first rsgarded by tha mssses as entirely out of plaoe in California—our winters wera too wet, our summars too dry, labor too high, and tha permanence of our population quite too uncartain. Cspitalists gave tha businass a cold shouldsr, and ths nswspapers gave it very little ancouragament.

Another grsat drawback to success in this business was tha lack of knowladga in ragard to the seasons. Everything hore in ths practica of agricultura was antiraly differsnt from whst had been learned alsewhera. We had floods and drouths iu tha summsr, which seamed to alternate with the most perplexing uncartainty.

Ths establishmsnt of sn Agriculturs] Collega in connection with this Univarsity ie ons of tha crowniug acts in tha history of California agricultura. For this ws ara chiefly indebted to ths liberality of tha Gsneral Government. Let ma congratulate you all as studants, and particularly you who havs chosen tha usefnl and ennobling study of sgrionlturs as your specialty, upon ths privileges which you here enjoy. Your opportunities ara rara—use them wsll to the and that yon may profit personally, and that au influanca msy go out from thess walls such ss will eventually bnild up, hera in California, a systsm and practice of agricultura which shall be ths model systsm of the Union.

Ons of the most hopsful and significant signs which we observe in connaction with tha history of sgriculture iu Califórnia, is the msrked absance of what we see, almost nnivarsally in tha agriculturs] communitiss of the East—ths tendancy of tha batter portion of their populatiou to desert tha farm and seak for whst they deem mora congenial employmsnt in cities and towns. Whils hera we witnass tha manifestation of a greater wisdom—tha bettsr portion of town and city rasidents seeking for opportunitias to enter upon ths mora healthy, tha mors ennobliug, and, with us, tha more profitabla avocation of agricultura.

The history of agricultura in California is without a parallel. This industry, lika the Stata itself, has spruug np almost full grown at its birth. During its first dacade, from 1850 to 1860 it increased mora than nina-fold; and from 1860, to 1870 its increasa was fully 150 per cent. Since that tima it has steadily advanced, with a prospact in the future uevar more promising. Califoruia has already becoma tha largast wheat growing State in the Union, and is second in the prodnctiou of fruit. The land is teeming with pleuteousness of every product both vegatahle and mineral—bonanzas in tha mouutains and bonanzas iu the valleys. In no State doss the grain grow higher or stouter; the reapsr's haud is nowhere fuller; nowhera does tho soil produoe mora hushels to tha acre, mora stalks to tha seed or mora kernels to tha head,

Our flocks and hsrds are on every hill aud in every vallay; our orchards and vinayards ara beuding baneath the heaviest loads of the richest fruits. The wealth and riches of the tropics are at our doors, and our fields and gardens abound with avery vegetabla product which the heart can desire. Hare we have no winter to linger in the lap of spring, or eat up the profits of summer. Six months of unbrokan sunshins are given to us in which to secura the crops with which a winter of verusl softness has clothed our fields. If we sow, we ara sura to roap, and as oftan as any way wa reap without sowing at all. Labor here brings no stiffened limbs, no premature old age. No othor land benaath tha blue vault of heaven exhibits such proofs of God's special favor to man, as is seen in this, onr chosan California home.

How an Amerioan Lady Obtained a Medioal Diploma in a German University.—A few years ago an American lady, whila studying medicine abroad, having bean refused admittance to a course of medical lectures in one of tha most noted universities in Germauy, detarmined to put on male costnma and pass harself off for a young man. One day an American Consul was summoned to a hotel to see a lady from tho United States. As thara was no reception room in tha hotel, he was showu up to the room indicated in the note he had received hy tha servant. Ha looked in vain for the lady, but saw what ha supposed was a young man sitting on a trunk. Ha was soon undaceived. Tha boy said he was simply in disguise, and set forth at length tho reasons for such extraordinary action. She said she was resolved to attend that course of madical lactures, and had called on tha Consul to giva her real uamo and place of rasidonce in tha United Statea, so that in casa of tronbla she could appeal to him for protection. Tha position of tbe Con ul was a noval ona, bnt he finally consantad to taka tha lady's statamant, and promised to keap tha sacret inviolate, unless she ahould be discovared. This did not happen. The disguisa answered its purpose; the lady remained at tha institution a year, passad through the course with honor, and is doubtless now applying tha knowledge gained in her practice somawhere in the United Stataa.—*Cincinnati Commercial.*

The Sun Engine.—John Ericsson, the celabrated American engineer, is still busy with his study of the sun as a direct source of power. He told Professor Langley, who not long since visitad him, that he had not laft hia house for five years, and did not meau to during the rest of his days.

Useful Information.

Revival of Canal Transportation.

The era of canels seems likely to revive. Recently, in his ahle and statesmanlike address at the Rockford fair, Ex-Senator Doolittle foreshadowed this event, pointing out their radical distinction from railroads in the fact of their being open to everyhody's vehicle as well as everybody's goods; they cannot be monopolized. The day is not distant when Chicago will he at the head of both river and lake navigatioa, nnless strangely procrastinating. In a ssuse, too, Chicago might bring horself he the commercial month of the Mississippi. Nay, is there anything stupeadous in a oaual scrose the Stato of Michigan to the head of Lake Erie?

Ohio grew from her canals. But railroads there, as elsewhere, completely eclipsed their valne, even to the extent of their total disuse. Recently a movemeat wae set on foot to repair this neglect. The board of publio works of that State hegan,in Cleveland, a fortnight ago, an official eurvey of the Ohio and Erie canal throughout, from the lake to the Ohio river. Hon. George W. Manypenny, who forty years ago in his yonth was active end zealous in promoting that work, is now, in the capacity of superintendent of pnhlic works of Ohio, at the head of the survey, with a competent engineer. The whole body set out ia carriagee, and will follow the tow path throngh, consuming tha whole aatumn, carefully inspecting the overgrown and long idle ditch, once the just pride of the State. Similar movemeats are in contemplation, we understand, in Indiena and elsewhere. Let it be remembered that of possibla canals, not a mile in a hundred has yet been dug in the country.

Cinders in Mortar.—These are often used in the mortar for plastering when the sand is not snfficiently sharp, and answer well. The material oen also he used for brickwork, when ground fine and screened. They are nndoubtedly a valnable material, if subjected to proper treatment. One essential to their use in mortar is a grinding or mortar mill; indeed, this is a valuable adjunct in the mannfaotnre of aay kind of mortar, as it insures a degree of thorough incorporation of materials that oannot be arrived at hy hand labor. It is a mistake to adopt cinders in lieu of sand—they shonld he allied with sand, and so assiet in the main composition of the mortar. Care ehould be takea that the sand is clean and free from argillaceons matter, and that the lime should he fresh, pure and strong, caloined from a class of limestone, highly orystalline in its character, or in other words such as a plasterer would call "fat lime." With these appliances and materials at hand a good mortar may be made of one-fourth lime, one-fourth sand and two-fourtbs ash or ciaders.

Use of Talc in Steam Boilers.—MM. Vigier and Aragon recommead the nse of talc as a preventative of scale. The Lyons and Mediterraneen reilway is stated to employ the method extensively, and with excellent results. The quantity of talo placed in the hoiler at once ie about one-tenth of the weight of the solid deposit produced hy two snccessive washings of the boiler. Not only is the formation prevented, hut that already formed hecomes gradually detached and carried away. This is a novel and interesting application of a cheap and abundant mineral, which has meny curious properties, but hitherto has not heen tnrned to much industrial accoaat.—*Moniteur Industriel.*

A New Mode of Preserving Fruit.—Fruit is kept in Ruesia by being packed in creosotized lime. The lime is slacked in water in which a little creosote hes been dissolved, and is allowed to fall to powder. The latter is spreed over the bottom of a deal hox, to ahont oae inch in thickness. A eheet of paper is laid above, aad theu the fruit. Over the fruit is another sheet of paper, then more lime, and so on till the hox is full, when a finely powdered charcoal ie packed in the corners, and the lid tightly olosed. Fruit thus encloeed will, it is said, remain good for a yeer.

Dry Rot in Floors.—Oil cloths have a very injurious effect upon floore, under most conditions, producing dry rot in a very short time. This is no donht due to the want of free ventilation to the floor; the joists and flooring are so imhedded and covered that no air can reach them, but the greatest evil is found to he the kamptulicon floor cloth, cemented down at the edges. All impervious floor cloths accelerate decay in the floor, and are better avoided. With such ooveringe the floors ehould be well ventilated by air openings betwesa the joists.

A substitute for ink has been devieed in Berlin, which consists of pointe, like the leads of ordinary pencils, that can be fitted to holders. The writing at first very mnch resembles lead pencil marks, but moistened immediately essumes a violet tint, and then adheres to the peper like ink. As many ae six good copies oen he teken from it by means of an ordinary copying press.

The railways in India seem to run to hridgee. A single English firm has built no lees than 16,000 iron hridges for the Bombay, Baroda aad Central India, and Indiaa railways. The last oae constructed and eent out is to have an entire length of 9,068 feet.

A New Copying Ink.—Manager Maynaid, of the Western Union telegraph, has beea experimenting for soms time on a new style of ink, his own invention, which will copy wlthout blurring, and which will not blur on the original (after drying) from the tonch of the hend before it had been copied. He has so far succeeded that the company here intend adopting it shortly. In color it is a nice shade of violot, and flowe from the pen freely. It seems to dry into the paper quickly, hut at the same time is easily bronght out npon the impression sheet, the finest hair mark coming out plain, the heaviest shaded letter copying without a blur, and as many as five copies being made from one writing, *not at one impression*, hnt in five successive onee. It is certainly a greet improvement over the ink now used, and it is claimed freezing will not destroy its properties. It has been redneed with water nearly ono-half and still retained ite copying qualities. It ie equally good for ordinary writing, as there is nothing in it that will glue or stick the pagee of written matter together should the procantion to use the blotter freely be neglected, as is the case with other copying inks. It has also been usod on the tapes of Gray's printer and Sholee & Glidden's type writors as successfnlly as on the Western Union office blanks.—*Telegrapher.*

Gutta Percha and India Rubber.—A Boston merchant, who imports nearly all the gutta percha which enters the United States, writes to the *Scientific American* to say that "the only region of prodnction thus far discovered is the East India islands in the immediate vicinity of Singapore." The principal nse made of gutta percha ie for insulating telegraph cablee and for cementing. India rubber is collected in localities all aronnd the globe hetween the tropics. The best comes from the banks of the Amazon river. Brazil produoee annually about 14,000,000 pounds, and the Central Americaa States, Africa and the East Indies together about 15,000,000 pounds. The consumption of india rubber ie ahont equally divided hetwcen Europe and the United States.

Chimney Shafts.—The diameter at the base should not be less then one-tenth of the hight. Batter of chimney, 0.3 in. to the foot. Thickness of brickwork, 1 brick from top to 25 ft. from ditto; 1½ hrick from 25 ft. to 50 ft. from top, increasing hy half a hrick for each 25 ft. from the top. If the inside diameter at the top exceeds 4 ft. 6 in., the top should be 1½ brick thiok. Firebrick liniag of 4½ in. thick and air space of 3 in. ie generally oarried up about oae-fifth of the total hight of the chimney.

A Step Further.—M. Bert, the French scientist, invented a procese of preserving meat hy compreseed air, and now M. Reynoso goes a step further, having accidentally discovered that meat tbus treated may afterward be exposed to the ordinary atmosphere indefinitely without decomposition.

Good Health.

The Best Physicians.

All physicians give fewer druge than formerly, and have greater faith in the curative powers of natare and good nursing. A French phyeician gavo good advice to his medioal friende.

As the celebrated physioiaa Desmoulins lay on his death-bed, he wae visited hy the most distinguished medical men of Paris, as well ae other prominent citizene of the metropolis. Great were the lamentations of all at the loes to be sustained hy the profession, in the death of one they regarded as its greatest ornament. But Desmoulins assured his hrother praotitioners he left hehind him three physioians much greater then himself. Each of the doctore, hoping his owu name would he called, inqnired anxionely who would he sufficieatly illustrious to surpess the immortal Desmoulins. With great distinctaees the dying man answered: "Their names are water, exerciee and diet. Call in the service of the first freely, of the second regularly, and of the third moderately. Follow this advice and you may be well without my aid. Living, I could do nothing without them; and dyiag, I shall not be missed, if you make friends of theee, my faithfal condjutore."

Ventilation of Clothes Closets.—Too lit tle attention is paid iu the coastruction of closets to their proper ventilation. It is not always coavenient to have a oloset door stand open, and if it were, full ventilation cannot be secured in this way. There ehould be a wiadow or an opening of some sort from the cloeet to the outer air or to a hall, so that a current of air might remove any nnpleasaat odors arising from clothing that hee heen worn, from shoes, or from anything else kept in the closet. A garment that has hung up for a length of time in a close closet is as unfit to wear, unless it has heen thorougly aired, as though the nawholeeome vapors it had absorbed were visihle to the eye. The charm of olothiag new and clean lies far more in the absence of theee vapors than many people are aware,

Avoid Rancid Butter.—All rancid fate are unwholesome. They alter the character of digestive aotion and affect health unfavorably. Strong coustitutions can bear the consequeaces of moderate rencidity without mnch apparent harm; hut infants and invalids feel its depressing effect upon digestion and health at once plainly.

Hearty Suppers.

Eating a hearty meal at the close of the day is like giving a laboring man a full day's work to do just as night sets in, although he has been toiling all day. The whole body ie fatigued when night sets in, the stomach takes its full share, aad to eat heartily at supper, and thea go to bed, is giving all the other portions and functions of the hody repose, while the stomach has thrown upoa it four or five hours to dispose of breakfast, and a still longer time for dinner. This ten or twelve hours of almost incessant work haa nearly exhausted its powers. It cannot properly digest another full meal, bnt lahors at it for long hours together like an exhausted galley slave on a newly imposed task.

The result is that, by the unnatural leugth of time tho food is kept in the stomach, and the imperfect maaner in which the exhausted organs manage it, it becomes more or less acid. This generates wind, this disteads the etomach, this presses up itself against the more yielding lungs, confining them to a largely diminished space. Henco, every hreath taken is insufficient for the wants of the system, the hlood becomee foul, black and thick, refuses to flow, and the man dies, or in delirium of fright leaps from a window to commit suicide.

Let any reader who leeds aa inactive life for the most part, try the experiment for a week of eating absolately nothing after a one or two o'clock dinner, and eee if a sounder sleep, and a vigorous appetite for breakfast and a hearty dinner, are not the pleasnrable results, to say nothing of a happy deliveranoe from that disegreeable fullness, weight, oppression, or acidity which attends overeeting. The great renovation and vivacity which a long, delicious, soothing sleep imparts hoth to mind and body will of themselves more than compensate for the certainly short aad rather dabious pleasnre of eeting a supper withno special relish for it.—*Investigator.*

Analysis of the Human Breath.

An account of some experiments made with the view to determine the organio matter of the hamaa breath in health and disease, presents some fects of a peculiarly interesting nature. The hreath of eleven healthy persone and of seveateen affectsd by different disorders was examined, the persons heiag of different soxes aud eges, and the time of day at which the breath was condeaeed varyiag. The vapor of the breath was condensed in a large glass flask surrounded by iee aad salt, at a temperature of several degrees helow zero, the fluid thus collected being analyzed for free ammonia, urea, and kindred substances, also for organic ammoaia.

Amoag the varione reeults of this examiaatoin may be mentioned the fact that, in both healtb and disease, the free ammonia varied coasiderably; the variation, however, could not be connected with the time of the day, the faeting or fall condition. Urea was sought for in fifteen instencee—three healthy persons and twelve caees of disease; but it wae only found in two oasee of kidney disease, in one case of diphtheria and a faint indication of ite preeence occurred in a female suffering from oetarrh. The quantity of ammonia ariaing from the destruction of organio matter also varied, possihly from the oxidation of alhuminous particles by the process of respiration; hut in the healthy persons there was a remarkahle uniformity ia the total qaantity of ammonia ohtained by the process.—*Investigator.*

A Disinfecting Cologne.—A correepondent of the Philadelphia *Medical Times* says: "Duriag the prevaleace of small-pox in 1871 and 1872, I hed frequently heen requested by my friends to prepere a cologne possessiag disinfecting properties. I found in preparing such an article that upon mixing hydrate of chloral and cerholic acid the disagreeable odor of the latter wae almost entirely removed, and upon adding these to spirits of lavender or ordinary oologae-water, a aot unpleasant odorous volatile solation reeulted. This, used with an atomizer, readily saturated an ordinary sized apartment with the vapor of these most valuable antisoptics."

Salicylic Acid for Burns.—There has been iu hospital for maay moatbs a oase of exteneive burn, in which different applications have been tried. Every new dressing succeeded well for a time, hut eoon it ceased to prove of advantage. The last agent that has been used, and is used at present, is selicylie acid. The effect is more heneficial than that obtained hy any of the former remedies. The method of nsiag it is to form au emulsion with olive oil, one part of the salicylio acid to sixteen parts of oil. This mixture is painted over the ulcerated surface once or twice a day. It gives rise to a slight smarting sensation when first applied, hut that soon paeees off.—*Med. Times.*

Analysis of a Human Body.—Dr. Lancaster, of London, recently analyzed a men and presented the result of his investigation, es far as possihle, in a palpable form before the audience at one of his lectures. His subject's body weighed 158.4 poande. The lecturer exhibited ou the platform 23.1 pounds of carbon, 2.2 pouuds of lime, 22.3 ounces each of sodium, iron, potassium, magaesium and silicon. He apologized for not exhibiting also 5,595 cubio feet of oxygeu, 105,900 cubic feet of hydrogen and 52 cubic feet of aitrogen.

Domestic Economy.

Fish as Food.

As a sonrce of nutriment, as a field of profitable industry, extending enormously the area of food production, admitting of vast expansion, which can ho worked at every season of the year, requiring no outlay in seed or tillage, and no artificial stimnlants to renew their harvest (for the fisherman reaps where he has not sown and gathers where he has not scattored), the fisheries deserve the consideration of all who feel how largely the comfort and well being of a people rest upoa tbat humble but solid hasis—ahundant and low priced food.

It was computed by the late Mr. Mayhew, in bis work on the "London Poor," that during the months of October and Novomher, or what is termed the costermongers' fish season, 800,000,000 herrings are disposed of in the streets of London alone, providing a cheap and wholesome meal for thousands and teus of thouaands of the humble classes of the metropolis.

The prejudice against a fish diet which was long current was hased upoa the assumption that it yielded but little nutriment. The result, however, of an analysis of various kinds has proved that they contain nearly as much alhuminons matter as the flesh of quadrupede—hence, as flesh-producing food, fish is nearly equal to beef. The herring coutains, moreover, a large qaantity of oleaginous matter in addition to its albuminous principle, hy which its nutritioue properties are considerably increased. It is evident, therefore, that fish were designed to oocupy an important place iu the sustenance of mankind, and it certainly contributes agreeably to that variety of diet by which the human frame is maintained in its highest degree of vigor and health. Nitrogen is a well known and important vital stimulant, and the proportion of nitrogen relatively to cerbon, estimated in grains, is ia flesh meat as 160 to 2,580, and in herrings 217½ to 1,435. Fish is a flesh and muscle, not a fat producing aliment, as is obvious from the appearance of our seafaring populatian, who are spare, sinewy aad strong, and free from thoee mouatains of flesh and masses of hlubber which characterize the prosperous beef-eating Englishmau, aad have from time immemorial typified the traditional John Bull. —*Blackwood.*

The Use of Rice.

Most readers think thie is something easily prepared. So it is, perhaps, but few nurses have an idea of the necessity of haviag it properly done—that is, cooking it until every grain hecomee perfectly *softened*. If the grains are not rednced to this soft stete, the rice is almost certain, when swallowed, to irritate the digestive organs, aad instead of soothing the parts and sustaiaing strength, will actually produce a diarrhœa, etc. Thie has been frequently noticed in hospitals.

When properly boiled until each particle hecomes so softened thet the *grain* cannot be detected when eaten, hut not cooked so much that the shepe of the grain is destroyed, and the mass reduced to the appearance of pasto, there are few articlee of diet for the sick which osn be mado more acceptable to tho taste of invalids than boiled rice.

Rice is iaferior in nutritious qualities to wheatea flour, and should by no means be depended on as a maia oonstituent of the dietery for infants, but we may enpply an agreeable change, especially whea the howels are in a relaxed conditioa.

It bas been a favorite food for children ever eince its first introduction, and is recommended by many of the earlieet English writers on the managsment of infants aud children. Every nurse has her own formula for the preparation of rice foods. The following is a very good one: Take two tableepoonfuls of the best rice and soak for au hour in cold water. Pour away this water and then maeerate and gently simmer the rice ia a qaart of water for two or three hours. Strain through a fiae sieve, and add warm milk, with a little loaf sugar and a few grains of salt.

Cheap Cookery.—We noticed, while visiting a large steel-making establishment recently, tbat the workmen at nooa iugeniously utilized the ingots of steel, which lay cooliag in the yerd, as cooking stoves, and eeemiugly prepared their dianers over the heated metal as easily as over a fire. The idea is a good oae, and might be adopted with advantage hy the men in all metal-working concerns. We helieve that the custom ie not common among the workmen in this country, nor in Eagland, though it owes its origin to and hes long heen practised in the tin melting establishmeats of Cornwell. It is considered qaite a civility there to offer a visitor a chop nicely broiled over a recently run ingot of tin. The big hammer block, we were told as an especial wrinkle, is the best place to fry things, es it is smooth and nsually just hot enough. Ingots are ordinarily rough and generally somewhat too warm. In wiater time, a workman oan ecoaomize considerably, and at the same time get a hot diuner, by thue utilizing the waeted heat of the metal.

Vegetables do not ordinarily form as large a part of the ordinary subsistence of an American as they should. Whether cooked aloae or jointly with the cheaper pieces of meat, in tbe form of a ragout, they will always serve as a suhetantial means of autritiou aud tend to diminish the cost of household consumptioa.

MINING AND SCIENTIFIC PRESS

W. B. EWER.....SENIOR EDITOR.

DEWEY & CO., Publishers.

A. T. DEWEY, W. B. EWER, GEO. H. STRONG JNO. L. BOONE

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SAMPLE COPIES.—Occasionally we send copies of this paper to persons who we believe would be benefited by subscribing for it, or willing to assist us in extending its circulation. We call the attention of such to our prospectus and terms of subscription.

THE ORIGINAL ARTICLES in this paper are mostly set in solid type, giving in our columns one-third more reading than is contained in ordinary leaded matter.

San Francisco:
Saturday Morning, Nov. 20, 1875

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GENEROUS REMEMBRANCE.—For years past the editors and publishers of the PRESS have received handsome contributions of fruit from the farm of Mr. James Lick, in Santa Clara county. We say "handsome," because the fruit was not only of choice variety, but from the motive which prompted the modest donor to wish others who supply food for the mind to enjoy the fruits of his own culture. Last week our donation for this year came in the shape of three large boxes of autumn and winter pears, of several varieties, some of which were of extra size and remarkably fine flavor, and all excellent. We are among the humble many who wish that Mr. Lick may live many years to enjoy the fruits of his own culture during his long life of industry.

PROFESSOR Jenney told a reporter of the Cheyenne *Leader* that the gold-bearing belt of Harney Peak district is about fifty miles long and will average twenty miles wide. The diggings prospected are not extraordinarily rich, but will pay good wages, and are what California miners designate as poor-man's diggings, and will pay from $4 a day upward. The richest gold deposits were found in Bear Lodge district.

WORKMEN are putting in a new hearth in the blast furnace of the Oswego iron works, Oregon. Other necessary additions and repairs are also being made to the works. Within a few weeks, it is reported everything will be in readiness for resumption of operations.

PHILIP DIEDESHEIMER is on his way to this city from New York, accompanied by his bride. Mr. Deidesheimer is the distinguished mining engineer whose estimate of the extent and value of the Bonanza mines created such a profound sensation some months since.

Work at the Foundries.

Work at the different foundries and machine shops in this city, is very slack at present. A visit among them this week showed that no large orders had been received recently, and that most of them are running light. It was at first supposed that the Virginia fire would be the cause of bringing some large orders, but it has been found that the heavier parts of the machinery are uninjured, and that only small portions have to be repaired or reduplicated. From conversation with Mr. Scott, of the Union, and Mr. Fogg, of the Pacific iron works, both of whom have been at Virginia since the fire, we should suppose that the damage to the machinery was not as bad as was at first reported.

The Consolidated Virginia mill, near the shaft of that mine, was burnt, so also was the battery mill of the California mine, the pan mill of the latter being some distance away from the battery, the pulp being carried down in a flume to the pans. Enough machinery has been saved from these two mills to put the California battery mill in working order early in December. The Consolidated Virginia mill was about a year old—that of the California was perfectly new, never having been started up, but being nearly ready. Therefore, when the California mill (the battery portion of which is being repaired), is started up, the crushing capacity of the works of the "Bonanza mines" will be the same as it was before the fire.

A large proportion of the machinery of the Consolidated Virginia mill will also be available when they rebuild. It is not supposed that anything will be done about it before spring. The main injury done was in the cracking of the bed-plate and of the cylinder, which will probably have to be replaced by new ones. Most of the small parts were badly injured by being warped and bent.

The fire is described as being very hot and quick. The wood work over the mills was of course rather light, the principal heavy timbering not being over the machinery. A tremendious wind was blowing, and as the planks fired they were blown off, and only very light burning material fell on the machinery. This is the reason why no more damage was done to the heavy portions.

The Ophir hoisting works, which were destroyed, have been replaced by other machinery. The Risdon iron works had just completed machinery for the new combination shaft of the Challar, Hale & Norcross and Savage. It was all ready to ship when the fire occurred. These companies turned this machinery over to the Ophir company, and it was immediately shipped and is now being put up. The Risdon works then received an order to duplicate the machinery for the original owners, and it is now well under way, considerable progress having been made already. The same works are also repairing the lighter portions of the machinery destroyed at the Ophir. This machinery was originally built at these works, and as the heavy portions were not badly injured the lighter portions only are being replaced.

It will be seen from what we have said that although extensive repairs have to be made, no complete works have been ordered to replace those injured. It is supposed that extensive pumping works will be ordered before very long for the combination shaft of the Challar, Savage and Hale & Norcross; but as yet no contracts have been made, and it is not known which foundry will get the order. These works are to be very heavy and of a permanent character. The foundries about Virginia are now all very busy repairing the injured works, and times are lively with them. In this city, however, business is now dull, after a very active summer's work.

A Glorious Rain.

If the farmers and miners ordered the weather they would probably have ordered just such as we have enjoyed during the last three weeks. It must seem queer to our neighbors of the Atlantic States to hear us talk about "enjoying" a long series of November rains; but if they could realize that these rains betoken not only good crops to the farmers, but freshen up business at once and give assurance of its continuance, they will perhaps be more inclined to believe us when we declare that we really like it. And when they go farther and consider that November is not with us as with them, the entering wedge to a long, dreary season of four or five months' duration, but is the black sheep in the flock of months, and not very black at that, they may possibly acknowledge that we know what we are about after all.

The rejoicings over the November rains are quite general in the city, but the indications of satisfaction are most perceptible about the establishments of seedsmen, the agricultural implement warehouses, etc. We would ask those who are spending their first winter in California, to note the marked difference in the greeting which winter receives here and "back there;" and also the apparent hope and confidence with which our farmers perform their work as contrasted with the solemn dread which characterizes the operation of the Eastern farmers. This is owing to the difference in climates; partly as they influence the mind and partly as they are known to affect the crops that are submitted to their influences.

There is at present unusual confidence manifested in the results of the coming agricultural year. This confidence will, of itself, produce good results. It will increase the acreage to be planted, and encourage a more thorough system of farming; and extending as it does through the banking, manufacturing and mercantile classes, it will have a tendency to release the grip on money and stimulate business generally.

The miners, too, will do their share towards the happy result, and are now rejoicing in the abundant rains which will soon set the sluice boxes running at a lively rate, and fill the huge ditches and reservoirs of the hydraulic mines.

On Thursday, when this is written, it is still raining hard, having passed a stormy night; but the getting about the city has improved by means of the storm. The ground is packed and settled and the muddy water has run off.

Mr. Tennent informs us that up to Thursday, at 8 A. M., the rain-fall in this city, for the season, was 4.85 inches; 4.63 inches of which fell in November. The rainfall for November has been very large, and still it pours.

Our Home Industries.

Boots and Shoes.

The value and importance which the above trade bears to the general industries which figure so prominently in the annals of the business career of San Francisco has time and again been subjected to criticism in local journals, and reviewed in brief by surrounding contemporaries. The incipiency of the business in this city is no doubt engendered with interest of more than common importance; but it would be a useless task to probe at the roots in order to discover the condition of growth, or recount the history, in order to become convinced that the trade, whether allied to manufacture or consisting of commercial barterings, has become separable and independent, of late years, of former sources of supply.

We are proud to express our heartfelt gratification that this state of affairs exists, and can, with fidelity to our object and purpose in fostering trade industry, or more properly, home manufacture, vouch for the energy we have infused into almost every department of business by our constant, indefatigible striving to place such reliable information, gleaned from most valuable sources, before the public, as to enable manufacturers to proceed on similar plans or adopt such means as our frequent suggestions have from time to time afforded. In this, we are assured that our efforts have not been unavailing; our epitomes of business career, success and operations, becoming the incentives to well merited trials in the numerous branches which go to make up the commercial character of the country.

As regards the boot and shoe trade of this city, the extensive local demand is sufficient to create means and ends or new sources of supply, the character of the goods depending upon accustomed usage, each locality of a State or country being partial to a certain special wear or "run" upon a certain line. The goods comprised in the stock of one of our main boot and shoe establishments aggregates hundreds and thousands of dollars in value and consists of a multitudinous description, obtained from all parts of the United States.

Our home manufacturers may be said to participate in the trade with the same degree of success, correspondingly with, the manufacturers of New England, or those in New York, Philadelphia and Baltimore, while the make of goods compares favorably with any manufactured in the country.

The house of Messrs. S. W. Rosenstock & Co., boot and shoe manufacturers and dealers, has become of equal importance as the larger houses engaged in this city. The membership, which consists, respectively, of S. W. Rosenstock and Marion Leventritt, employ exclusively "white" hands in their several departments.

The establishment is situated on the corner of Sansome and Bush streets, in this city, has a frontage of 33 feet and depth of 100 feet, four floors and basement, stone building embellished with iron front. The business offices occupy rear of first floor, which is also the principal sales department, the basement and second floor being also embraced in that category. The third and fourth floors are devoted to manufacturing departments, and occupy in addition to the space named above, also the adjoining property. Skilled superintendents are in the several departments.

Mr. S. W. Rosenstock originated the establishment about a quarter of a century ago, Messrs. Rosenstock & Price continuing operations from the time of the incipiency until 1867, when the firm was changed to Rosenstock, Price & Co., Mr. Leventritt becoming connected with the house, and still later, 1871, to S. W. Rosenstock & Co., which firm has increased in importance, their goods and those of our general houses comparing favorably with any manufactured.

Chocolate, Coffee, Spices, Etc.

As this naturally is a business having few establishments to represent its progress, it behooves us to enumerate each in detail, or at least to present a few superficial facts gleaned from casual inquiry into the nature of the operations and their value to us as one of the industrial pursuits. Among the articles mentioned, chocolate presents claims to early consideration from the fact of its manufacture and the several processes necessary to the performance of the same. Chocolate is the production of cocoa beans, which are roasted, ground and modified with sweetening substance, as sugar, the latter subjected to great heat in order to extract its natural concomitant, water. The process of its manufacture, on advanced plans and for a certain attained perfection, originated in France, where the machinery for its manufacture is alone made, and where scientific skill and ability have made it a monopoly, so to speak. The cocoa beans are the seed-kernels of cucumber-like fruit produced on the tree known botanically as *Theobroma Cacao*, and emanates generally from San Domingo, Martinique, Trinidad, Bahia, Estremadura and Surinam, which are used to a greater or less extent. The best known varieties are Caracas, Maracaibo and Guayaquil. The finest cocoa, however, is Caca de Soconsisco, which comes from a district of that name, in Mexico.

Cocoa was first introduced in Europe in 1520, and since that time its use has become fabulously immense, the use of it extending to our own country at a later date, and eventually its manufacture was deemed a necessity to supply the demand. Not alone on this account, however, but for certain specific reasons. It has been clearly proven that chocolate, when subjected to a sea voyage or allowed to become "stale" before being used, becomes deprived of its volatile *theobromin*, which is its "most distinguishing and valuable principle." Chemical analysis of the component parts of cocoa finds it to consist of water, five per cent.; starch, gum, etc., twenty-two per cent.; gluten, etc., twenty per cent.; oil (cocoa butter), fifty-one per cent.; theobromin, two per cent.

The manufacture of chocolate in this city, San Francisco, has been carried on according to the most advanced plans and mechanical and scientific appliances in the way of machinery, by Messrs. E. Gaittard & Co., proprietors of the Eureka steam coffee, chocolate and spice mills, the recipients of the highest premiums awarded by Mechanics' Institute at late fair, for superior chocolate and yeast powders. The firm personally consists of Messrs. E. Guittard and A. Birgham, gentlemen of wide experience in this direction. The first, Mr. Guittard, is a practical manufacturer, having learned the art in France, and superintends the manufacture of the chocolate in person. To Mr. Birgham, member of firm, we are indebted for the facts connected with our subject, the gentleman having bestowed much valuable attention upon the nature and origin of chocolate, and illustrated his researches in a pamphlet or catalogue, which he, in conjunction with the first named, will furnish on application, personal or by letter. From Mr. Birgham's graphic account we draw succinctly the above information, as it naturally behooves us to inquire into the origin and merit of every species of production, natural or artificial.

The Messrs. E. Guittard & Co., establishment situate at Nos. 515 and 517 Commercial street, this city, prosecute a business represented by the title of their establishment, Eureka steam coffee, chocolate and spice factory.

We will not, as intended, trace the cocoa bean through the processes of manufacture, leaving that to some future number, but will remark, in keeping with their character as progressive and enterprising practitioners of the art, that the members have introduced a prepared homœopathic cocoa for invalids, or those affected with disease where fatty substances become nauseating, as in dyspepsia, etc.; the cocoa named being subjected to processes in which there is a complete separation or extraction of the cocoa butter from the cocoa bean, this substance being the natural corollary of the bean, and determining its quality and intrinsic merit. They also manufacture extensively medicinal chocolate. This is a new feature in the manufacture of chocolates, having but lately been introduced with very great success in Paris, and having received the highest testimonials of the medical faculty. Messrs. E. Guittard & Co. have acquired the right of manufacturing these chocolates in the United States, where they have had them patented, and are already having an extensive sale for them in the Pacific States as well as east of the Rocky mountains. They manufacture four distinct medicinal chocolates, as follows: Ferruginous chocolate, being a combination of cocoa and iron; quinquina chocolate, being a combination of cocoa and quinine; purgative chocolate, being a combination of cocoa and scammony; and digestive chocolate, which is a combination of cocoa and vichy salt, the latter coming from the celebrated vichy waters. In this connection we will state also, that they are the sole manufacturers of *Cafe des Gourmands*, which is patented by this firm, and manufactured by an entirely novel process, which enables the manufacturers to retain the volatile part of the coffee, called *cafenine*, until brought out by boiling water, a quality not possessed by any other ground coffee.

They ship the goods we have named, in common with their other productions, extensively throughout the Pacific States and Territories, Mexico, Central and South America, Sandwich islands, China, Japan, etc.

THE water in the Carson river is again becoming rather low, and some of the stamps that were running a week ago are now stopped —"hung up." The snow that remains in the Sierras is well up towards the summit, and melts very slowly. Another rain is needed, or a fall of snow that will reach the valleys.

A Prospecting Trip in British Columbia.

Peter Cargotich, an old prospector and miner, well known in the mining regions of this coast, has been for the last two years and a half up at the Stickeen river mines, British Columbia, and thereabouts. Early last June he started with three white men and two Takon Indians, on quite an extended prospecting trip, traversing a good deal of ground and water in both British Columbia and Alaska. He concluded his "prospect" a few weeks since and returned to San Francisco for the winter, on the last steamer. In conversation with him the other day, he gave us a brief account of the section of country prospected and its fitness for mining. He had also made a rough map, which we have had copied and reproduce herewith, as it may be of interest to those who have had a desire to prospect in that region, to get some idea of the "lay of the land."

Mr. Cargotich left Dease creek on the 7th of June, with his party, on the way to Takou river. First went south from Dease creek about 85 miles, to Telegraph creek. The party then walked up to the head of First North fork and over by the Takon Indian trail, to the Fishery, prospecting the small streams, finding indications of gold, but nothing to pay; took canoes at the Fishery, prospecting along up to Takon Chief ranch, finding nothing to pay. Then they left the canoes and went up Middle fork. It was reported by a man called "French Joe," that there was gold up this fork, but this party found none. From head of Middle fork Mr. Cargotich went with the two Indians into the great desert, and within three days' travel of the North Takou river. His companions meantime had returned to Telegraph creek for a supply of provisions. The Indians told him that there were rich diggings at the North fork of the Takou, but being short of provisions he was obliged to turn back when within three days' travel of the place. The country was swampy and covered with small lakes, being very difficult to travel over. He then returned to the Takou Chief ranch, prospecting all along and finding some quartz and indications of placers on the streams, but nothing to pay in that country. At Takou Chief ranch the provisions which had been "cached" were found, and there he also met his companions again with a fresh supply of grub. The provisions were all packed on the back, the country being such that no animals could be used.

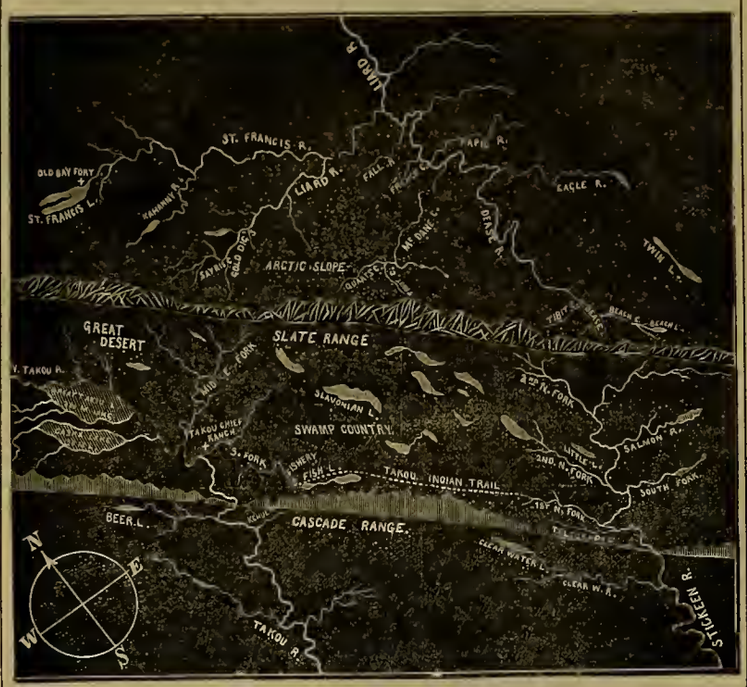
From the Takou Chief ranch the whole party went to Kchulin district, known to the Indians as a fine place for mountain sheep and other game. Mr. Cargotich had been informed as far back as 1862, by the Indians, that gold had been found there in great quantities. It took five days' travel from the ranch to this point, crossing the mountains at a time when it was blowing fiercely night and day. On the 5th of July they crossed a lake, about five miles long, on the ice. The country was very rough, covered with glaciers in every direction. On top of the summits, in some places, there was 20 feet of snow. No timber anywhere; nothing but mountains and glaciers. In the valleys there was plenty of timber and game in abundance.

In Kchulin district they found quartz containing gold and silver. It was tested in a simple way at Fort Wrangel and thought to go as high as $100 per ton. The assays made in San Francisco by Mr. Hanks, however, show a return of about $50 per ton in gold and silver, and some platinum. Some ledges of galena were found from five to twenty-five feet in width. These ledges are perhaps from twenty-five to thirty miles from the Takou river, which is navigable that far up. The country is very rough, however, being covered with glaciers, and it would be very expensive to build roads even to the river. There is no timber within sight miles of the mines. The Indians say the glaciers extend from the Takou to the Stickeen river, a distance of 165 miles. The country is very rough to travel in and no inducements were found there sufficient to make any one return.

The party then turned back by the same course to the Takou Chief ranch, then by canoe to the Fishery, then by trail back to Telegraph creek, and from there down to Fort Wrangel, on the way to Victoria to have the rock tested. At Fort Wrangel Mr. Cargotich heard of a discovery of galena ore up on the Liard river and determined to go and prospect in that direction. He accordingly returned to Dease lake to make a new start.

At Dease lake he and one partner started in a canoe to go down the Dease river, prospecting it and all its tributaries for quartz. They went up Canon creek, Cottonwood river, Eagle river, McDane's creek, Quartz creek, Rapid river, French creek, Fall river, etc. They found gold all along, but nothing to pay. At McDane's creek, Quartz creek and Trout creek many claims were being worked and paying well. At McDane's creek the miners get for wages $10 per day. The average yield is from $12 to six ounces per day to the hand, mostly bench diggings. The river is so big that it is difficult to work in the bed, being costly. The benches all contain gold, some of them being 200 feet above the bed of the creek. It is not known what the bottom of the creek contains, the water washing away the wing dams. The Discovery company has taken out a great deal of money, having about twenty men at work, paying $10 per day to the hand, the men boarding themselves. From the benches the dirt is dumped down to the bank of the river and there washed in sluices. This McDane's creek is three times as large as Dease creek, and there were about 250 men at work there and at Quartz and Trout creeks this summer, although but few wintering there. The season this summer has been short. At Quartz creek there is considerable quartz, but found nothing to pay. The quartz appears to be in bunches and pockets and not in ledges. The mining season lasts there only about three months in the year.

At French creek several companies have started work, making $5 or $6 per day, but the diggings would not pay at $10 per day in that country. Coarse gold was found up Fall river but no diggings which would pay. At the junction of Dease and Liard rivers Mr. Cargotich turned off into the Liard. At about ten miles from the mouth the galena was found, at the foot of a canon on the right hand side of



BRITISH COLUMBIA MINING REGIONS.

this river. The ledge was from four and a half to seven feet in width. A few shots were put in and the ledge was sunk upon enough to show it was not only a bunch of ore. The ore assayed is of low grade, but it would not pay there at $300 per ton. This ore run $15.50 in silver, forty-one per cent. lead and four per cent. antimony.

At Sayres' creek several men are at work, getting out about $20 per day to the hand for every day's work. The season, however, is very short. Some of the men who wintered there last winter died of scurvy. Mr. Cargotich did not go down to Sayres' creek, but he saw the discoverer, Sayris, who was going back in the spring again, as after last year's experience no one wants to winter there. Sayres thinks there will be 200 men at the creek next spring, but advises no one to come there without plenty of provisions and materials for sinking. The ground is deep, as he has sunk in places thirty-eight feet without striking bed rock. Timber is scarce, the timber being packed three miles. The gold is very coarse, pieces weighing $36 having been found. A good many men who worked at Dease creek this year will go to Sayres' creek and thereabouts in the spring. They have found quartz all around Sayres' creek, but the placer miners have paid no attention to it.

Mr. Cargotich thinks the country along the Arctic slope is a good mineral region. It is all slate formations, and the nearer they get to this range the better are the diggings. The mountains themselves have never been prospected. The country itself, however, is a very rough one. The mining season is short and the winters very long and severe. Provisions are very high, as they have to be transported so far. Mr. Cargotich thinks, however, that instead of taking provisions up to Dease creek, and from thence up the Dease river and the Liard to Sayres' creek, a distance of about 700 miles, they could be taken up the Takou river and then across the mountains to Sayres' creek, not more than 200 miles.

All the Indians are very friendly and peaceable and gave no trouble. They are good hands for packing, boating, etc., and are willing to work. In the Takou county Mr. Cargotich found coal and copper in many places, but no bar diggings. Game and fish were plenty. The greatest difficulties in traveling were the swamps, lakes, fallen timber, etc. The mosquitoes, too, were very troublesome and appeared in immense swarms almost everywhere in the summer season.

When Mr. Cargotich left Dease creek on his return trip, in October, most of the men were leaving for the winter. Perhaps 100 men will winter at the diggings. They had a pretty good season this year at the creek, but many of the claims are worked out. Thibet creek will be good for several seasons yet. The Takou and Chilcat rivers will probably be thoroughly prospected next year by the miners, and the county explored.

It will be seen that although Mr. Cargotich discovered nothing of value, he traversed a good deal of country in his prospecting trip. All of the region lies in British Columbia, although an impression prevails up there that some of it is in Alaska. The Alaska boundary follows a line thirty miles from the coast up to Mt. St. Elias, and from there runs due north. Few people care about prospecting much in such an out-of-the-way region.

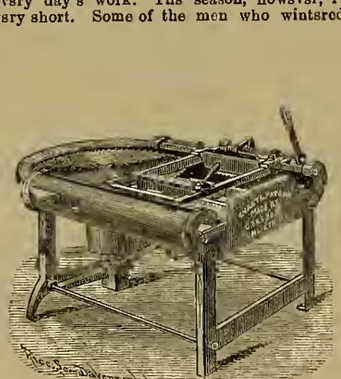


Fig. 1. Evart's Patent Single Block Hand-Feed Shingle and Heading Machine.

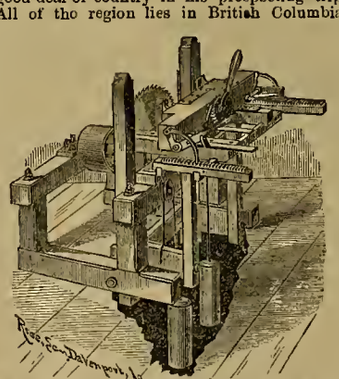


Fig. 2. Low's Patent Shingle or Barrel Head Machine.

Heading and Shingle Machines.

On our first page we illustrate two improvements in shingle machines, and on this we show two other machines, manufactured by the same makers, Messrs. C. S. & S. Burt, of Dunleith, Ill.

In Figure 1 is represented the Evarts one-block hand-feed shingle and heading machine, with the recent improvements, consisting in part of the grooved slide rods, carriage and taper works. This machine has one saw shaft, and a reciprocating carriage operated by hand. The tapering works are automatic, leaving both hands of the operator free to work the machine. The arrangement is such that the shingle can be made thicker or thinner without altering the taper, or both thickness and taper can be changed at will. Furthermore, one or more shingles can be cut from the block without change of taper, and the bolt thereby kept true and the shingles all cut with the grain of the wood; and this is done without any delay or extra labor whatever. This machine makes shingles from 16 to 24 inches in length and up to 15 inches in width. It also has a marked advantage in being adapted to the sawing of tight barrel heading, thick at the sap edge and thin at the heart. These adjustments are independent of and do not affect the saw, which is secured to the arbor by a single screw and is held in position by wide boxes, and adjusted by means of set screws at top and bottom. The saws range from 36 to 48 inches, those from 36 to 40 inches being used chiefly for shingles, and the larger sizes for sawing heading, fruit box stuff and other boards, up to 30 inches in length. The working capacity claimed for this machine, in green white pine and cypress, is about 30,000 to 40,000 shingles per day; in yellow pine, 15,000 to 18,000; and of oak heading, 8,000 to 12,000.

In Figure 2 is shown Low's patent shingle or barrel head sawing machine, also adapted to sawing short box boards, tub and pail bottoms, or any work of that class, of any thickness or length, not over thirty inches. The machine is light running and portable, and is easily attached to any kind of power. The saw is arranged in a vertical position, so that the bolt gets or carriage moves in a similar direction. The bolt is thus fed vertically down upon the saw, relieving it of the weight of the bolt, causing no friction, and leaving the shingle smooth and free from scratches. The gate is counterbalanced and has a head block to hold the bolt. The saw does not require to be removed from the machine to be set or filed, and no mechanical skill is necessary in operating it when at work. It cuts with the grain of the wood, and the shaft being horizontal no countershaft is needed. The dogs are set but once for each block. This machine is especially valuable in new countries, remote from machine shops, and has been adopted by government officials at military stations in the western territories, being easily operated and not liable to get out of order. Its capacity is 20,000 to 30,000 shingles per day in white pine or cypress, or 12,000 in yellow pine—depending on the power used and the skill of the operator.

The Steam Pump Trial.—The trial of steam pumps exhibited at the late Mechanics' Institute exhibition is now going on at the Pavilion. As we go to press (Thursday) the trial is still going on and will continue during the week. Only four entries have been made. These are the "Knowles" pump, entered by A. L. Fish & Co., the "Blake" pump, entered by H. P. Gregory & Co., the "Hooker" pump, from W. T. Garratt, who owns the patent for this coast, and the "San Francisco" pump of Wilcox & Co. While the trial is in progress no information as to relative merit can be given by the committee, but as soon as the report is made we will publish a full account of the test with such indicator cards as we can obtain. The trial is regarded with a great deal of interest in mechanical circles.

The office of the Consolidated Reforma lead and silver mining company, corner of Clay street and Montgomery, was visited on Thursday night by thieves, who were probably led on by a report that the bullion which the company was to receive from the Kohler smelting works was to be deposited at that office for exhibition. Fortunately the precious metal had not been delivered.

Rich Strike.—The *Reese River Reveille* says John Frost, superintendent of the mines of the Manhattan company, brought to that office recently a chunk of ore from the new strike at 500-ft. level of the Allsopp mine. The ore is coated with stephanite, and permeated with sulphurets, and assays $3,000 per ton. The ledge from which the specimen was taken has an average width of three feet.

Matthew Polson, an amalgamator at the Devil's Gate mill, Silver City, while at work on the 14th inst., was caught by a revolving shaft and thrown against a post. His skull was so badly fractured that there is no hope of his recovery.

The Handy-Leopard mining suit has been compromised by the payment of $40,000 by the Leopard company, $10,000 payable December 10th, and the balance in thirty-day payments of $10,000 each.

Last week's wash-up of gold dust on Lightning creek, Caribou, was as follows: Van Winkle, 670 ounces; Vulcan, 206 ounces; Victoria, 150 ounces; Castello, 36 ounces. Total, 1,062 ounces.

The citizens of Santa Clara have raised nearly $40,000 for the Alviso narrow-gauge railroad. Fifty thousand dollars is the sum required.

The El Dorado County mining ditch is to be completed within fifteen days.

The Virginia fire department lost $19,030 by the late conflagration.

A peat fuel company has been organized at San Jose.

Wet or Dry Lands? — Reclamation or Irrigation?

[From Pacific Rural Press.]

MESSRS. EDITORS:—Our State is now receiving a steady increase in population, which most likely will be a noticeable feature unti our best psrts are as thickly popnlated as the hetter parts of the Eastern States. The greater proportion of those now daily arriving among us are those who come intending to make permanent settlement, and it is a question of some importance to those who intend making agriculture a pursuit, to know where they shall most properly locate. If they shall select an ordinary npland farm, or one subject to irrigation, or a natnrally wet land, which may be reclaimed from overflow.

The ordinary upland farm, unless situsted in a very nnfavorable locality, if summer fallowed and properly looked after, will retnrn a orop; hut in summer fallowing one-half of the land may he said to be lying idle, the whole lsnd heing cropped only once in two years.

Irrigated land is necessarily expensive. The average expense of bringing weter is considerable, without inclnding the outlay necessary to put lsnd in a proper condition to receive it. Those trscts whioh lie flat and level csn undoubtedly be irrigated at much less expense than those tracts which are irregular, bnt it is safe to say thst the average expense of hringing water and conveying it properly on larger tracts of land, and of leveling off lands which are not naturally level, will cost from eight to fifteen dollars on the original cost of the land. Upon the ordinary farmiug uplaud of the State, it may be doubted if the yield of wheat will average ten bushels to the acre. Upon land properly irrigated we may snppose the average yield to he thirty hushels to the acre.

It has not been until within a few years that public attention has been drawn in this State to the plan of reclsimiug our swsmp and overflowed lands, as illustrated in Sherman, Grand, Staten and other islands, snd although some tracts have been cheaply and inadequately reclaimed, for speculative purposes, and although our hest reclaimed tracts may not be up to the standard which will be found necessary to stand the test of years, still we may say that the results of cultivating such lands prove conclusively that they will be found here, as they have been found in other oountries, to be by far the most prodnctive and valuahle of any. We refer particularly to that tract of freeh water tide land, comprising some 300,000 acres, situated quite at our door, at the delta of onr two largest rivers, the Sacramento and the San Joaquin.

Thie tract bears hut a small proportion to the halance of farming land in the State, yet from ite wonderful productiveness will be found of great importance in the future, when our popnlation will be from ten to twenty timee larger thau at present; for, having a practical immunity from drouths, aud heing of an inexhaustable character, will eupply not only the most luscious fruits, and in this respect vie with the uplands, hut give ne what the uplands may not he able to give—all our vegetahles with varied profnseness.

These are emphatically dairy lands, and are especially adapted for making butter and cheese, for fine stock, for fattening mutton, and for growing enormoue crops of sweet and Irish potatoee, turnips, beets, cahhages, pumpkins, and, in fact, all vegetables. The yields that have already been obtained on these lands, of potatoes, beane and onions, would seem fahulous, if repeated evidence was not so plentiful; $400 and $500 worth of onions, and $200 and $300 worth of potatoes and heaus to the acre are by no means uncommon; and in alfalfe, a yield of from eix to eight tons to the acre is of common occnrrence. Farmers are now cutting on those lande their fourth crop of alfalfs, and from four to five tons of the choicest timothy hsy have heen cut this year to the acre on Staten island, upon land that the seed was sown last yesr after the grain crop was removed, and upon land which the year before was unreclaimed and covered only hy the useless tule. These lands, unlike salt marshes, are suitable for hreaking up and cultivating as soon as reclaimed. The tule is hurnt off clean after the hcavy winter frosts, leaving the ground ready for the plow.

It is estimated that the yield this year in grain from 25,000 acres of this land approximated in value to $1,000,000, aud a very much larger tract will he brought nnder cultivation next year. A considerable tract, comprising 20,000 acres on Roherts' island, commencing a few milee from Stockton on the San Joaquin river, is heing enclosed and will he completed hy J. P. Whitney this year. This is but a portion of the island, which comprises in all 60,000 acres, the halance of which is to be enclosed next year. Thie is the largest island among the freeh water tide lands, and is of the choicest description, heing much firmer in its hanks and general character than the lower peaty lande of the Saoramento and lower San Joaquin; and the levee which is being coustructed upon the part now being completed, is hnilt entirely upon high, firm banks, aud is wholly of solid esrth matter, and more suhstantial in character than any leveo which has yet heen constructed. This land is wholly open to lease upon five ycare' time for a percentage of crops, upon which the owner is conetructing substantial huildings upon raised mounds, upon the levee line, which is supposed to be above the highest floods which the State has ever known.

Msy not these lands, slthough they may occasionally he overflowed, present inducements to the farmer superior to those offering upon the nplands, when considering the immense yields they give, and the great sdvantsges they present to the farmer in the msrketing of his orops?

Freight from any of the reclaimed tracts lying upon the San Joaqnin or Sacramento rivers to Ssn Francisco this year is, on grain, one dollsr per ton, with open navigation, whioh can never be controlled by any monopoly. The freight on grain from a distance of 160 miles from San Francisco hy railroad will approximate five dollars per ton, giving alone in this difference, the yield being equal, a fair profit to the farmer.

While on upland, without irrigation, a year of drouth may occasion an irretrievahle loss, and the land be of no valne nntil another year, it does not follow that an nnusual flood, occasioning an overflow of reclaimed land, will prevent the lend from yielding a good crop the same year; for our extreme floods, which come between the fifteenth of December and the middle of January, occur at a period when on tule lands the ground may he left unsown, and the water heing withdrawn hy the natural fall fifty or sixty days after, the land may he sown with a certsinty of crop; for those lands can he sown even as late as June without risk, and after any such break in levees, ample season is gained for repairs, without expectation of a corresponding rise the following year.

A tendency is apparent toward the building of stronger levees than have heretofore been hnilt, and a general improving of those previously built is taking place. Those levees situated on the lower peaty islands, aro many of them quite faulty in construction and will need much attention hefore they can he depended upon. They can be made secure, thongh involving considerahle expense; hnt the greater proportion of the fresh water tide lands can be securely reclsimed sgainst any prohable flood with only a moderate expenditure per acre.

Diaries.

Having for many yesrs kept a diary, and having found it useful in more ways than one, we are induced to recommend the practice to those who have never tried it. Its use as a remembrancer is ohvious. A good memory is not everyhody's property, hut a diary, which is often an efficient euhstitute, is within the reach of all, and if regularly written upon each evening or morning demands hut little time or trouble. The entry in a diary is authoritative, where a mere recollection might he disputed; and we helieve it is admitted as evidence in lsw, as we sometimes read of csses in which an appeal is made to its pages. When some years have passed, with the changes which time never fails to hring, there is a pecnliar pleasure in looking over the leaves of an old diary, recalling soenes and incidents that had passed from the memory, but spring into heing as we glance over the record. However slender the outline, it serves to recall the events, and memory finds little difficulty in filling up the sketch. It may he, indeed, that there is something end in many of these resuscitations; hut it ie undoubtedly true that there is a pleasure in sadness where the canse is remote, where the degree is slight, and where it can be dismieed from the mind if desired. But, hesides heing a record of events useful for reference and interesting to look hack upon, we have often thought that one henefit of keeping a diary is the influence it exercises over one's daily doings. If it faithfully records, as it should, whatever we do, it is sometimes a salutatory check upon our actions to remember that they must be set down that evening in hlack and white; and the sense of waste of time is rarely stronger than when, pen in hand, we can recall nothing worthy of record among the occupstions of the day. There is a feeling akin to that of the emperor of old, when he exclaimed, "I have lost a day." It impresses one with want of results when the doings of many houre will not fill a few lines, while it is a real source of satisfaction when we note the successful accomplishment of some useful ohject, or some worthy project pushed ou nearer to its end.

REWARD OF PERSISTENCY.—David Evans, well known in thie county, has for the past ten years heen digging around in the hille, sometimes with hopes elated at the prospect of sndden affluence, and more often depressed hy unseen circumstances to the depth of poverty and deepair, yet amid all his trials and tribulations never losing eight of the fact that "it was there," and patient work would some day receive its reward. The North Slope lode, cut in the Evans tnnnel on Hoosier mountain, a vein of some twelve feet in width with two feet of pay rock, some of which assaye from two to three thousaud ounces silver per ton, with a good showing of gold, has been sold by Mr. Evans to a Cincinnati company for good figures in cash; and Mr. Skinner and E. E. Hartwell have taken possession for the company, and will at once commence business.—*Boulder, (Col.) News.*

COVERING COTTON WITH SILK.—A method of covering cotton with silk has heen devised. The silk is dissolved in hydrochloric acid, or an ammoniacal solution of copper or nickel. Water is addod until the solution begins to cloud, when the cotton, previously mordanted, is immersed in it for a few minutes. When taken out it will he found to be plated with silk.

TIMBER LANDS.—Associated Press dispatches from Washington say: Commissioner Burdett, of the General Land Office, will, in his forthcoming report, strongly recommend that all timber lands offered by the Government he appraised and thrown open to purchasers at not less than their apprsised value. He is of opinion that unless they are thus placed under private guardisnship the fine forests of the country will soon be wantonly exhausted by lumher companies and speculators, who are now stripping the land of its timher under cover of dummy pre-emption entries, or without any pretence of complisnce with the law, while the Government derives no revenue from its property, and the country sustains almost irreparable damage from the sweeping denudation of large areas of its water sheds. He will also condemn the practice of extending the system of subdivision surveys over immense hodies of worthless land west of the 100th meridian, and suggest thst only such tracts be minutely snrveyed as have any attractions for settlers. He will also recommend thst provision he made for connecting land office surveys with important points established hy geological surveys of territories, and that monuments at section corners, etc., he constructed in a much more lasting manner. The recommendation of his predecessor that the pre-emption laws be aholished and the homestead system made the only method of acquiring title to agricultural lands, is repeated and earnestly nrged upon the attention of Congress.

AIR MACHINERY IMPROVEMENTS.—The Gold Hill *News* says: A new and valnable improvement in the arrangement of the air machinery of the Bullion mine has resulted in not only a oomplete success, hut promises, if introduced, which we have no douht it will be, a complete change in the system of fnrnishing air in all the mines on the line of the Comstock. A small air engine is plsced at the 2000-foot station of the Imperial mine and a suction hox attached to the under side of the hlower with an air pipe extending upward to the 1300-foot level, at whicb point the natural draft down the perpendicular shaft fnrnishes a snpply of pure air. At that point a tunnel-shaped opening is attached to receive the downward current of air which is drawn hy the suction to the blower at the 2000-foot station, and then driven directly into the face of the drifts. This use of the natural forces combined with the additional suction power, naturally creates a saving of the power necessary to force a snpply of air through the pipes 2,000 feet. The new arrangement of the hlower works with the utmost perfection, and is fast producing a great change in the progrese of the work on the lower levels. The 1700-foot level is looking more favorable, and the enlargement of the incline ie making rapid progress

ON THE WEAR OF STEEL RAILS.—A French journal in a note ou the wear of steel rails expresses the helief that "the chief advantage which results from their use, as compared with those of iron, ie that the wear caused hy friction is even, heing parallel with the length, and takes place slowly, whereas the hest iron rails deteriorate under the influence of the traffic, aud are found to be for the most part unfit for use hefore they have lost any appreciable portion of their weight by even wear." The opinion in this country is that the iron rails laminate hecanee the loads are greater per eqnare inch than the metal can bear, consequently the eurfaoe is crushed and its cohesion deetroyed. Some etatistics which have heen puhlished within a comparatively short time show that where the maximum weight per wheel was so emall that the weight per square inch did not exceed the strength of the iron to resist orushing, the life of the iron rail approached that of steel. Where the iron of the head of the rail has been made exceedingly hard, the life of the rail, even nuder a very heavy load, hae heen nearly as great as that of stoel, if not quite equal to it. The euperiority, thereforo, of the steel, aside from its greater strength, seems to be in the greater hardness of the material.

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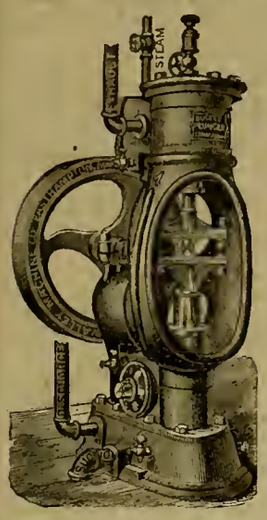

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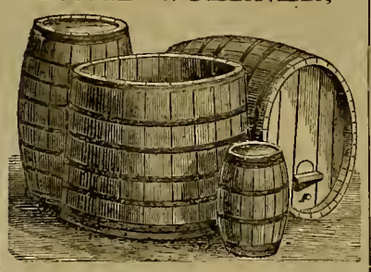

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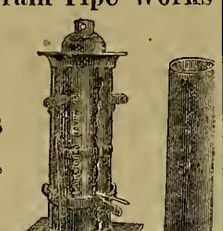

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Will be found on comparison to be

Unequalled in Quality.

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STEARIC ACID CANDLES

GEO. M. GRANT & CO.

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—AND—

Chemical Apparatus,

Having been engaged in furnishing these supplies since the first discovery of mines on the Pacific Coast.

☞ Our Gold and Silver Tables, showing the value per ounce Troy at different degrees of fineness, and valuable tables for computation of assays in Grains Grammes, will be sent free upon application.

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Nevada Metallurgical Works,

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Ores worked by any process.
Ores sampled.
Assaying in all its branches.
Analysis of Ores, Minerals, Waters, etc.
Plans furnished for the most suitable process for working Ores.
Special attention paid to the Mining and Metallurgy of Quicksilver.

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Mining Engineers and Metallurgists.

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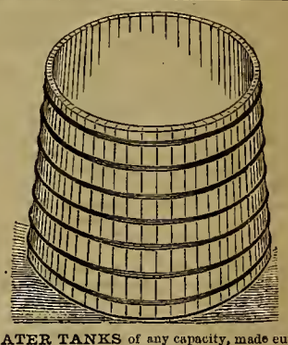

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The undersigned, owners of LESCHOT'S PATENT for DIAMOND-POINTED DRILLS, now brought to the highest state of perfection, are prepared to fill orders for the IMPROVED PROSPECTING and TUNNELING DRILLS, with or without power, at short notice, and at reduced prices. Abundant testimony furnished of the great economy and successful working of numerous machines in operation in the quartz and gravel mines on this coast. Circulars forwarded, and full information given upon application.

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24v26-tf

Mining Affairs on the Comstock.

The people of Virginia City are hard at work rebnilding and repsiring, and in spite of snow and wind seem to keep right st it in an indomitable manner. We give some account in another part of this issue of the damage done to the mining machinery and how it is being replaced. Of the mines themselves, the condition in whioh the lower levels will be found when clesred of wster is now an item of interest to a good many people. It is probable, however, thst a large deposit of mud npon the floors of the levels will be the most nnpleasant result. The levels which are timbered are not likely to oave, as the water will only swell the timber and thns fssten it more firmly in its place. The nntimbered levels will not suffer so mnch filled witb water as they would if left to themselves, filled with hot sir.

The locsl papers speak in a hopefnl way of the ontlook for the city. The militsry patrol has been disbanded and the police again keep watch and ward. The project of constructing smple and snbstantial water works ss a protection to the oity in cass of fire is not being allowed to slnmber. A large amount has already been subscrioed to the gnarantee fund, and the leading men of the city are determined that the work sball go on. As regards workmen being wanted there the *Enterprise* says: "The principal mines in the city being crippled, there are qnite ss many ordinary workingmen here as can fiod employment; indeed, men living in the town are daily to be seen in sesrch of work. Good brick and stone masons—also skillfnl workmen of otber kinds—can find employment at good wages; but there are plenty of men here to do all the rongh work required in rebnilding the town." There will probsbly be some suffering there this winter, as it is stated by the Virginia Relief Committee that there is hardly half enough on hand—money, provisions snd all told—to keep the sick and destitnte through the winter. They estimate that the cost of properly providing for the destitute and csrrying them through the winter will not fall far short of $100,000.

In the mines the water gives no grest trouble, although reports to the contrary have been oirculated. The *Enterprise*, of the 10th, says: "The water in the Ssvage mine has been lowered about 135 feet below the 2000-foot level. In the Consolidated Virginia the flow has deoreased to about ten inches. Abont all tbat now remains to be done is to pump out the water yet remaining in the lowest levels of the several mines. The water coming in amounts to nothing—can be easily handled by one emall pump." A letter of the 14th saya that the water has decreased to withiu sixty feet of the 2200-foot level in the Savage, and on the 13th the Gould & Curry 1700-foot level wss freed of water.

The new and powerful hoieting enginee at the C. & C. shaft went into permanent operation on the 11th inet. They are direct-actiug, and work to the admiration of all the engineers and other experts who have seen them rnnning. The progress made in sinking the shaft will henceforward be fully twioe as rapid ae while the hoisting was done with tbe little donkey engine. They now take a new departure in the einking of the shaft. With the new engines a car load of dirt can be hoisted in lese tban half the time that wae formerly occupied in briuging one to the surface.

The frame of the new building in which is to be set up the engines and hoisting machinery of the Opbir was erected on tbe 12th inst. To inolose the building will be the work of bnt a few days. Work upon the machinery in the interior will be going on in the meantime, and there can be no donbt tbat the hoisting of ore will be resnmed within the time specified by Captain Cnrtie, namely, Dec. 5th.

The erection of the frame for the building which is to oover tbe new works of the Conoolidated Virginia mining oompany (says the Virginia *Enterprise* of tbe 13th inst.) wae begun yesterday. To-day the work will doubtless be completed, so far as the main building is concerned. The heaits of our people ssuk as they eaw these splendid works go down, and in proportion as they see them rise again they "take oourage." It is eome consolation to know that when the works again go into operation, and when the drift from the C. & C. shaft shall have been rnn to the vein, the big bonanzs will be made to bleed as it has never bled before. We shall then see many car-loads of silver bricks rolling down the side of the monntain. All the ehops near the Consolidated Virginia are filled with workmen, and work ie being pushed on every part of the foundations. The hoisting enginee will soon be placed in position. The boilers are all sound, and stand just as before the fire, ae the engineers before leaving tbe works turned on the pumpe and filled them full of water. Being thns water-logged, the fire did not hurt them. Since the fire tremendous galos hsve visited the city, and thrown down a number of buildings.

The Pacific wood and flume company, one of the ageuciee of the Mackey-Fair combination, hae discontinned operations for the seaeon. This throws 600 men out of employment.

A lump of pure brimetone has been sent from Winnemucca to the Centennial, weighiug 1,000 pounds.

The investigations of the Wooodville Consolidated and Niagara mining companies still progress.

Notices of Recent Patents.

Among the patents recently obtsined throngh Dewey & Co.'s Scientific Press American and Foreign Patent Agenoy, the following are worthy of mention:

Improven Dental Plugger.—T. Crossett, dentist, San Franoisco, Cal. This invention relstes to certain improvements in that class of dental plnggers in which the bit or striking point is attached at a right angle to the end of the implement, so as to be more conveniently handled and operated in the mouth. The improvement consists first in a novel arrangement for transmitting the blow of the hammer or spring shaft to the bit or plugging point; secondly, in an improved device for incressing the force of the blow when desired; and thirdly, in the method of adjnsting the position of the implement, with reference to the driving shaft of the engine or motive power to which it is attached. This implement is very convenient, not only for dentists, but pstients as well, as it enables the dentist to perform the work in the patient's month without the necessity of the latter opening his mouth wide enough to swallow the operator.

Floor Clamp.—Elijah Hiokman, Red Blnff, Cal. This is an improved device for pressiog floor boards together so as to make tight joints, and then holding the boards firmly in place while they are being nsiled to the joists. A handle or lever is nsed, to one end of which a gripping device is secured, which clamps the sides of the joists in order to get a hold, from whioh to apply the leverage. Tbis gripping device oonsists of two strong bars of metal, which cross each other like a psir of shears, and are riveted together at one point. A braoe bsr is applied, so that when the gripping jaws are fastened to the joist it will bear against the edges of the boards to be pressed. A lever bandle serves to force the bar against the edges of tbe boards. A hook-bar is applied, which serves to secure the clamp in position when working overhead, as in tbe oase of fitting ceilings. This hook-bsr hooks unto tbe eide of the joists after the clamps have been applied to it, and sustains the clamp while the workman is nailing the boards.

Alarm Fare Box.—A. J. Costis, San Jose, Cal. This is an improved till or box for collecting fares in railway cars, omnibusses, and other vehicles for carrying passengers. It consists of an arrangement allowing each passenger to drop his own fare into the box. An alarm wheel ie caused to strike by the operation of dropping the fare into the box and a register for noting and counting each fare as it is introduced. The operation of registering the nnmber of fares, sonnding the alarm and rotating a wheel with radial compartments eo as to carry the fare to a position where it is dnmped into a drawer or lock box, ie all accomplished by the movement of the ticket receiving and depositing device. The box ie compact, having only two compartments, while the ticket, wben once deposited, is beyond recovery or abstraotion.

Baling Press.—D. L. O'Connor, Covelo, Mendocino county, Cal. Thie is an improvement in baling presses, and it oonsists principally in the construction of two or more distinct compartments which are placed eide by side upon tbe same base or frame and have a common driving ehaft extending through loosely mounted actuating drums, so that by means of a snitable clutch either one or the other may be operated. The devicee for commnnicating the power to the two followere are not especially novel. By the construction of the prees the inventor is enabled to work it alternately with only one set of machinery and one gang of men, thus greatly increasing the prodnction.

Judge Whitehead, who, with a party of surveyore, has been locating a route for a railroad between Cheyenne and Montana, hae reached Bozeman, and reporte having fonnd a feasible line along the eastern base of the mountsins.

The Coos Bay gold mining company, Oregon, in damming John Mule creek, half a mile above its confluence with Rogne river, have discovered an extensive prospect of gravel that prospects three cente to the pan.

One hundred tbousand trade dollars were Thureday delivered by the Coiner to the Caehier of the Carson mint. This is the largest delivery of this coin yet made at any one time.

John Ely, a pioneer of Lincoln county and one the original locatore of the Raymond & Ely mine, has returned to Pioche after an absence of about tbree years in Frenoh Gniana.

The Fryer works at Graes Valley still continue in operation, reports to the contrary notwithstanding. Before long the whole process will be available to the public.

Joseph Williams, a blacksmith at the Ophir mine, lost an eye on Wednesday. Wbile cntting a bar of iron a large fragment struck his eye and cut into the ball.

John F. Cassel has resigned the superintendency of the Leopard mining company, and A. Plummer has been elected to fill the vacanoy.

Academy of Sciences.

The regular meetieg of the Californis Academy of Sciences was held on Wednesdsy evening last. Louis Nusbaumer, of Snncl, wss proposed for membership. The contributions to the museum comprised forty-five speoimens of minersls from Dr. Helden, a specimen of oolymbus presented by Dr. Hsrkness, two birds from the Navigator islands and a specimen of *cebidichtus* or "wolf eel," five feet long, from Puget sound, presented by Captsin James Lswson. The latter is a curious specimen of marine monster. Its head is large and its face has a semi-hnman look, while its teeth are strong and espable of msstioatiug the *crustacea* on which it probably feeds. The fish is ssid to be found occssionally in the bay by our fishermen.

Mr. J. R. Scupham msde a few remarks on tbe teredo, presenting also a specimen of wood showing a curions instance of where one of the rotifers had bored into the hole of its neighbor, the first instance in whioh such an occurrence has been noticed.

He said that the teredo was s rotifer, moving abont in the water by means of its *cilia*. When it attached itself to a piece of wood the *cilia* died. It then moved around on the surface of the wood until it found an indentation, into which it crawled and covered itself with a limy substanoe. When covered it began to bore inward and downward, never crossing a crack and hardly ever breaking into the neighboring cell of a fellow insect. It kept its hole lined with a shelly substance. Its food was of animaculæ drawn throngh its siphon, and not the wood through which it made its way. In the section of pile shown by the speaker one insect had broken throngh into tue chamber of another, contrary to precedent. Probably the neighhor was desd. From its peculiar manoer of growing the teredo must continue elongating itself or must cesse its existence.

Jndge Hastings tbought the gas furnished by the gas company was so bad that somebody shonld make an exámination of it, and suggested that Dr. Blake be sppointed to investigate the subject. Dr. Blake said tbat he waa under obligations to the gas company for means to carry on his experiments into the best methods of exterminating the phylloxera now devastating the vines of California, and he could not undertake the task. He then went on to spesk of the insect and the damage it is causing, at some length. His knowledge was principally confined to the vineyards of Sonoma county. Many young plants had been sent down to him from the vineyards there, and he had not seen one that was free from it. He thought that there was no difficulty in killing the insects, bnt no application of the extermiuator had been found strong enough to destroy the eggs. Those queetione could only be determined by experiment. Soapsuds, tsr-water, tobacco-water, creosote and carbolio acid and snlphur water had succeeded in killing the insect, but none of them had destroyed the egg. The disease had greatly in reased within a few yeare. The insect ie traveling downward, and it is well enough to know exactly how fast it travels. The agricultural jonrnals of France have just found out that the eggs of the insect are deposited at the angle formed by tho vein witb the main stalk. They come to the surface in July, and sometimes late in September. So far as the gae works were oonoerned, Dr. Blake said he had no doubt that he could get from them snbatances that would be fatal to both insects and eggs.

Dr. Kellogg auggested kerosene, but Dr. Blake thonght it might be too strong for the plants.

It was suggested that the custom followed in Germany, of kindling fires about the time of entomological courtship, would attract and destroy the males.

Dr. Behr approved the recommendation, saying that this practice was followed on the Rhine and Main, and the vineyarde in thoee regions were entirely free from the pest.

Dr. Kellogg suggested the old Aztec custom of putting plante of other odore among the vines, so that the ineect would think the vineyard not a vineyard, and fly past it.

Dr. Blake thought that the plan of fires would scarcely do, ae the insects were wingless and could not fly to it. He asked Dr. Kellogg if the *aphis* was not always wingless?

Dr. Kellogg replied that almost all speoies of them flew at that season of the year.

Judge Hastings said that the kindling of fires was forbidden by the new code.

Wrecking.—According to "The Wreck Register and Chart for 1873-74," just issued by the British Royal Life-boat Institution, it appears that there were 506 livee lost from wrecks, casualties and collieions on or near the coast of the United Kingdom. The fleet of the association, consisting of 250 life-boats, saved 713 lives from various ehipwrecks.

The Penryn granite works, in Placer county, are now turning out large quantities of polished stone for monnments, etc.

The Miners' Union of Virginia are going to rebuild their hall. It will cost between $16,000 and $18,000.

The Risdon iron worke are building a set of engines for a new steamer designed for the Humboldt route.

Patents & Inventions.

A Weekly List of U. S. Patents Issued to Pacific Coast Inventors.

From Official Reports for the Mining and Scientific Press, DEWEY & CO., Publishers and U. S. and Foreign Patent Agents.]

By Special Dispatch, Dated Washington, D. C., Nov. 16, 1875.

For Week Ending November 2n, 1875."

Mandrel for Broom Machines.—Henry Anderson, Vallejo, Cal.

Metallic Burial Case.—Henry M. Grsy, S. F., Cal.

Steam Boiler Furnace.—Joseph Enright, Ssn Jose, Cal.

Batter Feeder for Cake Making.—Dennis H. Lsfferty, S. F., Cal.

"The patents are not ready for delivery by the Patent Office until some 14 days after the date of issue.

Note.—Copies of U. S. and Foreign Patents furnished by Dewey & Co., in the shortest time possible (by telegraph or otherwise) at the lowest rates. All patent business for Pacific coast inventors transacted with perfect security and in the shortest possible time.

General News Items.

The weather in Englsnd and Frsnce during the past week has been very stormy. Almost incesssnt rains have fallen, and many psrts of both countries are flooded. Vast tracts are threatened by rising rivers.

The abandonment at sea of the Nicaraguan ship *Liguria*, eight hundred miles from Csllao, is reported. The captain and crew hnd arrived at Callao prior to the 24th ultimo.

The General Land Office has rejected the Castro survey of the Rsncho Piedra Blanca, in San Luis Obispo, and direct a new survey to be msde.

The New York Court of Appeals has dismissed Tweed's appeal in both cases, thereby refusing to reduce his bail or grsnt him a bill of psrticulars.

Don Carlos is said to have written a letter to King Alfonso. There are rumors of peace and Spsnish funds have risen in conseqnence.

The Fall River mill owners have decided to reduce the wages of their employees ten per oent. on the first Monday in December next.

The King of Italy has granted a snbsidy of 190,000 lire to aid in representing his kingdom at the Centennial.

San Francisco contributed in goods and cash the sum of $48,061 50 to the relief of the sufferers by the Virginia fire.

Hon. Jasper O'Farrell, ex-State Senator, and the first surveyor of the city of San Francisco, died on Tuesday last.

Guiborn has been buried at last and the grave filled in with Portland cement to prevent the body from being removed.

Only two lives were saved from the ill-fated *Pacific*. An investigation is to be held as to the cause of the disaster.

The President hae appointed T. C. Woodward, of Iowa, to be Exsminer-in-Chief of the Patent Office.

The epizootio in a mild form is now prevalent in this city and to some extent in the Interior.

Work on the Mare island dry dock ia at a stand-still, the appropriation having been exhausted.

The snow slides in Little Cottonwood canon, Utah, have begnn, and already this winter four lives have been lost.

All hopes of finding any of the passengers or crew of the *City of Waco* have been given up.

The Thames has risen, and done five million dollars' worth of damage by flood.

A New England conservatory of music is to be established in this city.

The brig *Maine* was capsized in the Atlantic and 13 livee lost.

San Francisco wae again visited hy an earthquake this week.

The recent Virginia fire burnt about three hundred acres.

Vice-President Wilson continues to improve.

There are now 530 guests at the Palace hotel.

Baron Rothschiln nnd party have gone to Yosemite.

The Itslian legislative bodies convened Tuesday.

Treasurer New has concluded not to resign.

A great war is predicted in Europe next year.

Professor W. Frank Stewart states in the Carson *Appeal*, ae a quietus of mieapprehension, that the great cabinet of specimens, collected by himself and State Mineralogist Whitehill for the Centennial was not destroyed by the Virginia City fire, but is safely housed, the whole ten tons of the same, in the railroad round bouses in Carson City.

The Late Awful Winter leaves behind it a frightful legacy of Coughs, Colds, and Pulmonary Inflammation. Providentially, however, an absolute and immediate cure has been provided in Hale's Honey of Horehound and Tar.

Pike's Tootbache Drops cure in one minute.

(Continued from Page 325.)

shortly, when the real width and extent of this valuable deposit will be developed and defined. The ore is of the rich sulphuret character, the same as is fonud in the big bonanza. The position of this rich strike in the Leviathan, its known extent upward to tho level above, and the character of the vein itself, shows it to be a development of importance, and decidedly enconraging to the lucky stockholders.

SUTRO TUNNEL.—Total lougth of tunnel today, 11,415 ft. Material in face of header, quartz, porphyry snd clay, considcrably mixed. Excellent progress is being made, and some of tho qnartz seams passed tbrongh give good assays. The tunnel is liable to run into an ore body at any time, as it is already nearly a thonsand feet into the broad mineral belt of the Comstock.

LEO.—The main drift has developed considerable improvement, hoth in charactor and qnality of vein matter sinco last report. The veins of quartz are widoning and show more sulphuret ore. Water does not yet interfere with the work.

ALTA.—The new hoisting works are completed, and sinking the shuft has been commenced in good earnost. Everything works with the ntmost perfection.

EUAOPA.—The main west drift is in 170 ft, the face in soft working gronud. It is confidently expected that a distance of 40 ft more will be sufficinnt to reach the ledge, when some good developments may bo confidently looked for.

CROWN POINT.—The nsual quantity of ore is being extracted and milled. The prospecting operations on the lower levels have developed no large bodios of pay ore as yet.

CALEDONIA.—Sinking the new shaft is making fair progress. The average is now abont 3¼ ft per day. There is still considerable water coming in, but not enongh to at all impede the progress of the work.

LADY WASHINOTON.—Sinking deeper is progressing finely, the pnmps easily keeping the water out, and the new machinery working to perfection.

SILVER HILL.—Sinking the main incline is making steady and favorable progress.

COSMOPOLITAN.—The prospecting work goes ahead lively, with favorable indications. Considerable good pay ore comes from the main north drift, the face of which continnes all in good pay ore.

UTAH.—The erection of the new hoisting works bnilding, and the replacing and repairing of the machinery injured by the hnrning of the old works is making steady and rapid advancement.

NORTH CONSOLIDATED VIRGINIA.—Sinking the main shaft is making fine headway, the boltom still in ledge matter, and occasionally cntting streaks and stringers of qnartz of a very enconraging character.

BELCHER.—Daily yield, 300 tons of ore. The ore breasts and stopes are looking well and yielding the usual amonnt of good milling ore.

UNION CONSOLIDATED.—Work has been again resnmed in the north drift on the 1300-ft level, the face of which is showing quite favorable for hetter ore developments than have before been enconntered in that direction.

PROSPECT.—The face of the drift shows some improvement since last report, more and richer streaks of qnartz coming in.

MINT.—The shaft is down 900 ft, the bottom in soft ledge material. The sinking is making fair progress, and there is hnt little water to tronble.

SAVAOE.—The flow of water is gradnally snbsiding, and the pnmps are rapidly draining the incline and leaving the mine in a good condition for the resnmption of work on the lower levels.

GOULD & CUARY.—The water is heing gradnally drained from the 1700-ft level, prepsratory to resnming work in that portion of the mine.

DAYTON.—Sinking the main shaft is going ahead at the rate of 2½ ft per day. It is now down 541 ft. The flow of water at the bottom is considerable, hut is easily handled by the pnmp.

SOUTH COMSTOCK.—Face of the cross-cnt still in qnartz and clay, and good advancement made toward the main ore vein at the west side of the ledge.

BEST AND BELCHER.—The water is sgain nearly extrac'ed from the 1700-ft level, so as to soon permit of a resumption of work in that portion of the mine.

PICTOU.—The face of the main tnnnel is now in a softer material, oomposed of clay, porphyry and occasional qnartz seams, with some water coming in.

MOAE SPAOE WANTED.—It is stated that the Centennial bnildings, extensive as they are shown to be, are not large enongh to accommodate the articles that are promised to be on exhibition, and that additional edifices will have to he erected for intended special displays. The area covered now is rising forty-eight acres. This is more gronnd, by ten acres, than was covered by the Vienna Exhibition. A structnre occnpying fonr acres and a half is intended for the War, Treasury, Navy, Interior, Post Office and Agricnltnral departments, and the Smithsonian Inatitnte; under the liberal appropriation of Congress for their exclnsive nses, it is expected they will be able to make a display highly creditable to the Government.—*Call.*

WOODWARD'S GARDENS embrsces on Aqnarnm, Museum, Art Gallery, Conservatories, Tropical Houses, Menagerie, Seal Ponds and Skating Rink.

METALS.

[WHOLESALE.]

WEDNESDAY M., November 17, 1875.

American Pig Iron, ₩ ton	28 00	@	36 00
Scotch Pig Iron, ₩ ton	35 00	@	37 00
White Pig, ₩ ton	— —	@	28 00
Oregon Pig, ₩ ton	— —	@	40 00
Refined Bar, bad assortment, ₩ ₺	— —	@	3¼
Refined Bar, good assortment, ₩ ₺	— —	@	4
Boilar, No. 1 to 4	— —	@	5½
Plate, No. 5 to 9	— —	@	5½
Sheat, No. 10 to 15	— —	@	5½
Sheet, Ns. 16 to 20	5¼	@	— —
Sheet, No. 22 to 24	6	@	— —
Sheet, No. 26 to 28	6½	@	— —
Horse Shoes, per kg	7 50	@	8 00
Nail Rod	10	@	— —
Norway Iron	9	@	— —
Rolled Iron	6	@	— —
Other Irons for Blacksmiths, Miners, etc.	— —	@	4½
COPPER.—			
Braziers'	35	@	— —
Copper Tin'd	37½	@	— —
O'Nial's Pat	37½	@	40
Sheathing, ₩ ₺	24	@	40
Sheathing, Yellow	— —	@	25
Sheathing, Old Yellow	— —	@	12½
Composition Nails	24	@	— —
Composition Bolts	24	@	— —
STEEL.—English Cast, ₩ ₺	20	@	25
Anderson & Woods' American Cast	— —	@	16½
Drill	— —	@	18½
Flat Bar	18	@	22
Plow Steel	9	@	10
TIN PLATES.—			
10x14 I C Charcoal	10 50	@	11 00
10x14 I X Charcoal	12 50	@	13 00
Roofing Plate I C Charcoal	10 00	@	10 50
Banca Tin	26	@	— —
Australian	18	@	20
ZINC.—By the Cask	— —	@	11
Zinc, Sheat 7x3 ft, No 7 to 10 ₩ ₺	— —	@	11
do do 7x3 ft, No 11 to 14	— —	@	11½
do do 8x4 ft, No 8 to 10	— —	@	11½
do do 8x1 ft, No 11 to 10	— —	@	12
NAILS Assorted sizes	3 50	@	3 75
QUICKSILVER, per ₺	62½	@	65

LEATHER.

[WHOLESALE.]

WEDNESDAY M., November 17, 1875.

City Tanned Leather, ₩ ₺			22@25
Santa Cruz Leather, ₩ ₺			22@25
Country Leather, ₩ ₺			22@25
Stockton Leather, ₩ ₺			25@28
Jodot, 8 Kil., per doz	$50 00	@	54 00
Jodot, 11 to 13 Kil., par doz	68 00	@	72 00
Jodot 14 to 19 Kil., par doz	82 00	@	84 00
Jodot, second choice, 11 to 16 Kil. ₩ doz	57 00	@	74 00
Cornallian, 12 to 16 Ko	57 00	@	67 00
Cornellian Females, 12 to 13	63 00	@	67 00
Cornellian Females, 14 to 16 Kil	71 00	@	76 50
Simon Ultmo Females, 12 to 13, Kil	60 00	@	63 00
Simon Ultmo Females, 14 to 15, Kil	70 00	@	72 00
Simon Ultmo Females, 16 to 17, Kil	73 00	@	75 00
Simon, 18 Kil., ₩ doz	61 00	@	63 00
Simon, 20 Kil. ₩ doz	65 00	@	67 00
Simon, 22 Kil. ₩ doz	72 00	@	74 00
Robert Calf, 7 and 9 Kil	35 00	@	40 00
French Kips, ₩ ₺	1 00	@	1 15
California Kip, ₩ doz	40 00	@	8 00
French Sheep, all colors, ₩ doz	13 00	@	15 00
Eastern Calf for Backs, ₩ ₺	1 00	@	1 25
Sheep Roans for Topping, all colors, ₩ doz	9 00	@	13 00
Sheep Roans for Linings, ₩ doz	5 50	@	10 50
California Russett Sheep Linings	1 75	@	4 50
Best Calf Boot Legs, ₩ pair	5 00	@	5 25
Good French Calf Boot Legs, ₩ pair	4 00	@	4 75
French Calf Boot Legs, ₩ pair	4 00	@	— —
Harness Leather, ₩ ₺	24	@	42½
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Welt Leather, ₩ doz	30 00	@	50 00
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Wax Side Leather, ₩ foot		@	17@

Gold, Legal Tenders, Exchange, Etc.

[Corrected Weekly by CHARLES SUTRO & CO.]

SAN FRANCISCO, November 17, 3 P. M.

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PASO ROBLES, CAL., October 18th, 1875.

DEWEY & CO.—*Gents*: The letters patent for the Tire Upsetter have come to hand. For the prompt manner with which you have brought the matter to a successful issue, please accept my thanks.

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APPRECIATION ABROAD.—We copy the following from the *Mining and Monetary Gazette*, of London, Eng.: "We deemed it advisahle, as affording valuable information to our readers, to publish in recent lesnes of *The Gazette*, the fnll text of the "United States Mining Laws and Instructions, hy the Commissioner of General Land Office," taken from our talented contemporary, THE MINING AND SCIENTIFIO PRESS, of San Francisco. The documents have now been issued in a handsomeiyhound volnme hy Messrs. Dewey & Co., the pnhlishers of our transatlantic contemporary, and it will be found very usefnl to those already interested in American mines, and to others who may be tempted to embark in that enterprise in the States."

NO AGENTS are authorized to receive subscriptions for this paper at less than our advertised rates.

Mining and Other Companies.

Cloverdale Mining Company—Location of principal place of business, San Francisco. Location of works, Cinnabar district, Sonoma county, Cal.

NOTICE.—There are delinquent upon the following described stock, on account of assessment (No. 3) levied on the fifteenth day of October, A. D., 1875, the several amounts set opposite the nsmea of the respective shareholders, as follows:

Names.	No. Certificate.	No. Shares.	Amount.
H J Cooper	5	5	$1000 00
H J Cooper	6	5	1000 00
Woods Crawford	7	1	200 00
Woods Crawford	8	1	200 00
Woods Crawford	9	1	200 00
Woods Crawford	10	1	200 00
Woods Crawford	11	1	200 00
Woods Crawford	17	2	400 00
Woods Crawford	18	3	600 00
J D Adams	19	2	400 00
J D Adams	21	2	400 00
J D Adams	22	2	400 00
J D Adams	23	2	400 00
Wright Mathews	24	3	600 00
Wright Mathews	25	1	200 00
Wright Muthews	26	1	200 00
Theodore Deming	40	5	1000 00
H C Boggs	42	15	3000 00
John K Fraser	43	1	200 00
Kimhal Favor	45	2	400 00
Kimhal Favor	46	1	200 00
Kimhal Favor	48	1	200 00
J C Origler (not issued)	49	2½	500 00
Sarshel Bynum	52	1	200 00
Sarshel Bynum	53	1	200 00
Sarshel Bynum	54	1	200 00
Sarshel Bynum	55	1	200 00
Sarshel Bynum	56	1	200 00

And in accordance with law, and an order of the Board of Trustees made on the fifteenth day of October, A. D., 1875, so many shares of each parcel of such stock as may be necessary, will he sold at pnhlic auction, at the office of said company, No. 306 Clay street, San Francisco, on Thursday, the sixteenth day of December, A. D., 1875, at the hour of one o'clock P. M., of snch day, to pay said delinquent assessment thereon, together with costs of advertising and expenses of the sale.

ED. B. PARTRIDGE, Secretary.

Office, No. 306 Clay street, San Francisco, Cal.

Keystone Quartz Mining Company— Location of principal place of business, San Francisco, California. Location of works, Butte Township, Sierra County, California.

NOTICE.—There is delinquent upon the following described stock, on account of assessment (No. 5) levied on the twenty-second day of September, 1875, the several amonnts set opposite the names of the respective shareholders, as follows:

Names.	No. Certificate.	No. Shares.	Amonot.
C H Simpkins	37	1248	$624 00
Howard Havens	39	624	312 00
Peter Dean	45	200	100 00
Wm Dumphy	46	200	100 00
J F Greenman, trustee	68	774	387 00

And in accordance with law, and an order of the Board of Directors, made on the 22d day of September, 1875, so many shares of each parcel of such stock as may be necessary, will be sold at pnblic auction, at the auction house of John Middleton & Son, 310 Moot-gomery street, San Francisco, Cal., on the 29th day of November, 1875, at the hour of 12 o'clock M., of said day to pay the delinqnent assessment thereon, together with cost of advertising and expenses of sale.

LOUIS VESARIA, Secretary.

Office, north-west corner of Pine and Sansome streets, San Francisco, California.

Lake Mining Company—Location of principal place of business, San Francisco, Cal. Location of works, Quicksilver Mining District, Napa county, Cal.

Notice is hereby given, that at a meating of the Board of Directors, held on the 3d day of November, 1875, an assessment (No. 4) of twenty dollars per share was levied upon the capital stock of the corporation, payable immediately, in United States gold coin, to the Secretary, at the office of the Company, Nos. 19 and 21 First street, San Francisco, Cal.

Any stock upon which this assessment shall remain unpaid on the sixth day of December, 1875, will be delinquent, and advertised for sale at public auction, and nnless payment is made before, will be sold on Monday, the twenty-seventh day of December, 1875, to pay the delinquent assessment, together with costs of advertising and expenses of sale.

R. F. KNOX, Secretary.

Office—Nos. 19 and 21 First street, San Francisco, Cal.

Orleans Mining Company—Location of principal place of business, San Francisco, Cal. Location of works, Grass Valley Mining District, Grass Valley, Nevada County, Cal.

Notice is hereby given, that at a meeting of the Board of Trustees of said company, held on the 27th day of October, 1875, an assessment, No. 8, of two dollars per share was levied upon the capital stock of said company, payable immediately in gold coin of the United States of America, to the Secretary, at the office of the company, room 8, No. 315 California street, in the city of San Francisco.

Any stock upon which said assessment shall remain unpaid on the 30th day of November, 1875, will be advertised on that day as delinquant, and nnless payment shall be made before, will be sold on the 18th day of December, 1875, to pay the delinquent assessment, together with costs of advertising and expenses of sale.

GEO. P. THURSTON, Secretary.

Office, room 8, No. 315 California street, San Francisco, Cal.

Owyhee Water and Gravel Mining Company. Location of principal place of business, San Francisco, California. Location of mines, Elko county, Nev.

Notice is hereby given, that at a meeting of the Trustees, held on the 1st of November, 1875, an assessment (No. 1) of thirty cents per share was levied upon the capital stock of the corporation, payable immediately, in United States gold coin, to the Secretary, at the office of the company, No. 405 California street, San Francisco, Cal.

Any stock upon which this assessment shall remain unpaid on the 15th day of December, 1875, will be delinquent, and advertised for sale at public auction, and nnless payment is made before, will be sold on the 15th day of Jannary, 1876, to pay the delinquent assessment, together with costs of advertising and expenses of sale. By order of the Trustees. JOHN E. MCDONALD, Secretary.

Office, 405 California street, San Francisco, California.

Pauper Mining Company—Location of principal place of business, San Francisco, Cal. Location of works, Owyhee County, Idaho Territory.

Notice is hereby given, that at a meeting of the Board of Directors, held on the 9th day of Novemhar, 1875, an assessment (No. 6) of twenty cents per share was levied upon the capital stock of the corporation, payable immediately, in United States gold coin, to the Secretary, at the office of the company, room 1, No. 402 Montgomery street, San Francisco, Cal.

Any stock upon which this assessment shall remain unpaid on the 15th day of Decemher, 1875, will be, delinquent, and advertised for sale at pnblic anction, and nnless payment is made before, will be sold on Thursday, the 6th day of January, 1876, to pay the delinquent assessment, together with costs of advertising and expenses of sale. By order of the Board of Directors.

W. F. BOGART, Secretary.

Office, Room 1, No. 402 Montgomery street, San Francisco, California.

Peytona Gold and Silver Mining Company. Location of principal place of business, San Francisco, Cal. Location of works, Virginia Mining District, Nevada.

Notice is hereby given, that at a meeting of the Board of Directors, held on the 22d day of October, 1875, an assessment of five dollars per share was levied upon the capital stock of the corporntion, payahle immadistely, in United States gold coin, to the Secretary, at the office of the company, room No. 11, 215 Sansome street, San Francisco, Cal.

Any stock upon which this assessment shall remain unpaid on the thirtnth day of November, 1875, will be delinquent, and advertised for sale at public anction, and nnless payment is made before, will be sold on the 18th day of Decemher, 1875, to pay the delinquent assessment, together with costs of advertising and expenses of sale. By order of tha Directors. F. J. OWENS, Secretary.

Office—No. 11, 215 Sansome street, San Francisco, Cal.

UNITED STATES

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We have just issued a pamphlet containing the general mineral land laws of the United States, with instructions of the Commissioner of the Land Office The contents of this pamphlet comprise all of the Government laws with relation to mineral lands of interest to the mining community, as follows: Mining Statute of May 10th, 1872, with Instructions hy the Commissioner of the Land Office; Mining Statute of July 26th, 1866; Mining Statnte of July 9th. 1870 Forms required nnder Mining Act of May 10th, 1872, as follows: Notice of Location; Request for Survey; Application for Patent; Proof of Posting Notice and Diagram of the Claim; Proof that Plat and Notice remained Posted on Claim during Time of Pnhlicetion; Registers' Certificate of Posting Notice for Sixty Days; Agreement of Pnblisher; Proof of Publication; Affidavit of $500 Improvements; Statement and Charge of Fees; Proof of Ownership and Possession in Case of Loss or absence of Mining Records; Affidavit of Citizenship; Certificate that no Snit is Pending; Power of Attorney; Protest and Adverse Claim; Non-Mineral Affidavit; Proof that no Known Veins Exist in a Placer Claim, Sarshel Bynum, ... 54 1 200 00 etc. There is also given the U. S. Coal Land Law and Regulations thereunder. The work comprises thirty pages, and will be sold, post-free, for 50 cents. It should be in the hands of every one having any mining interests. DEWEY & CO.,

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ANY PERSON receiving this paper after giving an order to stop it, may know that such order has failed to reach us, or that the paper is continued inadvertently, and they are earnestly requested to send written notice direct to us. We aim to stop the peper promptly when it is ordered discontinued.

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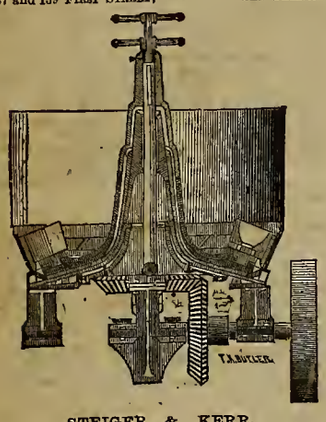

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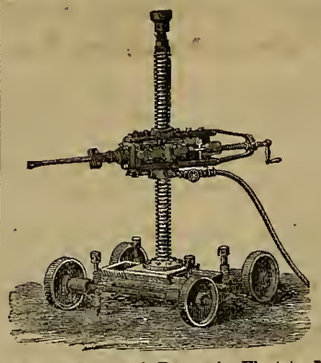

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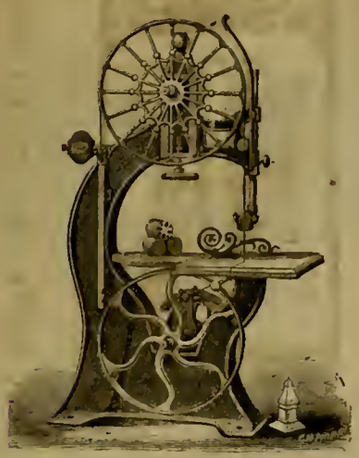

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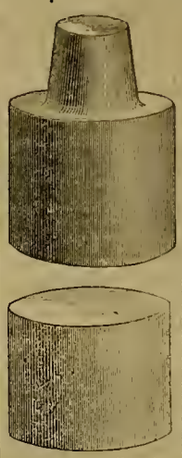

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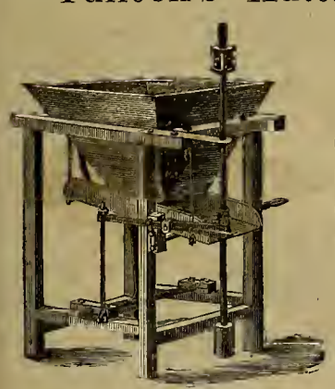

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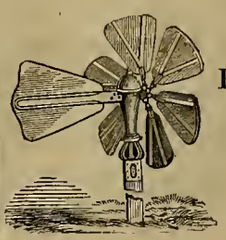

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Again thanking you for your promptness in securing my patent, I remain, obediently yours,
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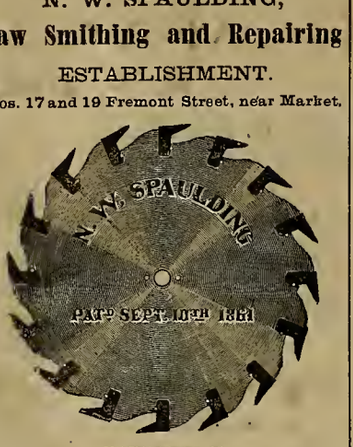

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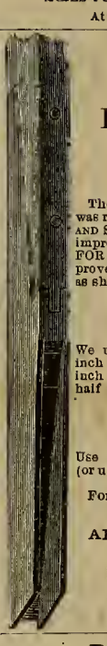

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The Improved Chisel here illustrated was recently patented through the MINING AND SOIENTIFIO PRESS Patent Agency. The improvement is adapted to all CHISELS FOR MAOHINE OR HAND USE. The improvement consists of a Chisel in two parts, as shown in the engraving.

For Machine Use

We use TWO STEMS. From one-fourth inch to one-half inch, use one-fourth inch stem. For all Chisels from one-half to one inch, use one-half inch stem.

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Use from THREE TO FOUR SOCKETS (or upper portion) for a set of Chisels.

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At a Stated Term of the Circuit Court

of the United States of America of the Ninth Judicial Circuit in and for the District of California, held at the court room in the city and county of San Francisco, on Thursday, the 30th day of September, in the year of our Lord one thousand eight hundred and seventy-five. Present—The Honorable Lorenzo Sawyer, Judge.

Nicholas Seibert, complainant, vs. Wm. T. Garratt, defendant—In equity.

DECREE.

This cause came in to be heard at the February Term, A. D. 1875, of this Court and was argued by counsel and thereupon upon consideration thereof, it was ordered, adjudged and decreed, as follows, viz: That defendant, William T. Garratt, was not the first or original inventor, or discoverer of the improvement or discovery claimed by him, in snd by thosa certain reissued letters patent of the United States, number five thousand three hundred and twenty-eight (No. 5328), for an alleged new and useful improvement in lubricators, issued to said defendant, William T. Garratt, on the 18th day of March, A. D. 1873, and is not entitled to a patent therefor, and that said reissued letters patent, number five thousand three hundred and twenty-eight (No. 5328) are declared void and the same are hereby vacated and set aside by reason of their interference with those certain letters patent of the United States, number one hnndred and eleven thousand eight hundred and eighty-one (No. 111,881) for a new and useful improvement in lubricators, issued to complainant, Nicholas Seibert, on the fourteenth (14th) day of February, A. D. 1871.

It was also further ordered, adjudged and decreed that complainant do have and recover of and from defendant his costs and expenses to be taxed herein.

(Signed) LORENZO SAWYER,
Circuit Judge.

The above decree has reference to "Seibert's Eureka Lubricator" for oiling the valves and cylinders of steam engines.

It has a glass gauge and condensing pipe, or reservoir, with a regulating feed valve, and works as follows: As the water of condensation is admitted, under the oil, just so fast the oil passes out at the top through a pipe into the steam pipe to oil the valves and cylinder.

Parties who infringe or purchase the infringed lubricators, will be held strictly responsible.

N. SEIBERT, Patentee,
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BY DEWEY & CO., Patent Solicitors.

SAN FRANCISCO, SATURDAY, NOVEMBER 27, 1875.

VOLUME XXXI Number 22.

Notices of Recent Patents.

Among the patents recently obtained through Dewey & Co.'s SCIENTIFIC PRESS American and Foreign Patent Agency, the following are worthy of mention:

AN IMPROVED CARRIAGE.—Richard L. Ogden, Kimball Manufacturing Company, San Francisco, Cal. This is an improvement on carriages which are provided with tops which it is desirable to open or close at pleasure, such as landaus, etc. The improvement consists mainly especially in a novel construction of the front so that it can be folded down forward and yet allow the top to fall back of the driver's seat. In the ordinary way of construction the front posts which support the top are hinged at their lower ends, so that they can be turned forward and carry the front part of the top with them. This top, however, must pass over the seat and lie across in front of it, which presents an awkward and unsightly appearance, as well as being inconvenient. Capt. Ogden's improvement is to split the front posts part of their length diagonally, making a joint so that the upper part of the post can be turned back as the device is forced down. The arrangement is such that the cross bar or rounded front of the vehicle falls just behind the driver's seat, making the whole look compact and neat, and remain entirely out of the way. Several carriages made for the Palace hotel have this improvement, and were exhibited at the late Mechanics' Institute fair.

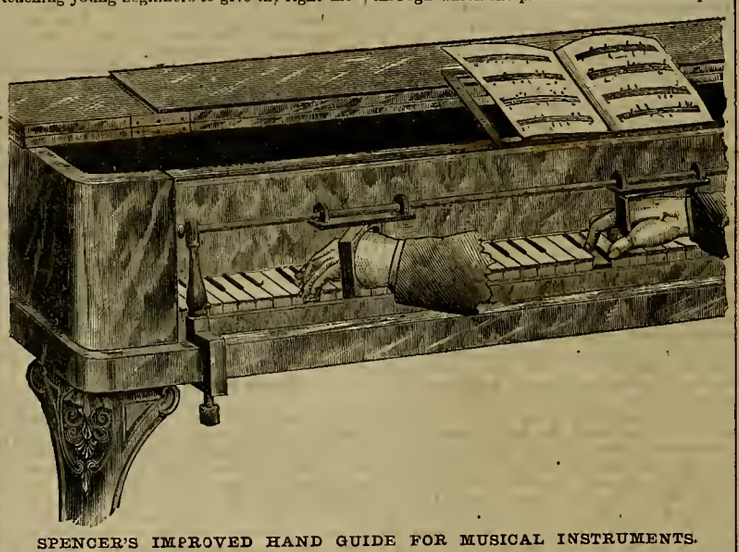
WATER-TIGHT JOINTS FOR COCKS AND FAUCETS.—Wm. C. Bussey, San Francisco. This invention relates to that class of cocks, valves and faucets in which a small shell which surrounds the water pipe must be turned to a certain point in order to connect the water passages and allow the water to escape, and which must be turned so as to disconnect the passages in order to cut off the escape of water. The invention is specially applicable to basin faucets. The improvement consists in the employment of India rubber to form the inside portion of the shell and move against the water pipe. By the use of the block of India rubber a perfectly tight joint which will not leak is provided. The frictional surface of the India rubber will be lubricated by the water so as to make it work quite easy, while there will be no wear of any consequence either on the rubber or on the pipe. The same arrangement can be applied to cocks, valves and other moving joints where it is desired to make a steam, water, or gas tight joint.

IMPROVED LIFT PUMP VALVES.—Fred. A. Ruhl, Stockton, Cal. This invention relates to certain improvements in the securing and guiding of lift pump valves, and also in a novel method of securing the pump rod to the upper valve box. In the construction of valves for lift pumps much difficulty has been experienced, first from the insecurity of the fastening of the lower part of the lower pump box, which being simply screwed on is liable to become loosened and gradually turned off by the jar and shock of pumping, so that it finally falls to the bottom of the well and is lost; or if made too light for this, it becomes so rusted to its seat that it is impossible to remove it for repairs to the valve. The valves themselves being guided by single or double spindles passing through holes in cross bars are very liable to become clogged and fixed by sand, which wedges into the guide holes. Mr. Ruhl's invention contemplates a simple and easy method of securing the parts of the box together and at the same time providing guides for the valve which will not clog.

PRINTING ROLLERS.—Wm. H. Bell, San Francisco. This invention comprises certain improvements in hand printing rollers, such as are employed for marking or labeling articles. It consists in certain novelties in construction, by which the inventor is enabled to mount different sheets of type upon the same roller and secure them firmly without nailing or other fastening. It also consists in a means of securing the printing and inking rollers in the frame, so that they are held to their places without springs, and the printing type are always brought into contact with the inking rollers by the action of putting the machine upon the surface to be marked. The device which strains the belts into place also serves to bring the rollers into position to commence marking by gravitation by simply lifting it from the surface.

Hand Guide for Keyed Instruments.

We give on this page an illustration representing an improved hand guide for keyed instruments, devised by Mr. M. M. Spencer, of Washington, Alameda Co., Cal. The object of the device may be seen at a glance. The main object is to give a rest for the hand, to keep it in a proper position, so that the beginner shall learn to strike the keys properly. It will assist young persons when they are being taught the correct way to hold the hands. Many teachers will recollect the difficulty they experience in teaching young beginners to give the right motion with the hand and wrist, and this invention will lessen these difficulties.



SPENCER'S IMPROVED HAND GUIDE FOR MUSICAL INSTRUMENTS.

If the keys are struck by the fingers properly, it follows that the wrist will be in the proper position.

The clamps, etc., of this apparatus are of wood, the bar being made of steel. Where the bar fits into the slot it rests on a piece of rubber, which can be raised or lowered to suit varying lengths of fingers in different persons. The device is arranged to fit upon any square piano, and the inventor claims that by its use six months' time is saved in elementary instruction on the piano. He can be addressed for further particulars as above.

AN Industrial Institute has been organized in San Jose, Santa Clara county. Any person in the county of Santa Clara engaged in manufacturing or producing any article for sale, either by mechanical or chemical process, or engaged in the business of horticulture, floriculture or viniculture, may become a member of the Association upon subscribing to the constitution and by-laws. The Institute will be governed by a Board of Directors. The meetings will be held on the first Wednesday of each month. The following were elected as officers for the ensuing year: President, John W. Coombs; Directors, H. A. Kienette, R. F. Peckham, Robert Page, Albert Lake, C. S. Creydenwise and D. B. Moody; Secretary, S. J. Hinds.

THE hoisting works on the Blue lead, above Willow valley, Nevada county, were burned last week. The fire is supposed to have been the work of an incendiary.

An Improved Dry Amalgamator.

Dr. Edwin J. Fraser, of this city, has recently patented, through the agency connected with this office, an improvement on an amalgamator previously patented by him and described some time since in the PRESS. The machine first patented consisted of one or more cylinders rotated inside of a box, which was partially filled with quicksilver. The cylinders were provided with projecting longitudinal wings or buckets, which served to carry the dry pulverized ore, as it was fed into the box under the surface of the quicksilver and around the opposite side of the cylinder, where it was released and allowed to run through the quicksilver to the surface, the object being to ensure the contact of the particles of metal with the quicksilver.

The improvement consists in the employment of a submerged shaking screen on the discharge side of the cylinder or cylinders, through which the particles of ore have to pass in rising to the surface of the quicksilver, and thus be separated or scattered, so as to ensure the contact of every particle with the quicksilver and prevent the too sudden rising of the particles or masses from carrying off quicksilver through the discharge spout.

Below the surface of the quicksilver or the tailing chamber of the box, or next to the rotating cylinders, is mounted the screen; and to this screen is imparted a shaking motion, so that the particles of ore, when they leave the cylinder and attempt to rise to the surface of the quicksilver, will be caught by this shaking screen and scattered, and the force of their upward movement broken for the purpose above mentioned.

A SAND BLAST machine may now be seen in operation at Heverin's marble yard, on Jackson street, between Montgomery and Sansome. It was brought to this coast by Sumner C. Bugbee. We will shortly give a detailed description of this machine for the benefit of those who are unable to examine it.

THE railroads, telegraph lines, bridges and stock have been heavy sufferers by the late storm, which appears to have been general throughout the State. These losses are but trifling, however, when compared with the benefits which will result to the farmers and miners.

THE Virginia Relief Committee, at a meeting last Thursday, telegraphed to San Francisco for a large amount of wearing apparel and groceries. They also decided that they would need about $10,000 in coin a month through the winter.

New Mineral Districts and Mining Enterprises in Central Nevada.

A correspondent sends us a cheerful account of mines and operations in Hot creek, Tybo and adjacent districts in Nye county, Nevada. The discovery of rich ores in that neighborhood is not a new thing, but dates back nine years or more. The retarding causes common in these far off districts appear, however, to have been more potent there than usual, nearly defeating the efforts of the early prospectors to keep their foothold in the country. Under the great changes since wrought it has become possible for miners to more thoroughly examine that region, which promises to more than realize the expectations first entertained of it.

The surface ores first found in the Hot creek district were of a very high grade. But all the miners having left during the White Pine excitement, the mill put up in the district in the summer of 1868 following them, but little was done here until a year or two since, and now it would appear better prospects than ever before have been struck and the miners are calling for another mill, some furnaces also being required for smelting ores.

From Tybo, twelve miles further south in the same range of mountains, the reports are especially encouraging. Here a large population has been gathered, towns, mills and furnaces built, and bullion is being produced in quantities. The Tybo Consolidated mining company, with but one of the several furnaces they intend to run in operation, and before their large mill, about completed, has yet started up, are turning out $60,000 per month, not more than a tithe of what their mine could be made to produce with reduction works of sufficient capacity, such as they design erecting at an early period. This company, in a liberal outlay of money, have laid here the foundation for a large and profitable mining business and will have earned in a legitimate way any success, however large, that may attend their wisely applied means and well directed efforts.

The mining estate of this company embraces a large number of claims, either one of which would in itself constitute a good operative property, two or three of these claims being possessed of a merit not less pronounced than the best mines at Eureka. One of these mines, the "Two G," so called, has been opened by means of numerous shafts, drifts, cross-cuts and tunnels, to a vertical depth of 323 feet—388 on the incline, and with this course of the vein 800 feet, these workings having developed several chimneys of ore of high grade and great magnitude.

So encouraging do the inhabitants of Tybo consider this prospect of the district that they are earnestly agitating the question of an early extension to that point of the narrow gauge railroad lately completed from Palisade to Eureka. The mineral developments being made in the Hot creek and Tybo regions will be no surprise to those who have ever visited that country or kept themselves well posted in regard to it. In fact, only capital and increased facilities for transportation, and the various improvements lately effected in the business of mining itself, have been necessary to start this remote section of Nevada into life, as these same advantages will serve to open up also other rich mineral districts in the distant and now isolated portions of that State.

RIVER AND HARBOR IMPROVEMENT.—The following are among the appropriations asked for the fiscal year ending June 30th, 1877, in the report of the Chief of Engineers of California: San Francisco harbor: for Fort point, $60,000; for Lime point, $60,000; for San Diego, $50,000; Fort Canby, Columbia river, $15,000; for improvement of Oakland harbor, $250,000; improvement of Wilmington breakwater, $100,000; Sacramento and Feather rivers, $200,000; Upper Willamette (Oregon), $50,000.

A PUBLIC trial of the Mindeleff process, recently described in the PRESS, was given this week. The engineers have reported formally on this process, and we will next week publish an abstract of the report.

CORRESPONDENCE.

Mining Matters in Colorado.

MESSRS EDITORS:—Mining in Colorsdo shows a steady snd uniform progress, with a rapid increase in the yield of bullion. It is no lonsgr csrried on as in ths olden time, but with the csre snd skill requisite for success in sny ordinsry line of business, and the beneficisl effects of this chsnge are everywhere evident. All of the older districts are being stesdily developed and made to prodnce largely in silver and gold. These Rocky mountains have not been hslf prospected yet, snd new mining belts of great riobness are fouud every season.

In 1874 Colorado turned out $3 086,023 in silver, $2,176,624 in gold, $100,197 in copper, and $73,676 in lead, or a total of $5,436,520. The production of the past ten months has already exceeded these figures, and that for tbe year will be between $7,000,000 aud $8,000,000, or second only to that of California and Nevsda. Gilpin county in the same time has alresdy shipped more gold than the entire prodoct of 1874, which was $1,836,000.

Gilpin county is the oldest and richest of the gold districts, with Central, a city of 4,000 inhabitants, as its metropolis. Here in a spsce two miles long by one half mile wide are some thousands of gold quartz lodes, only a part of which hsve proved productive, which, notwithstanding drawbscks snd temporary suspensions, have yielded $27,000,000 since the first discoveries of 1859. The Gregory and Bobtail have each produced over $3,000,000, aud tbe Gunnell and Kansas nearly as much. The Burroughs, Leavitt, Briggs, Illinois, Bates, California, Roderick Dhu and others have also proved surpassingly rich and very remunerative. Owing to various causes these snd other mines were worked only about half the time previous to 1874.

The extrsvagance, ignorance and worthless processes of former yesrs have given place to skill and ecocomy in mining, and gratifyiug profits are now obtained in place of loss and disaster. All of the above named mines are worked to depths of from 500 to 800 feet, and the veins are found to improve steadily in size and value as depth is gained. Many claims or small properties are being consolidated under one management, and a vast saving is effected thereby. What is needed here, and more especially in the newer districts, is capitsl for the development of mines and the erection of mills and reducing works. Eastern companiea who operated here generally failed, and work is now mostly conducted by Colorado miners, most of whom sta'ted in without money, but who have generally been very successful. The causes of former failures were due to the fact that the cost of labor and supplies were three or four times as much ten years ago as they are at present, and from ignorance of the nature of Colorado ores, and also on account of many worthless processes introdnced.

In the lsrger mines at Central gold ores csn be mined snd hoisted for $2 per ton, and milling costs about $2 more, while expenses of coal, wood, transportation, etc., are about $1 additional, making the total outlay per ton, $5. The smaller mines cannot be worked quite ss cheaply. Where ores are milled by other parties than the mine owners the cost is abont one dollar additional per ton. The ores of Gilpin county usually yield under tbe stamps from $5 to $20 per ton, although double and trebie the last figure is ofteu obtained. From many of tbe mines about ten per cent. of the mineral can be selected as it comes from the shaft tbat is rich enough to sell to the smelting works, where it brings from $50 to $150 per ton, being honght on the basis of a charge of $35 per ton for treatment.

At Central, the Bobtail employs 100 men in the mine (worked through a 1200-foot tunnel) and 30 men at the mills and elsewhere; also 90 stamps, and 75 tons of ore are mined and milled daily of sn average value of $10 per ton. Some ore is also sold to the smelting works, and altogether a profit of $10,000 or $12,000 is derived monthly. Monthly cost for coal, $1,500; labor, $7,000; other expenses, $2,500. The Briggs brothers' part of the Gregory and Briggs mines, 1,000 feet long, is worked to a depth of from 500 to 700 feet, employs 60 men and 50 donble issue stamps, mining and milling 50 tons of $8 ore daily. The total expense here is a little less thsn $5 per ton, the mill being immediately over the miue. The remaiuder of this lode produces nearly as much. The Knnsas and Burroughs, 3,000 feet under one manssement, produces nearly $20,000 monthly. The Gunnell, Fiske, Kent County snd Gregory Second lodes have all developed large bodies of rich orc recently, yieldiug from $15 to $40 per ton, and each of tbese mines is now turning out $15,000 per month in gold. A hundred other lodes are worked that yield from $10,000 down to a few hundreds per month.

Except in the case of the Briggs mill, all of these stamp mills are run at the slow rate of from twenty to thirty-five drops of the stamps per minute, it being claimed that a slow rate of speed saves more gold in this region than a fast one. About fifty per cent. of the gold contained in ths ore is ususlly saved. During the year ths sversge number of stamps kept in motion is over 600, locsted in 23 mills, crnshing 125,000 tons of ore worth $1,250,000, as near as csn be estimated.

There are many less extensive gold districts thst are in a prosperone condition. The Gilpin County district has not been so except at intervals, until within the last eighteen months. The recent encouraging developmeuts and retnrns have really been but a work of prepsration for the greater operations to follow. All of ths leading mines show rich ore bodies in ths lowest workings, which hss cansed a general revival in businsss and among the mines.

Twenty milee southwest of Central is Gsorgetown, with 4,000 people and the best developed silver mines of Colorado. In this county (Clear Creek) 12,000 lodes have been recorded, hundreds of which have already proved very valuable. In 1866, the first year of silver mining, the silver prodnct was $500. In 1874 the silver yield was $2,266,000, obtsined from 9,490 tons of ore, giving the enormous aversge of $237 per ton. The lodes hsve veins from a tew inches to ten feet wide, snd the crevices are, on some lodes, 40 and 50 feet wide. The gold lodes of Central range from two to twelve feet wide. The Dives or Pelican lode, near Georgetown, is the best silver lead yet fonnd in Colorado, bnt is mostly shut down by litigation. It has produced $60,000 in a single week, and has a million dollars' worth of ore in sight. The Terrible gsve a profit of $88,000 last year, emnloying 100 men. The Hukill, Colorado Central and eeveral other mines did nearly as well.

The Georgetown mines will turn ont over $3,000,000 for the yesr 1875. The value of the ore shipped to the Esst and to Europe during tbe last ten months is nesrly $1,500,000. There are three reducing mills, one using the Bruckner cylindere and two the reverb ratory furnaces. They will turn out silver bricks to the value of $1,000,000 during the year.

The Boston aud Colorado smelting works at Black Hawk, Gilpio county, have the Swansea process snd ship silver bricks 999 fine to the valne of $1,500.000 this year. Thia comes from the silver mines of Clear Creek, Park and Boulder counties. They also annually ship matte to Boston for separation contsining gold to the value of $600,000, chiefly from the mines about Central.

On both sides of the msin range of the Rocky mountains, immediately south and west of Georgetown are the Snmmit County and Hall Valley silver mines, having very lsrge and rich veins, but from their inaccessibility having yet been but little developed. Still further south are the Park County or Mount Lincoln mines that yielded $596,392 in silver in 1874. Here is a branch of the Boston and Colorado smelting works, and another similar establishment has lately started up also chlorination works. The Moose, Hiawatha, Dolly Varden snd other lodes are enormously rich. The character of these ore deposits resemble those of Utah as far as "pitch" and direction go. Mining at this point dstes from 1871.

Twenty miles northwest of Central are the Caribon silver mines, and here is a hill that is one vast network of silver veins. The Caribou mine employs nearly 100 men, yields twelve tons of ore daily, worth $80 to $100 per ton, treated at the company's reducing works, where Bruckner cylinders are used. The product of the mine for the year will reach $350,000. The cost per ton of treating the ore is about $8. Main shaft is 500 feet deep, with immense quautities of ore in all the lower workings—crevices from four to eight feet wide. This mine was purchased in 1873 for $3,000,000 by the mining company Nederland of Holland. The No Name, Sberman, Native Silver, Idaho, Potosi and Poorman lodes show eqnally as well as the Cariboo did at the same depths, and are paying handsomely. The No Name chlorination works will start up next week. In the same county (Boulder,) are the recent wonderful telluride discoveries, that in some cases show wonderfully rich streaks or narrow veins of gold, but the main portion of ore treated givea a yield of several hundred dollars per ton.

Silver ores are treated at a charge of $35 per ton or are bought on that basis. Where the miuers own their own mills, as in the csse of the Pelican and Caribou, the expense of treating their own ore varies from $7 to $20 per ton, according to the character of the ores. The actual cost of other processes here is said to be from $15 to $20 per ton, except in the cases of the chlorinization works, and of blast furnaces, whiob are much less. Many of the latter are running at various points in Colorado, those at Golden being the most extensive. Large smelting works are also being built at Golden. Rosita, in Southern Colorado, has grown to be a place of 1,200 people from the development of its silver mines during the past two years. In Southwestern Colorado, among lofty ranges of mountains, is tbe San Juan silver region, surpassing all others in extent, breadth of lodes, and as a general thing in value of assays. Bot little bullion has yet been produced, owing to lack of works and facilities for transporting ore. Several smelters have lately begun operations there.

The placer and gulch mines of Colorado are worked out in many plaoes, but rich localities still exist and produce altogether from $300,000 to $400,000 annually. Chinamen are employed in several creeks and gulches.

A mining stock board has lately been established in Denver. Its operations are yet small but are steadily increasing. F.

Central, Colorado, Nov. 24, 1875.

The Missouri Gold Deposits.

The St. Louis *Republican* says: Professor Charles P. Williams, Principal of ths School of Mines at Rolls, returned last evening from an examination of the Mscon county gold placers, and is registered at ths Southern.

The Professor msde tbe exploration by request of Governor Hsrdin, who was in receipt of numerous letters from the new El Dorsdo requesting him to send np ths Stste Geologist to maks a scientific examiuation of the localities where the gold was fonnd.

Of course the Geological Board wae abolished by ths Legislatnrs last winter, and what wss left of the survey was transferrsd to the Rolls School of Miues, and Professor Williams may be considered as filling the position of State Geologist under the present very restricted and economicsl system. He is witbal an experienced ecientist, at the hesd of a corps of able instructors in the various branches of applied science, and very properly the Governor referred the letters to him with the request that he might satisfy the inquiries of his correspondents by an examination.

As Professor Williams will make a report to the Governor of his examination and analysis of the specimens brought away, he is until thst time very nnwilling to be committed to any opinion respecting the quantity, etc., which he hss or may hereafter form. He, however, imparted some general information regarding the formation in which the gold is found, of an interesting character. The Professor left St. Louis on Friday lsst, and has spent the intervening time in the exsmination of several localities in Macon county. He has taken samples from seventeen different localitiee for the purpose of assay on his return to Rolls, so as to obtsin the approximate yield to the cnbic ysrd.

The gold occurs in very fiue particles in the drift formation. The formation is composed of three strata of gravel, all giving gold in the psn, but as to whether it exists in paying quantities remains yet to be seen.

The drift covers a large area, extending from Mscon county northerly beyond the Iowa line. It is disclosed mostly along the Great Cbariton river; and from the fsct that the appesrance of the gold is widely dispersed, it being fonnd near Kirksville, in Adair county, where the most excitement prevails, places the euppositon thst there has been "salting" done out of the question. The underlying rook belongs to the carboniferous formstion.

The drift was transported to its present place from a direction west of north, and in the opinion of the Professor the parent beds could be doubtless traced to Minnesota.

The gold-bearing drift extends abont to the southern limit of the boulder zoue. Boulders of varions sizes are fonnd in the drift, of grsnite, sienite, hornblende, greenstone, trap and quartzite mixed with small pebbles of chalcedony aud rubies—some speoimens of which the Professor bronght away with him. The drift formation is estimsted is by him to be on an aversge sixty-four feet in thickness, forming in many places low hills seamed with gullies aud gulches, in which the "color" is sought for. Water for washing the gold in several localities is scarce, bnt ooald be brought there should the expense be justified.

Sheep Ranch District.

The Calaveras *Chronicle* says that in this district powerful stesm hoisting works are being erected on the well known Wallace & Ferguson mine. The machinery is now upon the ground, and being placed in position with all the dispatch possible. The engine is 45-horse power—of sufficient capacity to admit of sinking to any required depth. The ledge—the yield of which has been remarkable from the ontset—has been mined to the depth of 125 feet, a distance of 1,400 feet in length, without the aid of machinery. The mine has been very successfully worked for a number of yeara, and is to-day one of the most valuable mining properties in the State. When the new hoisting works are completed operations will be pushed with greater vigor, and on a more extensive scale than ever. Work is going actively forward at the Woods mine. Siuking has reached a depth of about 200 feet, the quartz having been of a fair quality from the snrface down. The scarcity of water during the dry season rendered it impossible to run but a portion of the stampa of the mill connected with the mine, but as that impediment no longer exists, the entire battery will be kept in motion in the future. The prospects of the mine are excellent. Splendid ore is being takeu from the Calaveras mine, located near the Woods. A new shaft is being snnk, which has reached a depth of about 175 feet. The old shaft is 400 feet deep. The ledge is a very wide one, all good milling ore. A fine 20-stamp mill is owned in connection with the mine. Work is being energetically pushed with good results.

CARE IN HANDLING MACHINERY.—The general thoughtless handling of machines, oleaning parts of machines while in motioo, adjusting parts which should be at rest while being acted on, and other habits contracted by familiarity, should be avoided. A machine ought not to be trifled with. It has no remorse or pity. Once in its power, there is no escape with impnnity. It should be msnaged with caution and constsnt care, for in dealing with mschinery it is always better to be foolishly careful than foolishly careless.

New Rules of the San Francisco Stock and Exchange Board.

At a recent meeting of the Ssn Frsncisco Stock and Exchsnge Board, the following additional rulee governing the transsotion of business by its membsrs were adopted:

No assembly of members of this hoard outside the board rooms, for the transaction of stock husiuess, shsll at any time be allowed, snd ths rooms shall remsin open for ths holding of iuformal sessions during such hours, between 10 o'clock A. M. and 5 P. M., as shall not be requried for ths regnlar sessions of the hoard. All trsnsactions msds during such informal eessions may be recorded in a book kept for the purposs, and after having been initisted by the psrties thereto, shall bs binding in the same manner as those of the regolar sessions. Any adjournment of the bosrd shall affect its informal as well ss its regular sessions, and the hoard rooms shall remain closed duriug the whole time of such adjournment.

The assistant secretary shall be in attendauce during the informal sessions of this bosrd to record all transactions at the request of members.

All receipts and deliveries reqnired by the purchase and sale of shares of stock must be made directly between the members of this board; and any member who shall, in completion of such stock transactions, either receive the certificates from or deliver them to any person other thsn a member of thie board, shall be fined $500 for the first offense, and for the second shall be expelled.

Whenever the members of this board shall have assembled for tbe transaction of stock business, it shall be the duty of esch member in every transaction with non-members to demand the name of some other member of this board as his broker for the completion of the ssme, and in case of a violation of this rule on tbe part of the member, the penalty for the first offense shall be a fine of $500, and for the second offense expulsion. In the event that the non-member does not give the nsme of a member of this bosrd as his broker, or in the event the broker so named shall fail to complete suoh contract according to the rules of this board, immediately after its having been made, the trsnssction with such non-member may, at the option of the member, be oonsidered null and void. Stock transactions inside the bosrd room can only be completed between members thereof, snd visitors trading among themselves must give to eacb other respectively the name of some member of this board ss their broker.

The admission ticket is issued on conditiou thst the holder thereof will abide by all the rnles and regulations of the San Francisco Stock and Exchange Board, and for any violation thereof, the board reserves the right to cancel the ssme and deuy the holder admission to the rooms of the hoard.

No member of this bosrd shall employ directly or indirectly a non-member to buy or sell mining stocks dealt in at the bosrd, under a penalty of one thousand dollars for each offence.

Prospects in Plumas County.

The Plnmas *National*, in spesking of "hard times," says: We hear on all sides the cry of "hsrd times," "money scarce," "awful dull," etc., and occasionally some poor devil seems to think that the conntry is in a bsd way, and is likely to collapse or "bnst." We don't believe anything of the kind. For two or three good reasons, just at this time there is a heavy pressure, and a scsrcity of money. The past season has been a very poor one for the hydranlio miners, and as they phrase it, "there hse not been water enough to drink," consequnently that source of revenue has almost entirely failed, and the farmers, who have been blessed with abundant crops, are selling them off for a small part cash and the balauce on time. The failure of the water season, and the two money panics in San Francisco have almost entirely stopped the outlay of money by ontside parties in the mines. Another thing which works toward a scarcity is that the merchants have been purchasing large stocks of winter gooda and supplies, and have taken out pretty muoh all the ready money in the conntry. There is only oue way—"scratch along." The heavy rains of the past week would indicate that the water sesson will be a good one, and already the miners are commeucing active operations again. In a short time the riffles will be yielding the precions metals, and aa the majority of the claims are all in good condition for work, we may reasonably expect a successful season. The good results will start up the outside capitalists, and money will again be plenty, and the cry of "hard times" be only a "memory of the past." The hidden mineral resonrces of Plumas have only just commenced to be developed. It has a futnre second to no mining county in the State, and it is folly to snccumb to the "blnes," simply because the present season is a little hard.

GAIN IN CATTLE.—Upon this question one of onr exchanges ssys: "It takes eleven pounds of milk to add one ponnd of live weight to a calf, and an ox that weighs 1,300 pounds will consnme twenty-two pounds of hay in twenty-four honrs to keep from losing weight. If he is to fatten he mnst have just twice that amount, when he will gain two ponnds a day. This is one pound live weight to eleven ponnds good hay. To obtain fifty cents a hundred for his hay, a farmer must sell fat steere at $5.50 per hundred poonds.

SCIENTIFIC PROGRESS.

Black Oxide of Manganese for Destroying Noxious Gases.

Don Juliné de Valmaginl, of Vienna, claims to have discovered a new and valnable disinfectant in the ordinary black oxide of manganese. In tbe *Bayerisches Industrie* he writes as follows:

It is well known that ozone is the only snbatance which will rapidly decompose badly smelling gases; bnt np to this time we possess no metbod of preparing ozone cheaply and in large quantities. I bave fonnd by a series of experimenta that ozone is present in black oxide nf manganese in largo quantities, and that it is continually regenerated. It was not bitherto known that many kinds of oxide of manganese (manganite, pyrolusite, etc.) were ozone carriers; bnt I can prove that they not only possess all tbe properties of the known ozone bearers, bnt are excellently adapted to nse in all cases where ozone haa proved usefnl.

(*a*) Ozeno test paper, prepared with starch and iodide of potassinm, is immediately blued by the liberation of iodine without any acid being addod.

(*b*) A solntion of chemically puro iodide of potassinm, is at once decomposed hy dropping into it a fragmeot or aome of tbe pulverized mineral, tbe liberated iodine turning the solution brown. Tbe liberated iodine is recognized by all its reactions, such as turning hlue witb starch paste, dissolving in chloroform or bisulphide of carbon, subliming at the boiling temperature, aod the characteristic odor.

(*c*) Chemically pnre hinoxide of manganese, prepared artificially, shows the same reaction in chemically pnro iodide of potassium as given above at *b*, reacting jnat like tbe natural prodnct.

(*d*) When the pnlverized mineral is strewn npon chemically pnre silver and moisteoed, tbe silver is browned at once hy tbe formation nf oxide of silver; on heating, the brown spot entirely disappears, proving that it was not sulphide of silver which was formed.

(*e*) The air is also ozonized by contact with the snrface of tbe miueral or of the powder.

(*f*) The reaction abont to be mentioned now was indeed known, bnt was never considered as an ozone reaction, namely: Tincture of guaiacum is colored deep hloe by the oxide of manganese.

(*g*) Black oxide of manganese is also well adapted, by its ozonizing power, to destroy putrid gases, such as sulphuretted hydrogen, and pntrefactive gases, and that too in a short time.

From this it may he concluded that many kinds of manganese ores could meet with extensive nse for sanitary and building purposes.

SONOROUS FLAMES.—M. Dechorme, in the *Comptes Rendus*, reports some interesting observations on the prodnction of sonnds by blowing throngh a tnbe into a flame. He considers that the action of the air is chemical rather than mechanical, and that the sonnd results from small explosions that are prodnced incessantly on combination of the oxygen of the air with the hydrogen or carhon of tbe flame, in incomplete combustion. For the sound to occnr, the presence of air, or of an inert gas mixed with the oxygen, seems necessary. In one of his experiments the white flame from a Bunsen bnrner, with the lateral apertures closed, gave a very strong sonud when blown into with a tube, whereas the blne flame produced when the apertures are open gave a very weak one, or none at all. Carbonic acid alone, or nitrogen, or oxygeo, or chlorine, blown into a flame of ordinary gas, gave little or no sound; protoxide of nitrogen gave a weak sonnd, bnt more acnte than that obtained from air.

ANALYZING SOUND.—A curious instrument has been exhibited before the Academy of Sciences, which is called by its inventor an "analyzing cornet." What is commonly termed sonnd is, as is well known, made np of an infinite nnmber of mnsical notes, and these the cornet in qnestion is designed to analyze, just as a prism separates a ray of white light into its colored components. In appearsnce the instrument is described as resembling a trumpet, having a nozzle to fit to the ear, instead of a monthpiece, and furnished with holes like a clarioeet. Provided with an instrument of this kind, it is said that the roaring of a cataract or the howling of a tempest may be resolved by the listener, skilled in the necessary fingering, into the softest melody, which is heard, however, by himself only.

THE POPULAR BELIEF that lightning will not strike a heech tree receives additional support from the following: In a recent thunder shower in Goshen a beech and a maple standing near together, with branches interlocking each other, received an electric bolt from a passing cloud which shattered the maple and passed into the earth through a prostrate hemlock lying near, which was stripped of its bark nearly the whole length. No trace of the lightning was left npon the beech.

THE PRACTICAL VALUE OF SCIENCE.—When the cultivation of cochineal was introduced into the Canary islands in 1840, tbe prodnct was worth twelve francs per Spanish pound; but mainly owing to the increased nse of aniline colors, first made known to the world by a German scientist, the price fell to four francs in 1870, and to two and a half francs in 1873.

Muscle and Gunpowder.

In the *Journal* for April, 1874, we explained how tbe amonnt of work tbat food is capable of performing is calculated, and how this theoretical amount compares with the work actnally done by the human machine. According to the data tben assumed, the effective result is about one-fifth of what ought to be obtained hy tbe combnstion of the food. If this is less than we might have expected, it is better than is found in the case of the atoam engine, the "nsefnl effect" of which is only from three to ten per cent. of what the transformation of the heat of the fnel ioto work ought to yield.

According to calculations recently made by M. de Saint-Robert, and communicated by him to the *Revue Scientifique*, the work done by gunpowder in modern fire-arms is rolatively much greater than the best results obtained with the steam-engine, and nearly eqnals the average of the human machine.

According to Moleschott's estimate, the combnstion of tho average daily food of a laborer ought to yield a mechanical equivalent of abont 8,880,000 foot-ponnds; bnt tbe average work he does is only ahont 2,000,000 foot-ponods. In other words, tbo "usefnl effect" is ahout 22 per cent of the total available work. Helmholtz estimates the external work of a man as one-fifth of the mechanical power contained in his food.

Fire-arms, like the human hody, are machines for converting heat into motion, the heat being obtained by the combnstion of gunpowder. The gases evolved in this combnstion give motion to the projectile by their expansive force, and at the same time a certain amonnt of heat disappears, heing transformed into work. Tbe total work accomplished by the powder, independent of the recoil, is eqnal to "the prodnct of the weight of the projectile hy the hight to which it would rise if projected vertically in a vacnnm." The "useful effect" is measured by the ratio between tbis work aod the mechanical eqnivalent of the heat set free by the combnstion of the charge.

If we take for illnstration, as M. de Saint-Robert does, a rifled cannon, whose bore has a diameter of 7.5 centimetres (ahout 3 inches) and wbich fires a shell weighing 3.7 kilogrammes (ahont 8.14 ponnds) with a charge of .55 of a kilogramme (abont 1.21 ponnds) of powder, experiment shows that the velocity of the shell when it leaves tbe gun is abont 400 metres, or 1,300 feet, per second. The hight from which it would have to fall to acquire this velocity is 8,158 metres, or abont 26,600 feet; and multiplying this by the weight of the ball, the work actnally done by the powder is found to be about 216,500 foot-pounds.

On the other hand, the calculated mechanical eqnivalent of the heat evolvod hy the combustion of .55 of s kilogrsmme of gunpowder is abont 1,050,000 foot-ponnds. Comparing this possible work with the actual work as just given, we find the nseful effect of the cannon to he hetween 20 and 21 per cent., or a trifle less than the reanlt already found for the human machine.

The comparative cost in money of the work done in the two cases is quite another qoestion. Of conrse the gunpowder hnrnt in the cannon is a mnch cheaper fuel than the food consumed by the msn. In this respect the steam-engine, though it utilizes a smaller percentage of the heat from its fuel, has a decided advantage over the hnman machine. Assuming that the labor of eight men is eqnivalent to one horse power of the engine, it is evident that the cost of the former will be many times greater than that of the latter.—*Journal of Chemistry.*

Magnetization of Ilmenite.

Dr. T. L. Phipson says: "Some fine specimens of ilmenite (titanic ironstone) having been sent to my laboratory from Norway, it seemed a good opportunity to investigate the magoetic properties of this mineral. The composition of that which served in my experiments was: Titanic acid, 24.60; protoxide of iron, 72.10; Fe S_2, 2.06; manganese, trace; silicic acid, 1.24. Total, 100.

"Its specific gravity was 4.8, and it acted with tolerable energy npon the magnetic needle. From the inspection of this action, I concluded that it was possessed of a very considerable number of poles in close proximity to each other, so tbat scarcely two closely adjacent parts acted in the same manner npon the north pole of the needle; hence it was evidently built up by a mass of crystals. An elongated rectangular piece of this mineral was separated by a blow of a hammer; it measnred 1¼ inches in length and was abont ¾ inch broad. This was placed npoo a table and submitted to magnetization by friction with good magnets for upwards of an hour. It was then found to have a pole at each extremity, which it certainly had not before, and was accordingly snspended to a piece of silk, and hung up in a quiet corner of the laboratory. It pointed constantly towards the north, and returned to that position when deviated. It continued to do so for some weeks; but one morning I found it pointing east-west, or nearly so; it had lost its acquired magnetism entirely, having retained it for rather more than a month.

"This loss occurred rather suddenly, and I believe that it coincided with a magnetic storm of some intensity which happened about the time. If these experiments could he continued by some who have more time to devote to them, they might lead to some interesting results. It is possible that some minerals that show action npon the needle might he made magoetic in the above manner."—*Chemical News.*

MECHANICAL PROGRESS.

Admitting Steam into the Cylinder.

The *Journal of the Franklin Institute*, in alluding to the statement in the text books that "It is desirable to open the steam ports and admit steam at the end of the cylinder toward which the piston is moving, before the latter has completed its stroke," pronounces this statement incorrect, and adds:

"The extreme difficulty of eliminating erroneous statements from previous publications, or from translated originals, especially after the many reiterations of error, is exemplified in the preceding qnotation from a recent text book.

"The original statement, made hy good English authority abont the years 1830 to 1835, has held its place in all text books of succeeding date, has gone to misinform German students on its travels, and has come to America, translated, to impart error here. As a general assertion it may be correct that 'it is essential, in order to insure good action of tbe steam, that a maximum cylindor pressnre shall be obtained at tbe very commeocement of the stroke,' but as applied to a rnnning engine it is altogether erroneous.

"For easy motion of an engine, the prevention of shocks and relief of bearings from excessivo pressure (and consequent friction and loss of power), it is desirable that as the piston approaches the end of its stroke the exhaust shall have been closed, so as to form a cushion that will absorb tbe momentnm of the reciprocating parts, and relieve the pressure on tbe side valve at its time of opening; and the back pressure will then be just that needed to give to tbe moving parts their proper velocity in the other direction. And then, after tbo center is well passed, the pressure of steam should be slowly admitted, reaching a maximum not earlier (perhaps for high pressure non-condensing engines) than 1 15 or 1-12 of the motion of the crank; while tbe cut-off should be effected, both by good action of the steam and for the good action of the engine, instantaneously. It may be possible with small sizes of ports and inadequate cross areas, or great length of passages, that steam cannot follow a piston at high speeds; but such possibility exists only with improper proportions for high speed, and should not be remedied by lead.

"The original statement of forty to forty-five years since, was not incorrect for the time, and, if the conditions are all given, is not incorrect to-day.

"About thirty-five years since the slide valve was made without lap; it just covered tbe ports at both ends. The skill of tho workman was taxed to see how exactly the one steam port should open and the other be closed. The motion then given to the valve was almost coincident to tbat of the crank, and the rate of opening was exceedingly slow, as both crank and eccentric bad just passed their centers. The valve motion was then usually transmitted from the eccentrio to the valve through light rocker arms aod rods, and there was more or less lost motion in the transmission. Under such circumstances there was a reason for lead of the eccentric, as well as valve, and both rule and reason bad a warrant in facts.

"When the lap valves were introduced much difficulty followed, so firmly had the theory of lead been established, but the workmen have long since learned, if the books have not, how to get the thnmp out of a slide valve engine. The effect of throttling the exhaust is in no way a loss of power, but is simply a loss of capacity of the steam cylinder. For a given boiler a little larger cylinder is needed to perform tho same work. There is, however, an absolute loss of steam and power on the back lead of the steam, and its recompense must be found in the ease of working and duration of the engine.

"These remarks do not apply alone to slide valve non-condensing engines. For engines of higher grade, in ecooomy for use of steam, the cutting off of the exhaust is a great practical gain. With twenty-four to twenty-six inches of vacuum, if the exhaust is closed (cut off) at one-fourth or one-third, a back pressure of vapor will pile np in the cylinder, to over one-half an atmosphere, and thns relieve, or partially relieve, the engine of the momentnm of the piston and part; and besides this the coudenser will have been relieved from any leakage of the piston itself, which leakage again will have been saved for effective working of the engine. Leakage of piston packing, witbio the limit of troublesome back pressure, thns becomes tolerable."

THE breaking up of large masses of cast iroo has, as our mechanical readers are well aware, heen a matter of considerable difficulty and expense. This is, however, according to the *Monîteur Scientifique*, now accomplished in the case of large gnns by placing dynamite st the lower end of the gun and filling the bore with water. The explosion of the dynamite, transmitting its force throngh the water, fractures the gun.

THE prodnction of spiegeleisen, which not long ago was confined to Prussia, was first begnn in France at the furnaces of St. Louis, near Marseilles, about 1866, by M. Jardan (who visited the Siegen district in 1864, where he learnt its manufacture), by the introdnction of manganiferous ores from Almeria and Murcia in Spain, Corsica and Algeria.

An Improved Locomotive.

A new engine, known as the Weston locomotive, and built by the Baldwin locomotive works of Philadelphia, has been pnt on the Boston and Albany railroad for trial. A saving of fuel of generally over thirty per cent. is claimed. This is effected by means of a peculiar firebox. In most locomotives, the long flues or pipes connecting the furnace with the smoke stack are directly opposite the door, and much of the fine coal is caught by the draft as soon as thrown into the furnace, and comes ont of the smoke stack in the form of dnst and sparks. With this boiler, however, the invention of a man named Weston, a firebrick arch over most of the furnace keeps down much of the fine stuff, and what does escape has to pursue a zigzag course through a consuming box—where the particles are stopped, and even the smoke is consumed—in front of which are the flues, only six feet long, instead of a dozen as in an ordinary engioo. This much for economy of fuel; and to provide still more for comfort, the smoke stack contains an arrangement by which what few sparks do get that far are carried off to the ground by pipes running beneath the engine. The locomotive is higher than most, and is extremely well proportioned. H. B. Klinger, who has it in charge, has been running it on the western end of the road, and comparing its work with that of the company's engines, with an avorage saving of 46 per cent. in fuel.—*Scientific American.*

A CHEMICAL PROCESS OF CONVERTING IRON INTO STEEL.—The Wilmington papers of a late date describe an exhibition given by Prof. Wm. Field, of that city, of a new process of converting cast iron into steel by chemical process. The process is probably a secret, bnt the manipulation is described. Some hundreds of ponods of ordinary cast iroo were first made, we anppose for purpose of comparison, and then the molten iron was taken in pots and ladles containing from twenty to twenty-five ponods, and "the amalgam" pnt into each. The metal after being stoved waa ready to be cast into molds, and in less than five minntes after the amalgam was put in the iron was converted into steel. A number of articles were cast from the metal—a bar of railroad steel, horse shoes, a razor aud plowshare. The tools were said to be of the best quality. The newspapers report that the steel may he made molleable by this process or as hard as is desired. If a part of the carbon which cast iron contains can be removed by chemical means as described above, the process will prove as valnable in opposition to the Bessemer as the latter was superior in most respects to the process of cementation.

THE causes at work for the destruction of boilers are not always well nnderstood, and the results which follow their operation are sometimes of a startling character. The Washington *Republican* cites the following instance, which occnrred recently on the Mount Vernon steamer *Arrow*: "The engineer, on arriving from Monnt Vernon, informed the captain that there was a slight leak in the boiler, arising from defective bolt heads. The captain promptly determined to have them replaced at once, and accordingly the boiler was 'blown off,' new bolts obtained and fitted in their proper places. Everything was pronounced safe, and the order was about to be given to pump up again, when 'crack' came an unmistakable metallic sound, which denoted more trouble. A short search developed the fact that a plate had broken nearly across its face. It was a clean, new fracture, without any flaw, and no discoverable reason for its occurrence. The plate had been in constant use for two years, and was made of the best material, and rolled especially for this boiler by order of the captain."

STEEL FROM THE ORE—SIEMENS' PROCESS.—Dr. Siemous is now erecting furnaces which will hold charges of ton tons and produco twenty tons of steel in twenty-four hours, by his new process; to effect this, thirty tons of pig and scrap are nsed. According to the *Practical Magazine*, the pig iron is made direct from the ore, dispensing with both blast furnaces and puddling furnaces. Extensive works are being erected at Towcaster, for bringing that very important invention into practice. The possibility of this feat has been long admitted; the need was, a furnace in which reduction could be effected perfectly at a low heat.

DANGERS OF SUPERHEATED STEAM.—The dangers of superheated steam form the subject of a timely article in the latest nnmber of the *American Engineer*. Steam is liable to become superheated, without any indication from the pressure gauge, whenever water gets low enough in boilers to expose the steam to heating surfaces. Superheated steam will in turn communicate its heat to the metal, and ignition may be prodnced wherever felt, wood, or other inflammable substance comes in contact with any portion of the boiler.

THE HIGHEST SUSPENSION BRIDGE.—A wire suspension bridge, which will be the highest structure of the kind in the world, is to be contracted over the Delaware river at Water Gap. Its Pennsylvania anchorage will be the summit of Mount Minsi, Mount Tammany forming the abntment of the New Jersey side. These peaks are 1,600 feet high. The length of the bridge will be 3,000 feet, and its cost $100,000.

Sales at S. F. Stock Exchange.

FRIDAY, A. M., Nov. 19.

135	Alpha		16
160	Andes		3@3
150	Baltimore Con	2½@2¾	
1515	Best & Belcher	3@3⅛	
120	Belcher	19@19¼	
100	Bullion		41
250	Chollar	61@59	
277	Con Virginia	264@260	
40	Caledonia		14
1340	California	56⅝@55⅞	
780	C Point	2@2⅛	
29	do	h 5	28
50	Exchequer	10½	
20	Empire M		4⅞
100	Europa		3
450	Florida	3@2	
100	do	s 30	2
310	Gould & Curry	15@15⅛	
60	Hale & Norcross	31	
1795	Justice	24½@24¾	
400	do	h 30	25@25⅛
300	Julia	10¾@11	
25	Kentuck		3
100	Kossuth	2⅞	
60	Leady Bryan		1¾
650	Leo	1⅛@1¼	
1030	Leviathan	2@2¼	
140	Mexican	17⅛@17	
140	New York	1⅞@1¾	
1445	Opbir	40¾@41	
50	do	b 5	41
265	Overman	44@43⅞	
100	Pacific		80c
300	Rock Island	2½@2⅝	
140	Savage	70@69½	
260	S Nevada	11@11⅛	
80	do	b 5	11⅛
255	Union	8@7⅞	
120	Utah	11	
3760	Woodville	3¼@3¾	
200	Yellow Jacket	67½@68	

AFTERNOON SESSION.

70	Advance	4@3¾	
60	Belmont	1¾	
60	Belcher	19	
40	Pacific Bel	27¼	
1000	Coso Con	1½	
695	California	56@55⅞	
100	Crown Point	27¼@27	
50	Con Virginia	261@260	
50	Chollar	60	
20	Eureka Con	13½	
935	Gila	3⅞	
55	G & Curry	15½@15¾	
200	Hersey	50c	
40	H & Norcross	30	
370	Justice	23¾@24	
300	do	h 10	24
370	Jefferson	4⅝	
215	Leopard	10¾@10⅞	
100	do	b 30	10¾
25	Meadow Valley	2¾	
50	Mansfield	1⅝	
100	N Coso	75c	
1245	Opbir	40½@41	
100	do	h 5	40¾
60	Overman	43@43½	
100	Potosi	40¾	
225	Raymond & Ely	18@17¾	
120	Savage	69½	
110	S Nevada	11¾@11⅝	
30	Utah	10¾	
150	Union Con	8@7⅞	
1067	Woodville	7¼@6¾	

SATURDAY, A. M., Nov. 20.

55	Alpha	16¼	
455	Andes	3½@3¾	
200	Amazon	1⅞@1¾	
245	Baltimore Con	2½@2⅝	
160	Belcher	19@19½	
10	Bullion	42	
545	Best & Bel	41¾@43	
50	do	b 30	42¾@43
150	Buckeye	1¾	
310	Chollar	63@61	
700	C Point	27@27⅛	
260	Con Virginia	261@260	
150	do	s 30	260@260
1580	California	57@58	
60	Caledonia	14¾	
50	Dayton	1¾	
305	Eureka Con	14½@14	
490	Gould & Curry	15¾@16	
120	Hale & Nor	33@32	
300	Imperial	8@8¾	
1040	Justice	25@25¾	
275	Julia	11¼@11⅜	
20	do	b 5	11¾
160	Jackson	1½	
215	Knickerbocker	1¾@1¾	
70	Leady Bryan	1¾@1⅝	
1930	Leviathan	2¾@2¾	
1000	Mexican	17¾@18	
160	Meadow Valley	2¾@2¾	
310	New York	1¾@1¾	
100	N Carson	25c	
1950	Ophir	42¾@43¾	
85	Overman	44@44½	
100	Pacific	80	
900	Rock Island	3¼@3⅜	
500	do	h 30	3⅜
10	Ray & Ely	16	
140	Savage	71@70	
305	Sierra Nevada	12	
100	do	b 5	12½
75	S Hill	7¼@7⅜	
100	do	h 5	7⅜
525	Union Con	8@8¼	
220	Utah	10@11	
6465	Woodville	6¾@7	
75	Yellow Jacket	69½@70	

MONDAY, A. M., Nov. 22.

70	Alpha	17⅛	
140	Bullion	45¼@46	
1245	Best & Bel	46¼@45¾	
100	do	s 30	46⅛
195	Belcher	20@20¼	
210	Bal Con	2¾@2¾	
30	do	h 5	2⅞
310	Buckeye	1¾	
515	Crown Point	28¼@28	
560	Con Vir	27@26¾	
20	do	s 30	28
50	Caledonia	15½@15	
4785	California	61@62	

SALES OF LAST WEEK AND THIS COMPARED.

THURSDAY A. M., Nov. 18.

135	Alpha	16	
60	do	17@17¼	
100	do	b 5	17
1455	Best & Belcher	38@37	
85	Belcher	19¼@19¾	
100	Bullion	41	
150	Baltimore Con	2¾@2¾	
270	Chollar	61@59	
1340	California	56¼@55¾	
60	Caledonia	14	
317	Con Virginia	264@260	
780	Crown Point	28@27	
25	do	b 6	28
50	Exchequer	10⅝	
120	Empire Mill	4⅞	
10	Europa	3	
450	Florida	3@2	
400	do	s 30	2
310	G & Curry	15¾@15¾	
60	Hale & Nor	32	
1765	Justice	25@24¾	
400	do	h 30	25@25¼
300	Julia	10¾@11	
24	Kentuck	2	
500	Kossut b	2⅞@3	
50	Lady Bryan	1¾	
1040	Leviathan	2@2¾	
650	Leo	1@1⅛	
140	Mexican	17@17½	
140	New York	1⅞	
1445	Ophir	40¾@41	
50	do	b 5	41
250	Overman	44@43	
200	Pacific	80c	
300	Rock Island	2½@2¾	
140	Savage	70@69½	
260	Sierra Nevada	11@11¼	
80	do	b 5	11¼
255	Union Con	8@7⅞	
120	Utah	11	
3460	Woodville	5¼@6¼	
200	Yellow Jacket	68@67½	
70	Chollar	66@67	
250	Exchequer	12	
707	Gould & C	16¾@17⅛	
100	do	b 5	17⅛
1245	Hale & Nor	34½@34	
340	Imperial	8@8¾	
3025	Justice	33¼@33½	
50	do	s 10	35½
600	Julia	12@11¾	
385	Mexican	18½@18⅝	
195	Overmen	47@46½	
50	do	b 5	47
640	Justice	23¾@24	
270	Leopard	10⅞@10¾	
50	Mansfield	1.05	
25	Meadow Valley	2¾	
100	N Coso	75c	
825	Ophir	40¾@41	
50	Overmen	43@43½	
870	Coso Con	1¾@1⅝	
304	Challenge	5½	
400	Cosmopolitan	30c	
120	Con Virginia	264@260	
50	do	b 5	300@298
100	do	b 30	305
1125	California	63¼@62⅝	
160	Crown Point	28½	
85	Eureka Con	15	
5	Eclipse	1	
870	Hussey	50c	
200	Jackson	1½	
70	Jefferson	4½@4¾	
1645	Justice	24½	
50	do	h 30	31
50	do	h 5	30¾
75	K K Con	5	
100	Kossuth	2⅝	
300	do	b 30	2⅞
490	Leopard	11	
630	Leo	1¼@1⅜	
1250	Leviathan	2½@2⅝	
160	do	b 5	2⅝
25	Meadow Val	2¾	
100	Midas	40c	
200	Niagara	10c	
720	New York	1½@1⅝	
1945	Opbir	42¾@40	
225	O G Hill	2¾	
100	Prussian	1¾	
1110	Rock Island	3¾@3⅝	
285	Ray & Ely	16¾@17	
160	S Hill	8@8¼	
210	Utah	10¾@10⅝	
3610	Woodville	3¾@4	

TUESDAY, A. M., Nov. 23.

90	Alpha	19@18	
1840	Best & Belcher	36@35¾	
260	Belcher	20	
270	Bullion	48@48¼	
45	Chollar	69	
230	Crown Point	28@28¾	
80	Caledonia	16@15	
35	Confidence	18¼	
837	Con Virginia	315@310	
5435	California	66@65½	
50	do	h 5	65¾
50	do	s 30	65¾
50	do	b 30	65¾
100	do	h 10	65½
200	Empire	5@4¾	
1045	Gould & Curry	19¼@18¾	
426	Hale & Nor	36@37	
2285	Imperial	8¼	
1730	Justice	33@32¾	
745	Julia	12¾@12	
15	Kentuck	1¾	
555	Leady Bryan	1¾@1¾	
985	Mexican	21@20	
10	do	h 10	21
2295	Ophir	61¼@52½	
70	do	h 10	53
235	Overman	48@47	
510	S Nevada	13¾@13	
255	Savage	77¾@76	
555	Union Con	9@9¼	
272	Y Jacket	72@73½	

AFTERNOON SESSION.

200	Alps	25c	
120	Alta	1½	
50	Amazon	1¾	
600	Andes	3¾@3⅝	
200	do	b 10	3¾
190	Advance	4	
250	Belmont	1½@1⅜	
255	Belt Con	2¾@2¾	
700	Coso Con	1⅜@1⅜	
10	Challenge	5½	
200	Cosmopolitan	35c	
101	Con Virginia	306@310	
2400	California	67¼@66⅝	
100	do	s 30	66¾
50	do	s 10	67
200	do	b 5	67⅛
200	Dayton	4¾@4⅞	
245	Eureka Con	15@15½	
500	El Dorado South	1⅜	
70	Florida	3	
970	Gila	3¼@3⅜	
167	Hussey	50c	
190	Jefferson	4⅝	
130	Kossuth	2½@2⅜	
420	Leopard	10⅞@10⅝	
100	do	h 30	11¼
150	Lady Wash	2@2¼	
400	Leo	1⅞@1¼	
775	Leviathan	2¼@2⅜	
250	do	h 5	2⅜@2⅝
85	Meadow Valley	2¾@2¾	
500	Mansfield	1.07½@1.10	
300	N Carson	25c	
570	New York	1⅝	
175	Occidental	3½@3¾	
230	O G Hill	2¾@2¾	
850	Pacific	1@1⅛	
1900	Rock Island	3¾@3⅝	
255	Ray & Ely	15@18¾	
415	Sil Hill	3¾@3¾	
300	do	h 30	3⅝
380	Utah	14¾@13¾	
3195	Woodville	3@3⅜	

WEDNESDAY A.M., Nov. 24.

1525	Best & Bel	50@51	
985	Belcher	20@19¾	
1160	California	67@66¾	
200	do	b 5	69
415	Con Virginia	315@321	
1255	Crown Point	28¼@27¾	
70	Chollar	66	
80	Caledonia	15	
245	Empire Mill	5	
10	Exchequer	10⅛	
1360	Gould & Curry	19@18	
110	Hale & Norcross	35@34	
725	Imperial	8¼@7¾	
1830	Justice	32@34	
400	do	b 30	33⅜
250	Julia	12@11¾	
250	Kentuck	1¾@2	
535	Lady Bryan	1¾@1⅝	
1380	Mexican	19½@20¼	
100	do	h 5	20¼
1265	Ophir	51¾@49½	
50	do	b 5	50
265	Overman	47@46	
50	Savage	76¾@74	
495	Sierra Nevada	14@13¾	
100	do	b 30	14
10	Seg Belcher	70	
1200	Union Con	9@9⅛	
355	Yellow Jacket	72@73½	
500	Alps	25c	
170	Advance	4¾	
350	Alta	1½	
315	Andes	3½	
100	Amazon	1¾	
475	Belimore Con	2½@2⅞	
885	Best & Belcher	50@50¾	
300	Coso Con	2@1¾	
230	Challenge	5½	
350	Cosmopolitan	35@40c	
252	Con Virginia	310@314	
150	Dayton	5	
110	Eureka Con	15½@16	
250	Eldorado S	1¼	
75	Florida	3	
975	Gila	3¼	
230	Golden Char	75c	
500	Hussey	50c	
405	Jefferson	4¼	
1230	Justice	36¾@38	
495	Kossuth	2½@2⅝	
100	Knickerbocker	2¾	
275	Leopard	10¾@10⅝	
500	Lady Wash	2	
600	Leo	1¼	
1080	Leviathan	2¾@2⅞	
200	Meadow Valley	2¾	
240	Mansfield	1.09@1.07	
610	New York	1½@1⅝	
100	Niegara	60c	
1070	Opbir	41¾@47	
200	Occidental	4	
269	O G Hill	2¾@2¾	
850	Pacific	1	
100	Prussian	1¾	
340	Raymond & Ely	18	
205	Sil Hill	3¾@3	
100	Utah	13¼@13	
1715	Woodville	3¾@3⅝	

Mining Stocks.

Considerable animation has been shown in the stock market this week and several pretty little deals have been made. Nobody seems to know the cause of the rise. Those who are credited with being the controllers of the destinies which govern stocks can or will not ascribe any reason why the market should take the sudden turn it has. There are some who ascribe the advance to the filling of shorts, and there are others who say that after a period of depression a reaction takes place and that the present market is one of those actions, which will be followed by a strong recession. Whatever may be the reasons of the advance, it is a great satisfaction to those who have been "holding for a rise" for the past few months. Rumors are again afloat that the "bank crowd" has control of the California and will carry the next election, which takes place soon. The Woodville collapse astonished some of the holders a good deal after its late heavy rise, and those who were holding for $20 are badly cinched.

The era of investigations still continues. The Woodville purchasers are indignant, and the sellers are correspondingly pleased. The Mansfield investigation, which is assuming shape, promises some interesting developments. Many complain that they have been ciuched, and say that there is no truth in the story that the mine has been purchased by English capitalists for ten dollars per share. If the latter should prove to be correct. there will be some lively hauling over the coals of certain individuals.

At the last meeting of the disaffected stockholders of the Niagara Mining Co. over 41,000 shares were represented. This exceeds the number of shares required to overthrow the present management, as only 40,000—two-thirds of the entire stock—was necessary. When the stock has been brought together, then the present secretary of the company, Mr. Townsend, will be directed by the stockholders to call a meeting, and at that meeting new officers will be elected.

The Phil Sheridan and Monumental Companies will probably have an investigation soon and more are to follow. The move is a good one, and those mauagers who are really honest have nothing to fear, while those who have not been faithful will be disgraced in the eyes of the community.

New Incorporations.

The following companies have filed certificates of incorporation in the County Clerk's Office at San Francisco:

CABINET M. Co.—Nov. 15. Location: Storey county, Nev. Capital $8,000,000. Trustees—Alex. Badlam, W. T. O'Neale, Eugene W. Cary, M. J. Donovan and E. A. Rowe.

WYOMING COAL AND COKE CO.—Nov. 16. Object: Mining for coal and manufacturing coke therefrom, and buying and selling coal and coke. Directors—Sampson Tams, Wm. Walkesly, Daniel Randolph, Edward S. Smith, Columbus Bartlett, Jas. E. Smith and W. W. Lyman. Capital stock $2,000,000, in 2,500 shares of $50 each.

AMERICAN FLAT M. AND DITCH CO.—Nov. 16. Location: Fiddletown district, Amador county, Cal. Capital stock $5,000,000, in 10,000 shares of $50 each. Directors —W. W. Swadley. J. Craig, Peter Cook, Samuel L. Harrison, R. R Craig, E. B. Jago and R. H. Blake.

WEST BRANCH M. CO.—Nov. 16. Location: Magoolia district, Butte county, Cal. Capital stock $2,000,000. Directors—Roht. Sherwood, J. M. Buffington, J. E. McElvath, Stephen Clis and J. F. Earnest.

SELBY SMELTING AND LEAD CO.—Nov. 15. Object: Smelting, refining, assaying and trading in the precious and useful metals and their ores, and for manufacturing the useful metals in their various forms. Directors —Jas. C. Flood, Wm. S. O'Brien, N. K. Masten, Prentias Selby and Andrew J. Ralston. Capital stock $200.000.

The following company filed a certificate of incorporation at the office of the county clerk of Santa Clara county on the 16th inst:

SANTA CLARA PEAT FUEL CO.—The object for which the corporation is formed is the manufacture and selling of peat, by the process patented by Franklin Dodge, Feb. 2, 1875, and by the machinery invented by him and J. H. I. Tuck. The corporation is to have its principal place of business in San Jose, and is to exist for a term of fifty years. Capital stock $1,500,000, in 1,500 shares of $100 each. Directors—Samuel A. Bishop, J. H. I. Tuck, C. Burrell, J. H. Elwood and Ed. McGowan.

MINING SHAREHOLDERS' DIRECTORY.

Compiled every Thursday from Advertisements in the Mining and Scientific Press and other S. F. Journals.]

ASSESSMENTS.—STOCKS ON THE LIST OF THE BOARDS.

Company.	Location.	No.	Amt. Levied.	Delinq'nt.	Sale.	Secretary.	Place of Business.
Baltic Cons M Co	Washoe	2	10	Oct 9	Nov 13	Wm Sto	419 California st
Baltimore Cons M Co	Washoe	10	1 00	Oct 7	Nov 10	Nov 30	C A Sankey 381 Montgomery st
Belmont M Co	Nevada	6	50	Oct 6	Nov 9	Dec 6	Frank Swift 419 California st
Caledonia S M Co	Washoe	15	3 00	Nov 1	Dec 1	Dec 23	R Wegener 414 California st
Cherry Creek M & M Co	Cherry Creek	5	25	Oct 21	Nov 29	Dec 27	D F Verdenal 409 California st
Chollar-Potosi M Co	Washoe	8	5 00	Oct 14	Nov 17	Dec 7	W E Dean 419 California st
Mt Diablo S Cons M Co	Nevada	7	1 00	Oct 13	Nov 16	Dec 7	Wm Willis 419 California st
Empire M Co	Idaho	11	50	Oct 23	Nov 29	Dec 20	W Willis 419 California st
Florida S M Co	Nev	3	50	Nov 5	Dec 11	Jan 3	L Hermenn 330 Pine st
Gould & Curry S M Co	Washoe	24	1 00	Oct 26	Nov 27	Dec 18	A K Durhrow 309 Montgomery st
Hale & Norcross S M Co	Washoe	48	5 00	Nov 9	Dec 11	Dec 31	J F Lightner Nevada Stock
Ida Elimore M Co	Idaho	19	50	Oct 16	Nov 19	Dec 10	W Willis 419 California st
Illinois Central M Co	Idaho	4	50	Oct 12	Nov 16	Dec 7	R H Brown 402 Montgomery st
Imperial S M Co	Washoe	25	1 00	Nov 9	Dec 14	Jan 4	W R Dean 419 California st
Justice M Co	($5 on old stock and $1 on new)	16	6 00	Sept 15	Oct 18	Nov 14	Jas S Kennedy Merchants' Ex
Kossuth M Co	Nevada	5	75	Oct 4	Nov 9	Nov 30	E F Stone 419 California st
Lady Washington M Co	Washoe	6	50	Nov 4	Dec 9	Dec 28	H C Kibbe 419 California st
Mansfield G M Co	Cal	4	1 00	Oct 9	Nov 17	Dec 4	J M Buffington 311 California st
New York Cons M Co	Washoe	16	1 25	Oct 27	Dec 1	Dec 20	H C Kibbe 419 California st
New York M Co	Washoe	3	75	Oct 27	Dec 1	Dec 20	H C Kibbe 419 California st
North Bloomfield Gravel M Co	Cal	40	1 00	Oct 21	Dec 3	Dec 20	T Derby 320 California st
North Cons Virginia M Co	Wesboe	1	5	Oct 6	Nov 16	Dec 1	Joseph Magnire 419 California st
Oakland G & S M & M Co	Nevada	2	50	Sept 2	Nov 8	Nov 30	W B Watson 302 Montgomery st
Overman S M Co	Washoe	33	3 00	Oct 12	Nov 16	Dec 7	Geo B Edwards 414 California st
Raymond & Ely M Co	Pioche Dist	5	3 00	Nov 5	Dec 14	Jan 10	T W Colburn 418 California st
Rock Island G & S M Co	Wesboe	9	50	Oct 7	Nov 10	Dec 2	J W Clark 418 California st
Savage M Co	Washoe	20	5 00	Oct 8	Nov 10	Nov 29	E B Holmes 419 California st
Sbeha S M Co	Neveda	3	10	Oct 27	Nov 29	Dec 22	A Halsey 200 Montgomery st
Sierra Nevada S M Co	Washoe	42	1 00	Oct 1	Nov 5	Nov 25	R Wegener 414 California st
Silver Hill M Co	Wesboe	7	1 00	Oct 1	Nov 4	Nov 23	W E Dean 419 California st
Tiger M Co	Cornucopia	2	10	Oct 29	Dec 8	Dec 28	Frank Swift 419 California st
Troy Cons M Co	Washoe		20	Oct 22	Nov 26	Dec 17	S C Herbert 535 Clay st
Union Cons S M Co	Washoe	8	50	Oct 11	Nov 15	Dec 6	J M Buffington 311 California st
Utah S M Co	Washoe	11	2 00	Oct 14	Nov 22	Dec 10	W E Dean 419 California st
Utab S M Co	Washoe	11	2 00	Oct 19	Nov 22	Dec 10	W E Dean 419 California st
Woodville G & S M Co	Wasboe	12	1 00	Nov 4	Dec 8	Dec 27	W M Helman 309 California st
Woodville Con M Co	Washoe	4	1 00	Nov 4	Dec 8	Dec 27	W M Helman 309 California st

OTHER COMPANIES—NOT ON THE LISTS OF THE BOARDS.

Black Hawk Coal M Co	Cal		5	Oct 25	Dec 24	Jan 15	H A Powell 520 Montgomery st
Cariboo Hydraulic M Co	Plumes Co	Cal	1	20	Nov 1	Dec 6	C W Reed Sacramento City
Cerbat Cons G & S M Co	Arizona		2	10	Oct 5	Nov 8	T E Jewell 507 Montgomery st
Cons Pac M Co	Peavine	District	9	25	Oct 13	Nov 13	J H Borland Reno, Nevada
Constitution M Co	Cornucopia	Dist	2	10	Oct 29	Dec 4	Frank Swift 419 California st
El Dorado Water & D G M Co	Cal		12	20 00	Nov 15	Dec 16	H Elias 427 Montgomery st
Enterprise Cons M Co	Cal		5	25	Sept 29	Nov 4	F J Hermann 418 Kearny st
Equitable Tunnel & M Co	Utah		11	20	Nov 12	Dec 18	Jan 7	C S Healy Merchants' Ex
Excelsior Q M Co	Cal		3	5	Oct 8	Nov 10	Dec 2	R Von Pfister Merchents' Ex
Goneva Cons M Co	Cherry Creek			20	Nov 11	Nov 15	Dec 8	I T Milliken 302 Montgomery st
Great Eastern Cons Q M Co	Cal		1	25	Oct 30	Nov 30	Dec 18	J G Kiley 331 Montgomery st
Howard Hill O M Co	Cal		4	35	Sept 27	Nov 3	Nov 24	F J Hermann 418 Kearny st
Juniata Cons M Co	Nevada		3	25	Sept 20	Nov 1	Nov 24	Chas S Nesl 419 California st
Keersarge Con Q M Co	Cal		2	15	Nov 4	Dec 10	Dec 30	J McHaffie 105 California st
Kelsey G & S M Co	Cal		14	5	Sept 27	Nov 17	Dec 9	J H Sayre 331 Montgomery st
Kennedy M Co	Cal		11	1 00	Nov 1	Dec 6	Dec 27	A Wissel 210 California st
Lake Mining Co	Napa Co	Cal	4	20 00	Nov 3	Dec 6	Dec 27	R F Knox 19 & 21 First st
London Quicksilver M Co	Napa Co	Cal	3		60 Sept 30	Nov 10	Dec 10	A Halsey 200 Sansome st
North Fork M Co	Plumas Co	Cal	9		25 Nov 2	Dec 6	Dec 22	A Martin 520 Washington st
New Coso M Co	Inyo Co	Cal	1		50 Oct 28	Nov 30	Dec 23	D F Verdenal 409 California st
Oceanic Quicksilver M Co		Cal	2		50 Oct 22	Nov 23	Dec 13	C G Funk 438 California st
Ocean View Q M Co		Cal	1		50 Nov 4	Dec 5	Dec 28	D Buck 309 Montgomery st
Orleans M Co		Cal	8	2 00	Oct 27	Nov 30	Dec 18	Geo P Thurston 315 California st
Sage Water & Gravel Co		Nev	1	20	Nov 1	Dec 15	Jan 15	J E McDonald 405 California st
Panther M Co	Cornucopia		2	25	Oct 29	Dec 1	Dec 20	Frank Swift 419 California st
Peytona G & S M Co	Nevada		5	00	Oct 23	Nov 30	Dec 18	T J Owens 215 Sansome st
Stanislaus River M Co	Cal		6	20	Oct 29	Nov 30	Dec 17	W Stuart 113 Leidesdorff st
South Comstock G & S M Co	Washoe		3	25	Nov 11	Dec 16	Jan 4	J M Buffington 309 California st
Table Mt Alpha M Co	Cal		9	10	Oct 29	Nov 30	Dec 20	J Leavitt 401 California st
Theresa M Co	Cal		3	10	Oct 7	Nov 8	Nov 24	J W Tripp 408 California st
Union Gravel M Co	Cal		12	1 00	Oct 21	Dec 3	Dec 20	T Derby 320 California st
Ward Ellis S M Co	Nevada		4	10	Oct 22	Nov 29	Dec 18	J M Buffington 311 California st
Whitfoot M Co	Nevada		2	20	Nov 11	Dec 13	Jan 1	D A Jennings 401 California st
West Point G & S M Co	Cal		2	10	Nov 10	Dec 31	Dec 13	L Kaplan Merchants' Ex
Young America M Co	Nevada		1	25	Oct 27	Nov 29	Dec 18	R H Brown 402 Montgomery st

MEETINGS TO BE HELD.

Name of Co.	Location.	Secretary.	Office in S. F.	Meeting.	Date.
Chicago G & S M Co	Wasboe	F P Reynolds	111½ Leidesdorff st	Speolal	Dec 3
Coe G M Co	Cal	A Treadwell	426 California st	Annnal	Dec 15
Kentuck Q M Co	Cal	H V Clarke	204 Front st	Annual	Dec 3
Mansfield Cons M Co	Cal	J M Buffington	311 California st	Annual	Dec 9
Mexican M Co	Nevada	C L McCoy	419 California st	Annual	Dec 7

LATEST DIVIDENDS (within three months)—MINING INCORPORATIONS.

Name of Co.	Location.	Secretary.	Office in S. F.	Amount.	Payable.
Black Bear Quartz	Cal	W L Oliver		25	Sept 13
Coos Virginia M Co	Washoe	Chas H Fish	401 California st	10 00	Nov 11
Empire G M Co	Sierra Co	Cal C Collinchon		5 00	Aug 17
Empire M Co	Nevada Co	Cal D A Jennings	401 California st	50	Sept 15
Eureka Consolidated M Co	Nev	W W Traylor	419 California st	1 00	Aug 5
Excelsior M & M Co		Frank Swift	419 California st	1 00	April 10
Gila S M Co	Nevada	W Ang Knapp	116 Leidesdorff st	25	Aug 16
Indian Queen M & M Co		A K Durhrow		50	Oct 11
Jefferson S M Co		C A Sankey	331 Montgomery st	50	May 15
Leopard M Co		R H Brown		50	July 15
Lyon Mill & Mining Co	Washoe	B F Stone	Hayward's Bldg	50	Aug 18
Manhattan S M Co	Nevada	Chas S Neal	419 California st	1 00	June 15
Northern Belle M & M Co		W Willie	419 California st	1 00	Oct 15
Oneida M Co		L Kaplan	Merchants' Ex	50	Aug 21

MINING SUMMARY.

THE following is mostly condensed from journals published in the interior, in proximity to the mines mentioned.

California.

AMADOR.

LINCOLN MINE.—Amador *Ledger*, Nov. 20: Both mine and mill are now running full handed. Forty stamps are kept going continually. No more intervals of comparative idleness will occur again for want of water. The large influx of water is trying the new branch ditch. A break occured this week, causing a cessation of work for a few hours. The pumping machinery at the mine is being run solely by water power. This machinery was put up a year ago at a cost of something like $17,000.

SULPHURET WORKS.—C. J. Garland has been compelled to close his sulphuret works at Sutter Creek for lack of sulphurets. The suspension of milling operations for the last two months has enabled him to work up the entire stock of sulphurets he had on hand. Now that the mills are again in full blast, the supply of sulphurets will soon be sufficient to enable the works to start up again. The period of idleness is not likely to extend over two weeks.

MILLS RUNNING.—The Bunker Hill, Original Amador, Volunteer, and we believe the Gover mills have started work again since the plentiful supply of water consequent on the heavy rains of the past two weeks.

CALAVERAS.

HAULING QUARTZ STOPPED.—Calaveras *Chronicle*, Nov. 20: The rains have made the roads so bad up country that the work of hauling rock from the mines to the mills has had to be stopped. There is a large quantity of ore in the dumps of the San Bruno and other mines in the Mosquito district that will have to remain where it is until the roads get better.

GWIN MINE.—The work of putting a new pump into the Gwin mine, that for some time past has been in progress, is nearly completed. It is expected to be in readiness for operation next week. The pump is to be worked by an 80-horse power engine which is in position. Since the commencement of the present storm the volume of water in the mine has considerably increased, rendering it necessary to bail constantly. The hoisting of ore is temporarily interfered with in consequence.

PLENTY OF WATER.—There is water everywhere—oceans of it—overhead and underfoot. Our streets are incipient lakes, the gulches filled with rushing, turbulent, roaring streams and the rivers are swollen almost beyond recognition. The ditch is full to the top of its banks, and if its capacity could be increased indefinitely the water supply would still be equal to the occasion. We take the storm to be the best possible indication of a prosperous season. The rain comes at the right time, there is an abundance of it and no lack of prospects of more in the near future.

EL DORADO.

ACTIVE.—El Dorado Co. *Republican*, Nov. 20: The miners are making active preparations to go to work on various claims as soon as the storm subsides, and will soon be in a condition to swell our finances.

INYO.

WAUCOBA DISTRICT.—Inyo *Independent*, Nov. 13: But little has been heard of this promising district for some time, but notwithstanding all that, the owners have not been idle. They have been doing all they could towards putting things in shape to insure its development. And we have a very good assurance that the time for this work to begin will not be much longer delayed.

PANAMINT.—Numerous Panaminters have been in town this week, but except that all maintain that they have just the most promising camp there is, and that some 75 additional miners are said to have been called for there quite recently,

we have no special items of intereat to record concerning ths camp.

UBEHEBE MINES SOLD.—Ws learn that Messrs. Porter & Hnnter have disposed of a portion lf not all their mining intsresta in Ubehebe district, to San Francisco parties, receiving therefor a good lround sum. We believe that Mr. M. W. Belshaw is ths purchaser. Ths sale includes their wonderfully large and promising copper mine. It has hesn demonstrated that the ores from that mine can be delivered on the dump at a cost not excesding $1 per ton und that they can he easily and profitably worked. Works are to hc erected at once. Our informant believes thut ths prospects for Ubshebe, bstter know as Rosc Spring district, ia second to no nther in the county.

ORES SHIPPED.—We ob.erve qnite u lurge quantity of the rich nres from the Silver Sprout mins piled np at Harris & Rhine's for shipment to San Francisco. Some 30 tons in all have lately heen hrought down for that purposs.

COSO DISTRICT.—Coso *Mining News*, Nov. 20: The devslopments in the loading mines for the past week have been of ths most flattering character, und the prospects for a continuation of the fine orc bodiss ars most highly sncouraging. Work is steadily progressing in the principal mines with as large u forcs in each oue aa can he worked to advantage. Our mines ars now ouly undergoiug snrface prospecting and preliminary opening for more extensive development; and hence the number of men employed is limited to actual needs, and in the near futuro will he largely iucreased. Work on the new furnaces building is progressing as rapidly us the arrival of material will admit of, and we can confidently conut upon having two more engaged in smelting within from two to four weeks from the present writing.

MARIPOSA.

GOLD.—Mariposa *Gazette*: All the boys about town, and not a few men, have turned ont, within the last fow days, to search for gold in the rills and gulches, left exposed by the washing of the water. We have heard of as much aa a dollar being picked up in a few hours hy parties on the search.

PERRIN AND CRAIG QUARTZ VEINS AND MINES.—The ahove miues are sitnated on the north side of the Main Merced river, opposite Reynolds' Cove. These veins of auriferous ore were formerly known as the "Rutherford and Cranherry lodes." Since the discovery of these mines, they have only heen worked at long intervals, aod on a very limited scale. The priucipal work done in 1867 was the sinking of a shaft about fifty feet deep, and running a tunnel to connect with the bottom of the shaft. The vein at the outcropping was narrow, but widened out to ahont three feet at the bottom of the shuft. Abont sixty tons of rock was taken from the mine to u five-stamp mill ahont three-fonrths of a mile distant, on the Main Merced river, owned hy the Rutherford Brothers. We are credibly informed that the rock yielded $40 per ton; hut ure not informed why the work of extracting ore from the mine was discontinued; bnt preaume it was a lack of capital. Should a twenty-stamp or forty-stamp quartz orushing mill he erected at Reynolds' Cove, as is contemplated, und which hus one of the hest water privileges and easiest of utilizing of any in the mining region, it would afford the Rutherford aud Cranberry mines a favorable opportunity to have their rock crushed, and would be profitable for a mill to make an exclusive bnsiness of crushing custom rock, as the country in the immediate vicinity is threaded with gold-hearing quartz veins.

MONTEREY.

CHOLAME QUICKSILVER MINES. — Hollister *Enterprise*: Fount Lecher called on us this week on his return from the Cholume mines, whither he has heen for the past six weeks, constructing a furnace for the Nevada company, and which he has just completed. He built the furnace in forty-one days, turned it over to the owners, who received it and it gives the completest satisfaction. This Nevada mine helongs to Messrs. Eager, Wintera and Goodrich, and is no donht a valnahle property. They have 300 tona of good ore on the dump, and the mine displays endless quantities of mixed ore. There are also other discoveries in that district which promise well. The Nevada mine is sitnated ahout 100 miles sonth of Hollister, in Monterey county. Now that this company have a new and perfect furnace ready for operating, it will not be long before they commence turning ont plenty of metal.

NEVADA.

SHUT DOWN.—*Foothill Tidings*, Nov. 20: The Kentucky mine was shnt down yesterday, probably for the winter. Canse, the failnre of a contractor to snpply wood necessary to make steam to keep the mine free of water. The disappointment to all stockholders will be great, as the mine was rapidly improving as the drift went west.

THE English mine on Badger hill is in full blast. John Quick, Esq., is the superintendent. This, says the San Juan *Times*, is one of the best paying mines in the township. It is worked on an economical basis, and is owned by a nnmber of very clever gentlemen, all Englishmen. An immense amount of money has been realized from this mine doring the past ten years, and it pays hetter now than ever.

WATER RATES.—Nevada *Transcript*, Nov. 19: The hydraulic mines in this vicinity obtain their supply of water for mining from the South Yuha canal company, who have the only principal ditch conveying water here. Twelve cents au inch, miners' measurement, is charged for the twenty-four hours. We learn that the rates have been modified so as to be sight cents an inch for twelve hours dnring the daytime, and four cents an inch during the night. Some of the mines have worked only during ths day, and allowed the water to run to waste or remain idle dnring the night time, hence ths company recently made the change in rates mentioned. This change does not seem to be satisfactory to some, and one owner informs us he will not work his mins unless he can secure a contract from the company so that he can obtain water throughout the season. We understand ths company owning the ditch, dnring the latter part of each season, cut off the anpply at this point, preferring to sell it at points nsarer ths source of the ditch, where they can get sixteen cents au inch for their water, und where ths shrinkage by svaporation, owing to ths long distance it has to run in ditches to get here, is much less. Ths miner hers claims that as he buys water when it is plenty, he ought to be supplied at the same rate when it is scarce, and will not work unless such an arrangement can he made. It is to be hopsd that an amicahls settlement of the question can be mads all round, and that all ths miners will soon be at work with a full hend of water. The country needs the gold lying waste in the banks hereabouts.

PLACER.

THE AUBURN GRAVEL MINE.—Placer *Argus*, Nov. 20: This company cleaned up last Satnrday, after a successful run of several weeks. We were not able to learn the amount of bullion realized, the company keeping that to themselves, but it is nnderstood that all parties were satisfied with the result, and highly encournged with the prospects for the future. Messrs. Gannon, Crowley and Higgins, members of the company, from San Francisco, were here ut the time of the clean-up, and expressed themselves as highly pleased. They left for the city on the Sunday morning train. We believe the company have not yet got to work again, the heavy rain having delayed them in getting ready for another start.

WORK BEGUN.—The splendid rains of the past week have set mining operations going all over the county, and if the promise of a good season holds good, we shall have the most prosperous year ever seen in Placer.

POND & Co., of Todd's valley, started up with four hydraulics the first of the week, and have plenty of water to keep them going. Dull times have ruled for long months in Todd's valley, but the rain has fixed all things right, and now there is plenty of work for all. Idle men with empty pockets no longer fill the streets, waiting for better times.

THE Union ditch company of Yankee Jims had a ditch full of water on Monday, and expected to he able to deliver the miners u full supply.

SACRAMENTO.

FINISHED.—Folsom *Telegraph*, Nov. 20: The North Fork dam was fully completed and the ditch cleaned out some four or five miles down on the line. Water will he running its entire length in about four weeks, when the mines along the river and at Ashland, that have lain quiet for so long, can again be worked. The Ashland mines are good and no douht will pay well. The new dam has been constructed in so substantial a manner that it will withstand any future flood.

SIERRA.

PROSPECTING.—*Mountain Messenger*, Nov. 13: Work has been commenced upon the Johnson ledge, about two miles this side of Ouk ranch. Parties below are interested in the mine and will speedily develop it.

GETTING READY.—Parties are busy digging a ditch to bring water upon the point, opposite Frank Beaver's place, on the South Fork. They are going to hydraulic this winter.

SOME TAKE.—Last week nine and a half onnces of gold was extracted from the Rising Sun gravel claim.

ORO.—The Oro Co. have found a lot of fine rock in their mine. There is some talk of a mill being put up now.

SISKIYOU.

WILL TRY IT SOME MORE.—Yreka *Journal*, Nov. 13: We learn from L. Tickner, the Scott bar expressman, that Bean & Co. will most likely go into their claim on the Klamath river again this season, if no more rain falls. When the Klamath river rose, in consequence of the rain storm a week or two ago, this company's dam withstood the current and did not go down with the other dams. Their wheel, however, was carried away, which will necessitate the building of a new one. The claim was also filled with water. It is thought that they would be able to get in the olaim again in a week or two, and if the rain held off, would be able to work two or three weeks longer in the claim. As they had just got to the pay dirt a week or two before the water drove them ont, this would be quite an object, and enable them most likely to retrieve the losses of the season and perhaps come ont a little ahead.

SOLANO.

QUICKSILVER.—Solano *Times*, Nov. 20: The St. John's quicksilver mining company is making large shipments of quicksilver to San Fraucisco every week, and they are now putting up a thirteen-ton furnace at their mine. The production of quicksilver in this State is indeed surprising, and completely overshadows that of other parts of the world, and exercises a controlling influence on prices. The price has now reached a figure that in many mines just covers the cost of production, and it is said that unless improvement takes place, some of them will be compelled to suspend operations.

TRINITY.

THE STORM. — Trinity *Journal*, Nov. 20: Hopes are entertained that a good winter has begun, ths present being the best storm that has visited us since ths fall of '67. Miners throughout ths county have begnn work with a fair supply of water, and if ths storm will only keep up a few weeks longer our fortunes are made. Everybody being at work makes town particularly dull, but who cares for that, as good times will be the inevitable result of a wet winter, and all can wait for the clean-up of next summer. If the water, now fairly begun, continues as favorable as indicated, we predict a greater gold yield in this county thau ever before. Mines are better prepared for working, and with an emple water supply are bound to yield largely.

Ths above was written on Thursday, when it was raining as though it never would stop. This, Friday, morning the sun rose clear, there being a heavy white frost. Whether the clear-up is permanent, we don't know, but hope not.

Nevada.

WASHOE DISTRICT.

JULIA.—Gold Hill *News*, Nov. 18: Sinking the main shaft is making fine headway, ths bottom being almost entirely in a fine character of quartz. It is now down 70 ft below the 1500-ft level, and it is confidently expected that everything will be in readiness for the opening of the 1600-ft station by the 1st of December next. The main southwest drift on the 1500-ft level is in 70 ft, the face in soft porphyry. The Burleigh drills last evening penetrated the hard porphyry and were driven into a bed of very soft material, but of just what character we have not yet been able to learn. The main southwest drift on the 1400-ft level is steadily advancing, the quartz and ore in the face showing a steady and favorable improvement.

[THE BONANZA MINES are mentioned in another column.—EDS. PRESS.]

ROCK ISLAND.—Sinking the shaft is making excellent headway. The main west drift, on the 650 ft level, is in a fine character of quartz, the face perfectly dry and the running excellent. The quality of the quartz and ore at this point is of a much better character than was encountered at the same point on the level above, so much better that strong hopes are entertained of finding paying bodies when that portion of the ledge is reached where the good prospects were found on the upper levels.

LEO.—Good progress continues to he made in the prospecting drifts from the bottom of the winze 225 ft below the main tunnel level. The face of the main drift is in very promising ledge matter, carrying seams of ore of a good character. A cross-cut was started yesterday from the main drift, and will he driven ahead until the foot-wall is reached. Excellent indications are being met with in the face of the cross-cut.

LADY WASHINGTON.—Sinking the shaft deeper progresses well, the powerful new machinery operating as well as could be desired. All the water that comes in is easily handled by the pumps.

LEVIATHAN.—Still driving ahead north, at the 420-ft level, with the face in fine ore. Two cross-cuts east are being made, which are in 36 ft, in good ore all the way, and no sign of footwall as yet. This shows a valuable and important ore body.

IMPERIAL-EMPIRE.—Daily yield, 40 tons of ore. The ore bresats still show well, and the ore extracted continues of a good milling quality. Average assay of car samples, $58.

GLOBE CONS.—The drift on the ore vein at the third station level is steadily advancing, the ledge increasing in width and showing some excellent quartz and ore.

BELCHER.—Daily yield, 300 tons of ore. The ore breasts are yielding finely, and show no signs of exhaustion. Driving the prospecting drift on the 1600-ft lovel is making fair progress. The air shaft is finished down to the 1400-ft level, and is doing an excellent work in cooling and ventilating the lower levels of the mine.

BULLION.—Enlarging the old incline is making steady headway. The main north drift on the 1700-ft level of the Imperial mine is steadily advancing northward, along the west wall of the ledge, the face in a fine character of ledge material. The air machinery is working splendidly.

YELLOW JACKET.—The north and south drifts from the bottom of the winzes on the 1940-ft level are each steadily advancing in ground perfectly dry and admitting of excellent progress. Prospecting on the 1740-ft level as usual.

GOULD & CURRY.—Owing to the breakage of some of the pumping gear during the first portion of the week, the water rose above the 1700-ft level, stoping all work in that portion of the mine. The damage has been repaired, however, and the water is being gradually reduced to its former level.

CHOLLAR-POTOSI.—Sinking the new combination shaft is making good headway, the ground in the bottom working well. Daily yield, 60 tons of ore, the assay value of which is $28 per ton.

CROWN POINT.—The ore breasts still continue to yield the usual amount of milling ore. The mills on the Carson river are running up to their full crushing capacity.

SUTRO.—The face of the main west tunnel is being steadily advanced. The flow of water is a little on the increase, but is not strong enough to at all impede the headway of the drift.

CALEDONIA.—Sinking the new shaft is making better progress than for some time past. The flow of water is considerable, but not enough to impede progress.

NORTH CONSOLIDATED VIRGINIA.—There is a slight increase in the flow of water, but not enough to at all impede the sinking.

SIERRA NEVADA.—The main west drift on the 1000-ft level is making excellent progress. No new developments.

NEW YORK CONSOLIMATED.—Sinking the main shaft is fairly inaugurated under the most favorable auspices. The station is also being opened for a drift into the merits of a very promising streak or vein of quartz mentioned in last week's report.

LADY BRYAN.—Driving the north and south drifts, on the 380-ft level, goes steadily forward. Sinking the winze below the 250-ft level to connect with the 380-ft level, south drift, is also making rapid progress.

SUTRO TUNNEL.—A very good indication met with during the past week in the face of the header has been a small stream of hot water, nearly hot enough to cook an egg. Total length of tunnel to-day, 11,192 ft.

WOODVILLE CONSOLIDATED.—The erection of the new machinery is going steadily forward without interruption.

OVERMAN.—The main west drift, on the 1100-ft level, is being steadily advanced, the rock in the face blasting tough and hard.

WEST BELCHER.—The main tunnel is now in 340 ft, and squarely into the ledge, which shows 15 ft in width. Excellent assays are obtained, and drifting, north toward the incline, is now on the docket. There is plenty of good pay ore now in sight, the extraction of which will he commenced very shortly.

AMAZON & GLASGOW.—Opening the ledge at the new 260-ft station and level is making excellent progress, the quartz and ore showing more favorable as the work advances.

SULLIVAN—Twenty-five feet advancement has been made in the tunnel since last week's report. Abont 75 ft further to go to connect with the main shaft.

SOUTH COMSTOCK.—Very encouraging material is met with in the face of the cross-cut, and the indications are that the main ore vein, next to the west wall, will he run into before long. Water does not trouble and good working progress is made.

HALE & NORCROSS.—Nothing is being done in the mine at present, owing to a portion of the main shaft needing retimbering.

BEST AND BELCHER.—The breakage of the Gould & Curry pumping machinery interfered somewhat during the week with work on the lower levels. Everything is again in good working shape.

FLORIDA.—Main west drift advancing at a fair rate, notwithstanding water, soft ground and other difficulties. Numerous streaks of quartz assaying richly are being passed through.

SAVAGE.—The water is being steadily drained from the 2200-ft level, and everything is fast assuming a good shape for steady cross-cutting and other working purposes.

NORTH CARSON.—Ore being extracted from the upper workings and hauled to the mill. Lower tunnel getting along first rate, with good ore prospects in the face.

UTAH.—The erection of the new hoisting works and machinery is going steadily forward at as rapid a rate as the state of the weather will permit.

JUSTICE.—Quite an improvement is met with in the main drift and cross-cuts at the 600-ft level, in both quantity and quality.

PROSPECT. — Excellent assays are obtained from the ore streaks continually cut through in the face of the drift.

General News Items.

OWING to the great depression of the iron trade the great firm of Blockow, Vaughn & Co., of Leeds, England, have been compelled to discharge between two and three thousand operatives.

THE Reno *Journal* says that the Central Pacific company have this year paid taxes on the assessed value of $9,000 per mile for their road, without entering a protest against the levy.

A SPECIAL from Philadelphia states that Charley Ross has been found in Connecticut, near the place where Mosher stole the boat in which he made his last cruise.

BRICK POMEROY, proprietor of the *Democrat*, of New York, has suspended. Liabilities estimated at $140,000. No assets.

THE Gnibord excitement at Montreal has completely died out, but the police still guard the grave.

FIVE DOGS, Kern county, wants a postoffice, and its residents have sent a petition to Washington.

A RACE track is being laid out at Visalia, which will cost with the necessary buildings about $20,000.

THE assets of the Selby estate, it is found, will exceed the liabilities by about $500,000.

THE interest in the $30,000 horse race has waned considerably since its postponement.

SAN FRANCISCO hoodlums are becoming more offensive than ever.

MOODY AND SANKEY are "revivaling" in Philadelphia.

THE Mexican annexation business is the topic of the day.

RUMOR says that Bismarck will soon retire from public life.

The Great Epidemic.

Some horse mon declsre that the epizootic is qnite as prevalent in San Francisco at present as during the spring of 1873, thongh all sdmit that it is of a less violent type. This is its prevailing charscter throughont the State, as well as in the Esstern Ststes and Canada. But few cases in this city have ss yet rssulted in death. We observe, however, a growing impression that the end is not yet, and thst the worst is yet to come. The prevailing ides that this is simply a horse disease is, we think, a mistake; for although the supposition that men, women and children have the epizootic is considered a sort of joke, it is, really, anything but enjoyable to those who are thus sffected. From whatever point we view this disesse in connection with man and the horse, it is evident that both are affected in about the same proportion as on its former visit.

We have heard from pretty good anthority that the epizootic is prevailing among swine. This snpposition is also accepted at first as a joke—it seems to soften the asperity of snch convictions to meet thsm half wsy with ridicule—bnt even here the snbject is assuming alserious aspect; for people are already manifesting an nnwillingness to eat pork.

It is possible thst the germs of this disease existed in sll animals now affected by it, requiring only such changes in the weather as have recently occurred to fnlly develop it. It is helieved by msny that the condition of the weather is the primary cause of the epizootic. This, however, is a very superficial view of the matter; bnt to whatever csnse it may be traced, no one can deny that the weather within the last three weeks has been snch as to aggrsvate the form of the disease. Owners of dray and othsr work horses in San Francisco say that exposnre to these frequent rains while the animals are sweating is very injurious to them; and the development, if not the cause of the disease, is in msny csses traced to these exposures. We think San Francisco msy jnstly he credited with taking as good csre of its horses as any other city. Even the street railroad horses of this city sre snbjected to no worse treatment here than in the cities of the East. If the old rule — "adversity tries friends"—is to be accepted as applying to the connection between the horse and those having him in charge, then we may truly ssy thst the horse has good frisnds in San Francisco; for in a majority of cases everything is done that can be done and his labors sre lightened as far as circumstances will allow. As far as practible horses are thoroughly blanketed, especially aronnd the neck. We have sesn horses not in the least affected by the disease having woolen cloths bound ahont their necks as a preventive.

It might have been expected that quackery would avail itssif of sll snch occssions as these visits of the epizootic to sdvertise itself; but, whoever is entitled to the credit, jnstice compels us to declsre that the horses of the country have suffered bnt little from quackery duriug either visit of the epizootic. No ominous specifics hsve heen put npon the market, and those who have written abont the great epidemic have spared advice to a remarkable degree. If we do not meet with much thst is directly availsble in treatment among our exchanges, on the other hsnd there is a noteworthy snd praiseworthy freedom from quackery.

A Rich Quartz Discovery.—Eli Miller and others discovered a very rich qusrtz lsdge near the head of Little Humbug last week. Mr. Kauffman showed us a piece of the quartz which was one of the richest pieces of rock we have ever seen and it was just full of gold. Mr. Kanffmsn informs us that the ledge where discovered is ahout six inches wide, and sll of the same quality of rock. Four pounds of the rock was pounded up and yielded $15. If the ledge widens as it goes down, and the rock remsins of the same quality, this ledge will hecome the best ever discovered in this upper country. The owners, we understand, have commenced, or are abont to, sinking a shaft on the ledge, thongh they will not be able to do much on it this season. As soon as the winter hss passed they will no doubt give it a thorongh prospecting. There are no doubt msny rich quartz ledges not only in the vicinity of Humbng, but elsewhere in the county, which will be bronght to light in the couree of time, and what is needed is capital to thoroughly prospect them. If one-sixteenth of the capital that has been invested in the Nevada mioes had been expended in this county, Siskiyou would stand at the head to-day as a gold producing section. We hsve got the gold, hut it is locked up where we can't get at it without help.—*Yreka Union.*

Child Education.—Let parents not lament because their children do not exbibit uncommon powere of mind in early life, or hecause, compared with some other children, they are deficient in knowledge gained from books. Let them rejoice if their children reach the age of six or seven with well formed hodies, good health, and no vicious tendencies, though they may be at the samo time ignorant of every letter of the alphabet, If they are in this condition, it is not to be inferred that their minds are inferior to those of children who have been constantly instructed. It is a great mistake to suppose that children acquire no knowledge while engaged in voluntary play and amusement.

Health and Happiness.

Health and happiness go together. There is no use talking ahout it, for they do. Not all the medicines or creeds in the world can make a bilious, nervous, sick psrson happy. He mnst be well before he can say, "I sm in good condition ia mind and body." There are a great many wrong notions in the world and everybody hss imbibed some of them. All have prescriptions for whoever complains. Some take this or that nostrum; others lay all nnhappiness to the heart or conscience, while the seat of the tronble is the stomach or liver. And it will be so, long as the world stands, unless a reform he made in our hsbits.

In the first place, a msn's house should be the most healthful, qniet, restfnl spot on earth to him. The religion of a man's life shonld begin here; find its spring and nurture here. All the chnrches under the sun csnnot do or nndo what this home does. When he enters there, and shnts the door behind him, he should feel that the cares, duties, business, noise, smells, and everything else of the outside world are shut out. Here are relaxation and rest. He throws off his formsr life as he throws off his coat. When he sleeps, he shonld do it ss going into the land of forgetfulness to come hack refreshed and new. When he eats, it is to he nourished, the old wastes msde up by newsupplies. When he reads or chats with his family, it should he as he would sit down iu an orchsrd to enjoy its fruits, or in a flower garden to be delighted snd soothed by its beauty and fragrance.

Home should he the club, library, picture-gallery, and sanctuary. But there are msterial arrangements connected wi'h our social life, and not lesst among them are cooking and breathing Poor or partially cooked food will drive heslth ont of the body, and happiness ont of tho hesrt; and had or no ventilation will rnin the pesce of any house. One of the best and greatest blessings in a house is an open fireplace. It is where the members of the family mostly congregate, and are in the best spirits. The hearthstone has witnessed more cheerfulness, and listened to more pleasant words, and seen brighter, happier faces than any other place in the world. The ouly prescription we give is, go snd make yonr home bright and healthful, and it will be happy.—*Investigator.*

The Forehead.

The npright forehead, with its various modifications of squareness and partial curving, generally denotes the sound and noble understandiog, as opposed to the retreating form, which indicates the precise reverse. A merely high forehead does not, however, always imply a good forehead; for the form, proportion, sloping head, arching and position of the hone of the forehead, are tests of the mental power and character. Even the color and smoothness of the skin, together with the lines of wrinkles must be taken into account, for the expression and state of the mind. A perfect forehead should be one-third of the whole face, or equal to the nose in height, the covering skin clearer than the rest of the face, and smooth and free from wrinkles, hsve the power of wrinkling in deep thought, anger, or psin. A forehead, to be perfect, should be, when seen in the profile, neither too arch, nor too square, neither too upright nor too retresting.

The higbor the forehead, the more comprehension and less activity, The moro compressed, firm, and short, (if not too short,) the more concentrated and firm the character. The more curved the top, the moro gentle and flexible the chsracter; while the less curved—that is the more square the top, the more determination, perssverance, and sternness. If the forehead is perfectly npright from the eyebrows to the roots of the hair, there will be a sufficient understsnding; while a projecting forehead will denote imbecility, immaturity, weakness, or stupidity, accordingly as modified by the other features. On the other hand, the pright forehead which is gently arched at the top denotes a calm, cold, deep thinker.

The Way it Rains in Florida.—It is hard for a Northern farmer, who watches the horizon with sching eyes, to understand the clock-like regularity of this rainy season south. Occasionally, as this year, it is delayed; but once set in it goes on regularly. There is a misty or clear morning, the air tranefused with a blushing, rainbowy effulgence that melts away in the ardent kisses of the sun into an intense dazzle of sunlight np to two o'clock. Then the skirmishers of the rain rush in on cool, dewy winds, and by sharp three o'clock the whole line is platoon firing in grest, heavy fusilades. Such rain! Gorgeous, glorious, rnshing, a magnificent enthusiasm of plunging moietnre. Then the long roll of the thnnder drums; the cracking artillery, with its splendor of electric flash, toned off in low rolls; and, hefore you are aware, the mobile srmy has gathered up its splendid wings, its fire and after guard and reservee, and only in the west yon see ite grand victorious battle flags ribbing the sky with broad bands of color. Mix in a few raiobows some foggy mornings when the whole air is prismy, and the clear, still lake looks like an undersky, and you have some idea of Florida in the rainy season. Regular ae the clock that marshalling and grand battle panorama goee on at set two o'clock, to be closed positively — no change on account of the weather—by five o'clock P. M.—*Cincinnati Commercial.*

Women's Wages.

It is a complaint so common as to be monotonous, with those who are seeking to roform social evils, that women receive much less payment for their wsges thsn men. We think there is less fonndation for this reprosch than appears on the surface. In certain fields of employment women crowd the market with half trained lahor, snd in consequence their wages fall to a very low point. They compete with one another. Employers pay less for their lshor thsn for men's because there sre so many of their sex seeking thst particular employment, and, of course, underbidding one another. Moreover, in msny occupations, owing to the chance of their marrying, to their physical weakness and to their want of training, women are worth less than men.

No one who has not sindied the habits of women of ordinary advantages csn realizs how inaccurate aud careless their training is. This is often owing to the want of ambition, or the neglect of their parents. There is in this city, for instance, a very respectable and useful calling for women—teaching in the public schools —by means of which salsries of from $600 to $2,000 per year can be earned. The city offers gratnitously a thrse years' course of careful and thorough trsining for this employmeut in the Normal college. When a graduate has finished this course she is immediately of more valne in the market. Her salary will be probably double what it would be if she undertook to teach without the preliminary training. But we venture to ssy that seventy-five out of the one huudred of those girls who graduate at the city schools, and who mean to be teachers, never enter the Normal college. The usnal alleged reason is poverty. But when one remembers the nnmhers of poor families in New England who deny themselves every luxury to give a boy a good education, one osn essily nnderstand thst the csuse of this neglect in this city is rather want of principle than want of means. The result is that this class of girls soon settle down into ths ranks of poor tosohers, or become shop-girls or sesmstresses.

But even in these places their want of any thoroughness and scenracy of training must at once depress their scsle of payment. For a certain period female assistants were employed in a well known library and reading room of this city. A gentleman hsd occasion to ask for a certain kiud of encyolopedia. The young lady in charge had not the remotest idea what particular encyclopedias were in the reading room, nor even of the character or subject of the journals and magazines. An intelligent office-boy in that positiou would have naturally made it his business to know thoroughly every book and paper in the room. Such a lad at once enters into a successful competition with the young lady, and brings down her wages.

A fow years ago some of onr job printers in New York undertook to employ female compositors. To their dismay they soon discovered that the New York working girls did not know the English lsnguage well enongh, or could not spell accurately enongh, to make good compositors, and they were forced to send for Mssschnsetts female worksrs, or to have the work done in New England.

We may appeal to the common experience of onr lady readers if the female clerks in onr dry goods stores are not more inattentive aud uncivil thsn the male. Such a fact slone (if it be general) would depress their wages as compared with the meu's. Bnt snch defects are merely the result of want of training. The French petty female shop-keepers and clerks sre unsurpassed. And in this conntry, take the branches where women are csrsfnlly educated, and they compete successfully with the other sex. The teachers, for instsnce, prepared by our best female Normal schools aud drilled in the "object system," are more in request for primary and other schools than male teachers. A young lady has been known to receive as high as $1,500 and $2,000 salary soon after graduating. A good Latin teacher in this city can oarn her $2.50 per hour.

Again, in a lower kind of service the pay is excellent. A fair female cook will earn $25 per month and her board, and a skillful one $50, which is better pay than men of the same class receive. We hsve known clever operators on shoe-sewing machines to earn $50 a week; and many just trained on the ordinary sewing machines will make from $1 to $2 per day. A rsw Irish peasant girl will often earn in our families $15 per month, which, with board, is equivalent to nearly $400 per annum. In higher branches there are many female "editors" earning their $1,000 and $5,000 per annnm. The most snccessful woman novelists enjoy a much larger income than this, and the female lecturers receive, in many instances, from $5,000 to $10,000 per annum. Women have no ground whatever for complaining of being "kept down" in the present day.—*N. Y. Times.*

Blackening Sheet Zinc.—The following is a new procees lately discovered for obtaining zinc sheets of a solid black color. The sheet of zinc is cleansed by hydrochloric acid and sand, and then plunged into a solntion of equal parts of chlorate of potash and sulphuric acid. A slight velvety black deposit is immediately formed. The plate is carefully washed with water, allowed to dry, and then plunged into a solution of asphalt in benzine, left to drain, and rubbed with a piece of cotton rag.

An Old Prophecy.

One of our New England exchanges has como across an old almanac, dated 1755, edited by Dr. Nsthaniel Ames, who lived in Dedham, Mass., published in Boston, and in one of its articles Dr. Ames made nse of these prophetic words :

"There lie buried in all this vast region materials for the art and ingenuity of msn to work npon—treasures of immense worth, concealed from the poor, ignorant, aborigins! natives. The curious have observed thst the progress of human literature, like the sun, is from the east to the west; thns it has traveled through Asia and Enrope, and now has arrivcd at the eastern shore of America. As the celestial light of the gospel was directed here by the finger of God, it will donhtless drive the long, loug night of heathenish darkness from America. So arts and science will change the fsce of nature in their tour from hence over the Appalachian Mountains to the western ocean; and as they march through the vast desert, the residence of wild beasts will be broken up and their obscene howl cesse forever, instead of which the stones and trees will danco together at the mnsic of Orphens, the rocks will disolose their hidden gems, and the inestimable treasures of gold and silver be broken. Hnge monntains of ore will bo discovered and vast stores reserved for futnre generations. This metal, more usefnl than gold and silver, will employ millions of hands, not only to form the martial sword aud peaceful share alternately, bnt an iufinity of utensils, improved in the exercise of art and handicraft amoog men. Nature, through sll her works has stamped authority on this law, namely, 'thst all fit matter shall be improved to its best purposes.' Shall not, then, those vast qnarries that teem with mechanic stones—those for strncture be piled into great oities, and those for sculpture into statues to perpetuate the honor of renowned heroes, even those who shall now save their country? Oh! ye nnborn inhabitants of America, shonld this page escape its destined confisgration at the year's end, and those alphsbetical letters remain legible, when your eyes behold the sun after he has rolled the seasons ronnd for a century to come, you will know that in Anno Domini, 1755, we dreamed of your times!"

The Various Parts of a Grapevine.

N. F. Luud, in an address before the Northern Wisconsin sgricultural society, thus defines the principal parts of a grspevine: The stock is the msin part above the root and below whore it branches. The stem includes those portions which have ceased to bear shoots, and are two years old and over. The arm is a portion of the stem trained in a horizontal position. The cane is s ripened shoot, from six to eighteen months old, or until it comes to bear shoots directly from its own buds. The spur is a cane cut short. The shoots are the growth of the current year until the fall of the leaf. Tho laterals spring only from the buds on shoots, and are simply the shoot reproducing itself from its own buds. The nodes are the joints in the shoots and canes from which spring the leaves, buds, tendrils or clustsrs and latersls. The internodes are spaces between the nodes; both these latter disappesr io the stem. The tendril is a twining support. The cluster or bunch is a tendril perfected into fruit. The buds on the shoots occur only at the nodes in the axils of the leaves. Thoy are of two kiuds, growiug side by side. From one springs the latersl, making its growth the onrront year; the othcr remains dormsnt perfecting for the growth of the shoot the coming yesr. Thore are also the blossom-bnds, which appear only on the tendrils and the berries. The whole make up the vine. Let it be borne in mind that the vine has not leaf-buds and fruit-bnds distinctly, like the apple, but leaves and fruit come from the same bud, borne on the shoot, the growth of the present ycar itsolf growing from the hud perfected for that purpose the previous year. No part of the vine which has once borne leaf or fruit will bear it a second time.

Unfermented Wine.—This article is coming quito extensively into use for church purposes, and when mixed with water it also forms a very refreshing summer drink. In order to prepare it the grapes should be allowed to thoroughly ripen. They are then picked and the eteme and all green and rotten grapes removed. The grapes are then crushed and pressed in the neual manner. The juice may be pnt directly into bottles, or it may he first concentrated somewhst by boiliug and then bottled. In either case the bottles are pnt into hot water and bronght to the boiling point, where they are maintained for half an honr. At the end of that time remove them from the fire and cork them tightly while hot, wiring in the corks. Then replace them and continne the hoiling another hour. Glass bottles are hettor for this pnrpose than tin cans, though the latter may be nsed. An analysis of a specimen prepared in New Jersey gave the following result: Alcohol, none; engar and extract, 23.00; ash, .40; water, 76.60. This had probably been concentrated somewhat before bottling. The flavor was fine. Some acid tartarate of potassium had crystallized ont.—*Journal of Chemistry.*

It is estimated that Minnesota will have about 22,000,000 bushels of wheat for export, and that the season'e crops will realize the sum of $30,000,000.

Useful Information.

Vanilla.

The word "vanilla" is frequently on the lips and the peculiar taste of it on the tongue, but few of the thousands who indulge in the delicious ice or delusive soda know anything about the flavor that is so grateful to their palate. The liquid known as "vanilla" is extracted from a bean which grows in considerable abundance in the interior of Mexico. In its green state it is about ten inches in length, as big round as one's finger, and bears a reasonblance to our string bean. When dried and prepared for the market it is about the size of a lead pencil, of a dark-brown color, and with a very aromatic odor. On being cut or squeezed a black tar-like substance oozes out, which, on examination, proves to be innumerable little seeds, so small as scarcely to be distinguished by the naked eye. These beans are cultivated exclusively by the Mexican Indians, a very lawless, treacherous race; so much so, indeed, that a Boston gentleman who recently traveled through the vanilla bean region found it necessary to be accompanied by a strong bodyguard.

The vanilla is indigenous to Mexico, and cannot with any success be cultivated elsewhere. When gathered and dried the Indians bring them to Tuxpan, where they are shipped abroad, one Boston manufacturer alone taking as much as thirty or forty thousand dollars' worth at a time. The demand for vanilla extract has increased so much of late years, not only for creams and soda water, but for cooking purposes generally, that the price has rapidly advanced, while rose extract, long so popular, has correspondingly declined. Another cause for the rapid rise in price is the liability of the bean to mildew or otherwise to become unfit for use. Owing to the increased cost of the article spurious compounds are being thrown upon the market, prepared principally from the tonqua bean, costing the manufacturer less than one-twentieth part as much as the genuine vanilla bean. It is a nauseating substitute, never intended for the human stomach, but can be readily detected by its odor.

Utilization of Cobwebs.

Cobwebs have been applied to various uses. The delicate cross-hairs in the telescopes of surveying instruments are fine webs taken from spiders of species that are specially selected for their production of an excellent quality of this material. The spider, when caught, is made to spin his thread by tossing him from hand to hand. In case he is indisposed to furnish the article, the end is attached to a piece of wire which is doubled into two parallel lengths, the distance apart exceeding a little the diameter of the instrument. As the spider hangs and descends from this, the web is wound upon it by turning the wire around. The coils are then gummed to the wire and kept for use as required. About a century ago, Boa, of Langue doc, succeeded in making a pair of gloves and a pair of stockings from the thread of the spider. They were very strong, and of a beautiful gray color. Other attempts of the same kind have been made; but Reaumur, who was appointed by the Royal Academy to report on the subject, stated that the web of the spider was not equal to that of the silk worm, either in strength or luster. The cocoons of the latter weigh from three to four grains, so that 2,304 worms produce a pound of silk; but the bags of the spider, when cleaned, do not weigh above the third part of a grain, so that a single silkworm can accomplish the work of twelve spiders.

Elastic Varnish for Ladies' Shoes.—Three pounds of rain water are placed in a pot over the fire, and when well boiling there are added four ounces of white pulverized wax, an ounce of clear, transparent glue in small pieces, two ounces of pulverized gum senegal, two ounces of white soap scraped fine, two ounces of brown pulverized sugar; the ingredients are placed in one by one, and every time stirred up; it is well to take the pot from the fire every time a substance is added, to prevent boiling over; when all is added the pot is removed from the fire; when sufficiently cooled, three ounces of alcohol are added, and finally three ounces of fine Frankfort black, well incorporated by continued stirring. This varnish is put on the leather with a brush, and is very valuable for boots and shoes, as it can afterwards be polished with a large brush like ordinary shoe blacking, shows a high polish and does not soil the clothing.

Hammock System in Cars.—Actual experiment in England has demonstrated the great advantages of the hammock system of conveying invalids by railway. The invalid suffers neither jar nor jolt. It is proposed to extend the benefits of the hammock system to the general traveling public, thus reducing the discomfort of railway travel to the minimum.

German Method of Preserving Wood.—The following method is used in Germany for the preservation of wood: Mix forty parts chalk, fifty resin, four linseed oil, melting them together in an iron pot; then add one part of native oxide of copper and afterward one part of sulphuric acid. Apply with a brush. When dry, this varnish is as hard as a stone.

Useful Cements.

1. Waterproof cement for cast iron pipes, etc. Take equal weights, in dry powder, of burnt lime, Roman cement, pipe clay and loam, and knead the whole with about one-sixth of its weight of linseed oil. An increased proportion of Roman cement improves the quality.

2. Cement which resists moisture and heat, but not the direct application of fire, suitable for gas and steam pipes, etc. Take six parts red lead, two parts white lead, and four parts pipe clay, fine and dry, and mix into a stiff mass with boiled linseed oil.

3. Rust cement for water and steam pipes, steam boilers, etc. Make a stiff paste by mixing two parts sal-ammoniac, thirty-five parts iron borings, one part sulphur, with water, and drive it into the joint with a chisel.

Or, take two parts sal-ammoniac, one part flowers of sulphur, sixty parts of iron chips, and mix with water containing a sixth part of vinegar or a little sulphuric acid.

Or, mix one hundred parts bright iron filings, or fine chips or borings, with one part powdered sal-ammoniac, moistening with water. When prepared, force it into the joints. It will prove serviceable under the action of fire.

4. Cement for the joints of iron stoves. Equal quantities mixed, sifted road ashes, and finely powdered clay with a little salt. When required for use, add water enough to make a thick paste.

5. Iron cement unaffected by a red heat. Take four parts iron filings, two parts clay, one part firebrick; reduce to the size of rape seed, and mix into a thick paste with a saturated solution of salt.

Improvement in Plate Glass.—Messrs. Charles Bussell Gibbs & Co., plate, sheet and looking-glass manufacturers, of London, have just succeeded in producing thin polished plate glass for pictures, etc. The standard thickness of the plate glass now in use is, as many of our readers are doubtless aware, a quarter-inch, but in the warehouse of this firm are to be seen sheets, varying in size from twenty inches by sixteen inches to eighty-five inches by forty-three inches, only an eighth of an inch thick. This glass is quite free from the wavy lines of patent plate or sheet glass, has a beautiful surface, and the color is of the greatest purity. Its superiority over that now in use for covering pictures and prints is obvious. Though a glass of this description has for a long time past been a desideratum, it is only now for the first time produced for sale.

A New Cement.—A French chemist is said to have succeeded in preparing a mineral compound, which is said to be superior to hydraulic lime for uniting stone and resisting the action of water. It becomes as hard as stone, is unchangeable by the air, and is proof against the action of acids. It is made by mixing together 19 lbs. sulphur and 42 lbs. pulverized stoneware and glass; this mixture is exposed to a gentle heat, which melts the sulphur, and then the mass is stirred until it becomes thoroughly homogeneous, when it is run into moulds and allowed to cool. It melts at about 248 deg. F., and may be re-employed without loss of any of its qualities, whenever it is desirable to change the form of an apparatus, by melting at a gentle heat, and operating as with asphalts. At 230 deg. F. it becomes as hard as stone, and preserves its solidity in boiling water.

Good Health.

New Treatment of the Insane.—On the occasion of a recent visit of a party of prominent citizens of Montreal to the new lunatic asylum which has been established by the Sisters of Providence near that city, Dr. Howard, the medical superintendent of the institution, made some remarks upon his method of treatment which will probably excite surprise among a good many of those who have made a special study of mental disease. Dr. Howard said that in his opinion it was impossible to treat lunatics and cure them without liquor. He had tried it, and found that no medicine could be substituted for brandy; nothing which would add in such a material manner to the brain substance. Dr Howard's theory is not new, for the most ancient writers on insanity believed in stimulation, and applied it in the treatment of the insane; but the modern practice runs generally to the use of sedatives. The asylum under Dr Howard's charge has been open for the reception of patients only about six weeks, and he says that thirty-two of his patients have already been discharged cured, while upon his books he has the names of nearly more for whose ultimate recovery he has strong hopes. There were altogether under treatment 417 patients.

There is good reason to believe that contagious diseases are often communicated by dogs, cats, and other household pets. A case of scarlet fever recently occurred in England in which a dog conveyed the disease. He had been the constant companion of a fever patient, and his hair doubtless became impregnated with the malaria.

Fatal Hemorrhage from a Tooth.—A young man named Hannan, living in Coles county, Ill., had a tooth drawn last week, and the hemorrhage was so excessive that he was unable to leave the dentist's office. All efforts to stop the flow of blood failed, and he died.

The Pulse.—In a discussion upon the frequency of the pulse, at a recent meeting of the Clinical Society of London, it was asserted that a slow pulse in no wise interfered with health, and some remarkable cases were mentioned. The most interesting was that of Dr. Hewan, related by himself. Twenty-one years ago, after prolonged study and work, his pulse fell from seventy-two to fifty-five, and he felt very cold; from that time its frequency gradually decreased until about eleven years later, when it was but twenty-four beats per minute. Its present rate is about twenty-eight. Notwithstanding these facts, he has not suffered from fainting, fits, or cold, and is capable of great physical exertion, of which evidence is to be found in his ascent of a high mountain on the continent; and his digestion remains unimpaired. Another speaker said that Napoleon I. had a slow pulse, being from thirty to forty per minute, and a third member mentioned that the rate of a horse's was only sixteen.

Chronic Diarrhœa.—"Well, now, Delia," said aunt, "just you tell her of what cured my son Andrew of chronic diarrhœa, brought on by exposure and improper diet in the army. He had been ailing for a long time, years, when this remedy was tried, and though it has been as much as four years since, he hasn't even had a touch of it. It was this simple thing Andrew took: Peaches, dried with the peeling on, and just kept them by him, eating perhaps four or five pieces a day, sparingly though, and a pound cured him." Another curative, or rather a preventive, of sick headache: When weary, either from travel or otherwise, take a small teaspoonful of Epsom salts, dissolved in pure, cold water, just before going to bed.—*Ohio Farmer.*

The Heroic Cure.—From the Virginia *Chronicle*: Among the few who have reason to be thankful for the fire is a lady whose home was on North C street. She had been bedridden for months, having lost the use of her limbs. When the fire approached her dwelling she was carried out on a blanket, and was as feeble as an infant. Within half an hour, to the amazement of herself and family, she discovered that the use of her limbs had returned, and from that moment she has been a well woman. Her great fright had worked a cure.

Neutralizing Chloroform.—According to Dr. Schuller, of London, the bad effects of chloroform on the *pia mater* are neutralized by nitrate of amyl. This substance, it is stated, even in cases of complete anæsthesia, arrests suffocation, re-establishes normal respiration, and allows the pulse to regain its vigor. This, if demonstrated beyond doubt by further necessary investigations, will be an important discovery, since it tends to neutralize the serious danger which now in many instances attends the use of chloroform.

Curing Dyspepsia.—Dr. W. W. Hall (good authority) says that dyspepsia can be uniformly cured and always avoided by the following rules: Eat thrice a day. Not an atom between meals. Nothing after a noonday dinner, but some cold bread and butter and one cup of hot drink. Spend at least half an hour at each meal. Cut up all the food into pea-sized pieces. Never eat so much as to cause the slightest uncomfortable sensation afterward. Never work or study hard within half an hour of eating.

Plenty of Sleep.—A medical man, discoursing upon sleep, makes this remark: "One man may do with a little less sleep than another; but as a general rule, if you want a clerk, a lieutenant, a lawyer, a physician, a legislator, a judge, a president or a pastor, do not trust your interest to any man who does not take on the average eight good solid hours of sleep out of every twenty-four. Whatever may be his reason for it, if he does not give himself that, he will snap something just when you want him to be strong."

Remedy for Toothache.—The following formula, says *The Practitioner*, seems to be serviceable, as the creosote will have an anæsthetic action, while the ammonia will act in the same way as bicarbonate of sodium, by neutralizing any acid present in the tooth. "Take equal parts of creosote, strong solution of ammonia and tincture of myrrh. A very *small* piece of cotton wool to be soaked in the mixture and put in the hollow of the aching tooth."

Vegetable Acids.—From the pen of A. Jacobi, M. D.:—"Nursing women are often forbidden to eat acids, or fruits, lest the milk should turn sour. Vegetable acids as soon as they are taken up into the blood are converted into alkaline carbonates, long before they could reach the milk glands, therefore their acidity is destroyed. Instead of being avoided, fruits are extremely desirable as articles of food for the nursing women."—*St Louis Medical Journal.*

Curry Unhealthy.—Curry has been discovered to be bad for the complection. Dr. Henderson, writing to an Indian paper, says that all curries are colored with turmeric, and that if habitually eaten they will in course of years affect the fleshy tissue, and ultimately the skin. The jaundiced hue of many Anglo-Indians is not due to sun-burning or any affection of the liver, but results solely from the constant consumption of curries containing turmeric.

Domestic Economy.

A Beefsteak.

The sublime idea of a beefsteak is by no means fixed. In England the *beau ideal* is a rump steak and the "point" where a noble circle of fat encloses a plump triangle of lean, is mostly esteemed. As to the thickness to which these steaks should be cut, doctors differ. A large majority rules in favor of thick steaks, but an intelligent and voracious minority declares for a thickness of half or at most three-quarters of an inch, on the ground that steaks of this thickness require only "one good turn," and when broiled over a clear fire become equally cooked throughout—a condition deemed impossible in those of greater density.

In choosing steaks great regard should be had to the color and grain. Pinky-looking beef is always immature, and if tender, tasteless; while coarse-fibred meat, albeit occasionally of high flavor, gives overmuch exercise to masticators, and is, moreover, apt to put a heavy strain on the digestive organs. In these cases the apparent waste is considerable, but the sublime sensation experienced in devouring the lean amply compensates for any loss incurred by an undue proportion of fat.

Perhaps the principal reason why steaks are so miserably cooked in private houses is that no skill is shown in the management of the fire. A good bright fire topped with charcoal, or, in default of pure carbon, with coke, will produce the intense heat without smoke absolutely necessary to cook a steak to perfection. The bars of the gridiron should be thin and not too close together. When these are thoroughly heated they should be rubbed with a little fat and are then ready to receive the steak, which, after being severed from the parent rump and trimmed, should undergo no preliminary treatment, save a slight dusting with pepper. Salt should never be put upon the steak till it is cooked, as it causes the juices of the meat to flow; and the steak should be turned, and only once turned, and should by no means be prodded with a fork.

All hammering of steaks should be avoided. Turned only once and broiled for about ten minutes over a clear fire, the steak is cooked and should then be sprinkled with salt and served on a hot dish. Confirmed steak eaters insist that nothing, beyond pepper, salt, mustard and horse-radish is needed with a steak except a mealy potato and a slice of stale bread; but the *dicta* of these rigid purists are often set aside in these degenerate days and oyster sauce or fried onions are often served as accompaniments. Mushroom catsup is also liked by many, but should always be made hot. The sight of a human being deluging a prime hot steak with cold catsup arouses stormy emotions in the bosom of a true steak eater.

The practice of cutting steaks from the sirloin prevails in America as well as in France; but although the upper and under portions are often divided into "sirloin steak" and "tenderloin," the truly national custom is to cut clean through the bone and sever both into one piece, which is then called a "porterhouse steak."

These handsome cuts are broiled, and often served with mushrooms, making a capital dish for at least two persons. It must, however, be admitted that in America there exist persons depraved enough not only to fry these magnificent steaks, but like the man who ate asparagus at the wrong end, to pretend that he liked them best that way.

Spanish notions of cookery are hardly worth quoting; but for the sake of variety I may describe the peninsular mode of treatment. Neat slices are cut from the under side of the sirloin; meanwhile, a quantity of onions chopped very fine are put into a frying pan, with a liberal allowance of butter, and allowed to take a slight color. The pan is then drawn back and the pieces of beef, well seasoned with pepper and salt, are put in and fried in the butter. Served with the onions over a quantity of stewed tomatoes these fillets are very eatable when nothing better can be got.

In Vienna it is not uncommon to mince the beef fine, flavor it with pepper, salt, pounded onions and chopped parsley. It is then mixed with eggs to "bind" it, and is formed into the shape of small steaks and fried in butter.

The Saxons mix one part of lean chopped pork with two parts of beef and proceed as above. None of the preparations, however, come strictly under the category of steaks.—*Condensed from London Queen.*

Honey Cakes.—Mix a quart of strained honey with half a pound of powdered white sugar, half a pound of fresh butter and the juice of two oranges or lemons. Warm these ingredients slightly, just enough to soften the butter, and then stir the mixture very hard, adding a grated nutmeg. Mix in gradually two pounds or less of sifted flour, make it into a dough just stiff enough to roll out easily, and beat it well all over with a rolling pin; then roll it out into a large sheet half an inch thick, cut it into round cakes with the top of a tumbler, dipped frequently in flour, lay them in shallow tin pans slightly buttered, and bake them.

To Broil Tomatoes.—Select those not over ripe and cut in halves crosswise, dip the cut side into beaten eggs, then in wheat flour; place on a gridiron whose bars have been greased. As they become burned, turn over and cook skin side until done. Season with butter, salt and pepper upon the egg side and serve upon a platter.

MINING AND SCIENTIFIC PRESS

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San Francisco:
Saturday Morning, Nov. 27, 1875

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The Steam Pump Trial.

The trial of steam pumps, in competing for the medal of the Mechanics' Institute, took place last week at the pavilion. The committee having charge of the trial have not yet made up their report, but as soon as they have completed their labors, we will publish the details. Suffice it to say for the present, that the "San Francisco steam pump," a California invention, manufactured in this city by W. C. Wilcox, came off victorious over the other competitors. This has been spoken of as the "Wilcox pump," after its inventor, and some people suppose it is the "Wilcox water lifter," an entirely different thing. The two machines and two inventors are entirely distinct and different. The "San Francisco steam pump" is adapted for irrigation, boiler feeding, mining water works and all the purposes to which a first-class pump can be applied. The water lifter was for irrigation only. The "San Francisco steam pump" achieved quite a victory in the trial, the tests being very exhaustive and accurate, and Mr. Wilcox is to be congratulated both as an inventor and manufacturer. A manufactory for these pumps was established some months since in this city, and is now working on them. The results of the trial will bring the "San Francisco" into prominent notice among pump users.

Kaolin and Infusorial Earth.

An item is going the rounds of the press to the effect that very extensive deposits of kaolin have been discovered in Santa Barbara county, in this State. Without attempting to discourage the discoverers or proposed purchasers we suggest that they be very careful to find out whether it is really genuine kaolin before going into it extensively. We have seen some of this Santa Barbara "kaolin" ourselves, and beg leave to state that what was shown us was not kaolin at all.

Two gentlemen called on us recently, one a discoverer of a deposit, and the other an intended purchaser. Both were firmly convinced that the substance they had was genuine porcelain clay, or kaolin. The discoverer had seen plenty of it in the East and Europe and was familiar with the substance. The intended purchaser took his word for it and was convinced also. However, he came with said discoverer to ask some questions relative to its value in California, and whether there were in existence on this coast any porcelain factories which imported the crude material. If not, they intended to go into the business on a large scale, being able to supply the world with a superior article of kaolin at a reasonable price.

Intending to make an item of the matter the writer questioned the gentlemen as to whether they had had an analysis made. To our surprise they said no chemist had examined the earth, but the discoverer was so familiar with it that no doubt existed in their minds. Shortly after they went away the intending purchaser returned alone and asked us if we thought it advisable to have an analysis made. We naturally replied that it was, if he intended putting any money into the proposed enterprise. The writer then accompanied the gentleman to a well-known chemist and metallurgist, who, on examination, pronounced it simply infusorial earth. He said an analysis was not necessary in this case, as many samples of similar character had been submitted to him previously. Under a powerful microscope he showed us the *infusoria* plainly, so the gentleman went away with the impression that he would n't start any porcelain factory just yet.

This particular specimen was from Santa Barbara, and since then we have seen other specimens from different places, slightly varying in appearance, but all of a similar character. Immense beds of infusorial earth exist all over California, but it is of no special value, except for scouring purposes and in the manufacture of giant powder, and in these cases a very small proportionate quantity is used. If any one finds real genuine kaolin or porcelain clay, it would be exceedingly valuable, but no one is apt to make much out of infusorial earth by calling it kaolin, unless by a swindling operation. We write this item to put those on their guard who might be careless in the matter.

Suspension of Work at White Pine.

We are sorry to see that the prospects in White Pine district, Nevada, are so very gloomy, and that so little work is being done. Work has been stopped on the Ward Beecher, Original Hidden Treasure, Mammoth and other prominent mines in the district. B. F. Sherwood, the broker, who died a few weeks since, was a large owner in these properties. Some months since, W. B. Bourne, the capitalist, who was also a large owner, died, and since then work on the mines has been languishing. The *White Pine News* in speaking of the situation states that the mines are owned by a few wealthy stockholders, and for the last three years have only been worked by a small force of men; they also own two or three good mills, among which is the Big Smokey, and they too have laid idle. The cause for this unpleasness on the part of the owners of this property has always been a matter beyond our comprehension. That there has been a large amount of money extracted from the mines there can be no doubt; neither can there be a doubt, if properly managed, that immense wealth is still waiting for further development. The mines are all on Treasure hill, in the same belt with the Eberhardt & Aurora, South Aurora and other valuable properties, all of which are now lying idle, with the exception of the Eberhardt & Aurora, which, we are pleased to state, is being vigorously worked, and has been paying its company at the rate of one hundred thousand dollars per month for the past seven months. With a proper management of the above mentioned mines, all the company's mills could be put to work, and they, too, could be receiving their hundreds of thousands per month. We hope that the old management of this valuable property may change, and that it may fall into the hands of parties who will know when they have got a good thing.

We also see by the *News* that the Hamilton mining and smelting company after a run of twenty seven days closed down their furnaces, having turned out in that time ninety tons of bullion valued at about $20,000 or $22,000. The company does not consider the run as having been a profitable one, owing principally to the extraordinary outlay in starting, and the high prices paid for most of the ores smelted. The assays show that the ores were worked up to ninety per cent throughout the run. Owing to the stoppage of the furnace, work has been suspended on the Fay mine, one of the best smelting mines in the district. The whole force has been discharged and the mine shut down. Unless some of the mines continue work this winter there will be no ore in the spring to start a furnace.

From the present outlook in the camp there will be a number of miners thrown out of employment by the stoppage of work on several prominent mines in the district. In this case the *News* advises the miners to form small companies and lease some of the many good mines now lying idle and work them this winter. By this means they would at least make wages, and in some cases a good deal more. All the ore that can be taken out this season will be wanted in the spring by the furnaces, and coin will be on hand to pay for it. It is better to do this than to spend their earnings in hunting work elsewhere, which at this season of the year will be hard to find in Nevada.

Our Home Industries.

Manufacture of School Furniture.

It is a singular and evident fact, that in five years' time a complete change has occurred in this city in the character and form of furniture as well as in the material employed. Prior to that period our dependency led to constant large shipments from the East or to the manufacture of furniture incomparable to the present productions. This will be more marked as the manufacture progresses. The woods obtained on the Pacific coast have not frequently been accorded the merit they deserve as supplying an article necessary to the manufacture of superior furniture. While we certainly do not claim that our woods excel in any specific manner, we must assume their importance as supplying the place of the best imported, and judge them fully up to the standard of being pronounced first-class. The preparation of the several qualities of lumber is the primary process, and here undoubtedly is contained the elements of subsequent success. The imported (Eastern) lumber, before being used, is subjected to kiln-drying, in the majority of instances. Now the great feature of the California lumber is exemplified in the treatment it receives in process of seasoning. California maple, ash and primavera, the chief productive hard woods on the Pacific coast, should be thoroughly weather seasoned and kept under cover. The duration of time depends entirely upon the condition of material and its ultimate object. The lumber should be so piled as to allow a current of air to pass through the different interstices, each board approximating to the other, but not in actual contact. California ash is superior to our maple, and in process of seasoning is less liable to become "doty," a condition which shows in decay. Heretofore much dissatisfaction existed in employing our woods, they being generally pronounced inferior; and this realized, we are bound to say, from a lack of knowledge concerning the best mode of seasoning lumber. There are extensive forests of fine ash in Washington Territory, we are informed by reliable source, and eventually the lumber regions there will be worked to our advantage and benefit.

School furniture is manufactured in one of the chief establishments of this city, and exclusive one of the kind here, the material employed consisting mainly of California and Oregon ash, maple, Mexican primavera, the latter a light-colored wood, resembling maple somewhat in color. The beauty of the grain consists in a variety of shades, the wood also partaking in appearance that of satin wood. Foreign and domestic veneers also form a portion of the materials. Messrs. Gilbert & Moore inaugurated the employment of California woods, and now chiefly, or almost exclusively, employ ash and maple in the manufacture of school furniture. That the business we treat of rests upon a solid basis, we need only mention that this firm shipped during last summer at the rate of two car loads of pupils' desks per month, the same received from Illinois, in addition to their extensive shipments of goods manufactured in this city, which would about equal the imported in quality and value. During four years, which dates from the control of the business by the present firm, home manufacture of school furniture and employment of lumber obtained on the Pacific coast have been the chief consideration of the firm. Our city possesses three manufactories, all under control of the above firm, Messrs. Gilbert & Moore. In the factories mentioned the majority of employees are Swedes, Germans and Americans, following in number; and wages range from $3 to $3.50 per day. Characteristic with the firm is their desire to initiate our native born into the art of manufacture, and in this direction they have accomplished many satisfactory results.

On account of the peculiar nature of the work which emanates from such an establishment as we allude to, it is impossible to systematize the labor according to any determined standard or division. The bank and office furniture is too often the result of architectural drawings, the same being made to occupy such positions as to oblige the manufacture to be carried on according to pre-conceived ideas. At the salesrooms of Messrs. Gilbert & Moore, No. 219 Bush street, this city, there are numerous evidences of a superior class of teacher's desks and settees made from our native woods, in the manufacture of which this division of labor occurs, as the firm can more properly systematize this branch.

It is worthy of comment that many of the public and private institutions in this State and Oregon were fitted up by this firm, in which fine æsthetical taste was displayed, the lumber used consisting mainly of walnut, and that obtained on the Pacific coast. In this connection we would state that about two years ago there was an attempt made to introduce a Mexican wood which resembled somewhat walnut. It was found to be susceptible of high polish and finish, but being of a soft nature it utterly failed as a substitute for the prime article. We are assured of the value of our lumber by extensive employment of the same. White cedar is now used extensively in the manufacture of the cheaper class of furniture, while our hard woods, such as spruce, white cedar and pine, as they come into more general use, will supersede to some extent walnut. Primavera can be obtained at from 12 to 14 cts. per foot; ash, 7 cts. per foot; and maple at about 5 cts. per foot, the price being quite uniform.

Windmills and Pumps.

The effectiveness of the several descriptions of pumps since the principles, or foundation of our knowledge of hydro-mechanics was first discovered by a pupil of Galileo, has been brought to the fullest maturity, our intelligent mechanics proceeding with the attained benefits of scientific erudition, and unlimited capacity for invention. The most popular method employed by the Greeks was a process depending upon the action of the Archimedean screw. The common suction pump early led ingenious men to procure water from a depth on entirely new principles. The common lifting pump was superseded by double-acting pumps; force pumps being introduced to raise water higher than it could be supported by atmospheric pressure; and double-acting force pumps supply an uninterrupted flow of water. The rotary pump and other successful contrivances of this nature are the emanations of the last quarter of a century.

These facts are only relevant to our subject, inasmuch as they are the natural corollary of the windmill, a species of device to raise water on the plan of the cheapest possible motor—the atmosphere. This motor is effectual; and according to the mechanical contrivance it performs well or ill. Some four establishments in San Francisco prosecute the manufacture with varying degrees of success, the principles of construction being identical, the *modus operandi*, or management of parts differing in such respects as to entitle the manufacturers to some knowledge of mechanical invention. The Excelsior windmill, as manufactured by Messrs. Atwood & Bodwell, presents several features worthy of remark, their windmill operating with equal facility to any here made, and unquestionably being superior to the Eastern mills as regards construction.

It is generally understood, we believe, that Eastern windmills are complicated in their arrangement. Thus they become more liable to disarrangement of the several parts and necessitate a constant repair at a pecuniary value of many dollars. Our windmills and pumps command a somewhat higher price, as they are built more solidly, and as their intrinsic value is better understood. The above firm has been in successful operation for the last thirteen years, and during that time it has supplied upwards of 4,000 windmills and pumps to California alone, which are to-day actively employed. This, in addition to the foreign supply, Mexico, South America, Southwich Islands, Australia, China, Japan, etc.

The Excelsior improved windmill, an adjustable and self regulating contrivance, possesses no complex machinery, but is constituted plain and out of the best materials. There are twelve sizes, with wheel twelve to forty feet in diameter. The chief features of the mill are recognized in the center column, upon which the wheel is mounted, revolving upon its axis on anti-friction balls at the base of column and iron circle in platform, the object attained being a susceptibility of the mill to work under the slightest breeze or air pressure; and in the vane, which lies parallel with the wheel, the chain or rope attachment, at the desire of the manipulator, causing the vane to assume a horizontal position to set the mill in motion, or have it become perpendicular to throw it out of the wind. The principle, as we said, with exception of these distinguishing traits, is the same as in general construction of such apparatus. The largest windmill made by Messrs. Atwood & Bodwell, wheel 40 feet in diameter, is capable of raising 20,000 gallons of water per hour. Their windmills range in price from $85 to $2,000, pumps $33 to $500 and $600. At their establishment, Nos. 211 and 213 Mission street, this city, the manufacture of the Excelsior windmill is carried on, also that of the Stover windmill, an Eastern invention, the right to manufacture which is possessed by this firm. Their employees receive wages ranging from $3.50 to $4 per day. This firm also manufactures extensively Sweep horse powers, with patent draw-spring levers, price from $80 to $140; Little Giant triple gears and double levers for two horses; Excelsior double geared, heavy, for one horse, and Farmers' single geared. The extensive use of windmills in this State naturally causes the manufacture to be carried on according to right principles, as ingenious inventions possessing unquestionable qualities of excellence are bound to come into practical play. And as this climate is particularly adapted to the employment of windmills their manufacture, it is reasonable to suppose, must be practiced here to a better advantage than in the Eastern States, where they are in less general use.

Improved Wood-Carving Machine.

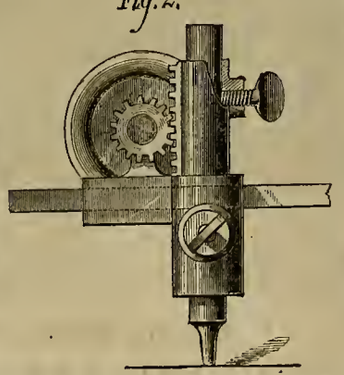
We illustrate herewith a new apparatus designed to perform all kinds of carving, from the coarsest scroll work or similar decoration used upon furniture, down to the pictorial engraving of wood blocks. The principal features of the invention are its simplicity and the ease with which it may be operated, requiring no skilled attention nor especial care other than that involved in the very plain proceeding of following the outlines of a given pattern with a pointer moved by hand. The machine, in construction, is nearly identical with the pantagraph, an instrument used by draftsmen for duplicating drawings on an enlarged or reduced scale, the carving cutters being substituted for the pencil used in that apparatus. *A* is the principal rod or shaft upon which the working part of the device is supported. Its inner end is attached to a sleeve which surrounds the vertical driving shaft, *B*, which serves as a center for the circle, an arc of which is described by the outer extremity of the rod which is mounted on slides or rollers which traverse a curved track upon the table, pivoted, as shown, to collars which slide freely upon the rod, *A*, and which may be adjusted thereon and clamped in position by set screws, or bars, *C* and *D*, of the pantsgraph frame. Said bars are connected by two other pivoted bars, *E* and *F*, which complete the square. The bar, *C*, carries the pattern tracer, *G*, and the extremity of said bar serves as a handle for the workman to guide the tracer into the various curves and indentations of the pattern. Adjustably mounted upon bar, *D*, is a vertical shaft which carries the cutting tool, *H*. Said shaft is driven by a belt from the pulley, *I*, fixed at the central portion of the bar, *D*, which, in turn, is actuated by another belt from the pulley located on the summit of the vertical shaft, *B*. Shaft, *B*, is belted to the driving pulley shown under the table.

It will be obvious that any motion given to the tracer, *G*, will be at once followed by the cutting tool, *H*, so that, for example, if the tracer be moved about the edges of a certain curve, the cutter will follow a like path. The latter, however, will be reduced in size, though in exact proportion, on account of the cutter being located nearer the center of the circle of which the bar, *A*, is the radius, than the tracer. Since the sleeves to which the bars, *C* and *D*, are pivoted are adjustable, it is clear that the nearer the cutter is carried toward the shaft, *B*, the smaller will be the path it describes, corresponding to that moved over by the tracer; and therefore the object, the outlines of which are followed by the latter, may thus be reduced, to any less scale desired, by suitable movements of the sleeve of the bar, *D*, in or out on the rod, *A*.

In the engraving, the machine is represented as carving the scroll work upon a pianoforte leg, which is mounted on centers so that the surfaces to be operated upon may be brought uppermost in succession. The work is always reduced in scale from three-fourths downward, so as to secure greater ease and accuracy in operation; and therefore the pattern, which is shown secured beneath the tracer, *G*, is considerably larger than the article itself, which is fastened beneath the cutter.

Thus far we have referred principally to motions of the tracer and cutter in a horizontal plane. In order, however, to cause the tool to form the raised or indented portions of the work, it is necessary that there should be free movement in a vertical plane, so that, by continuous pressure on the tracer, the cutter may cut downward or be raised to leave certain portions in relief. The bar, *E*, it will be noticed, is very much heavier in construction than bar, *F*. It thus serves as a counterpoise, and balances the frame on centers on the sleeves on bars, *C* and *D*, which surround rod, *A*. The

Fig. 2.



motion of the frame, therefore, is universal; and at the same time, the parts are perfectly balanced in every position, reducing the manual labor of moving it to a minimum. This is probably the most important improvement in the invention, and gives a large advantage over the ordinary routine machine, the motion of the cutter of which is confined to one horizontal plane.

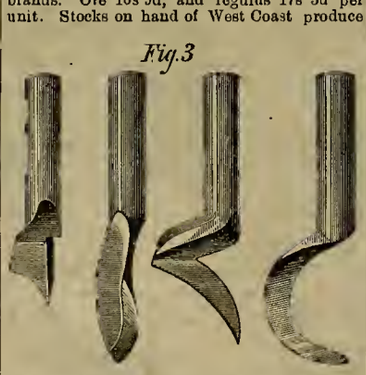
Connected with the upper part of the tracer, *G*, is a small rack, with which engages a pinion operated by a hand wheel. This device is shown more clearly in Fig. 2. Its object is to control the vertical action of the cutter, so that, if desired, it can be prevented from making as deep an indentation as called for by the pattern, or just the reverse. In Fig. 3 several forms of the cutters used are shown.

The capacity of the machine is large, since the table may be built on a more extended arc, thus admitting of an area to be worked over as great as is afforded beneath the cutter, allowing, of course, room for the pattern. The invention is light in all its portions, and easily constructed. It will prove, we think, a valuable aid to workers in wood of all classes. The inventor states that the machine will do the work of twenty expert carvers. For further particulars address the inventor, Mr. John F. Blackman, with Vanderbergh, Wells & Co., corner of Fulton and Dutch streets, New York city.

FIG. 1. BLACKMAN'S WOOD-CARVING MACHINE.

COPPER.—The Liverpool copper market has of late been unusually dull and lifeless. The ruling rate for good ordinary brands during the month of October, has been £82 10s. Quotations on November 1st, according to Jas. Lewis & Son's report were as follows: Bars, £82 to £82 10s for good ordinary brands on the spot and to arrive, and £83 and £84 for special brands. Ore 16s 9d, and regulus 17s 3d per unit. Stocks on hand of West Coast produce

Fig. 3



were 12,435 tons fine, against 13,206 tons on the 1st of October.

THE hoisting works of the Niagara and Monumental mining companies, situated a short distance above Devil's Gate, on Gold canon, Washoe county, were blown down last Saturday night, and were left a total wreck. The same blast that demolished the Episcopal church in Silver City, Lyon county, leveled the hoisting works.

NEARLY all the Virginia fire companies are making arrangements to disband.

To Prevent Shafts Catching Fire.

Mr. W. Ware, one of our oldest subscribers, gives the following suggestions for a method of preventing mining shafts from taking fire, when the mill and hoisting works over the shaft take fire and burn. In the first place, he says, there should be no wood at the top of the shaft, but it should be finished at least the length of one set of timbers with iron, brick or stone. Moreover, there should be no wood on the ground close to the top of the shaft.

Two ordinary iron rails, such as are used for street cars, are taken, and one laid on each side of the mouth of the shaft, so as not to interfere with the hoisting. These rails should be sunk a few inches in the ground. Have a strong iron car with small wheels or rollers to fit the rails, so that it will run easily back and forth, and large enough to cover the mouth of the shaft perfectly and some little to spare. The car should be kept filled with sand or earth and run back out of the way while hoisting operations are going on, but always kept beside the shaft in readiness.

Now, when the alarm of fire is given and the workmen hoisted from the mine, the car loaded with sand should be run over the mouth of the shaft, so as to cover it in the most perfect manner. An embankment of earth can now be thrown up all around the edge of the car so as to make it perfectly air tight and fire proof. The rails should be sunk so that when in position the body of the car will just clear the ground. When properly prepared and kept clear of rubbish the mouth of a mining shaft may be closed in five minutes. For small mines particularly a device of this character would be of great utility, since it would always be in readiness.

THE Virginia *Enterprise* of the 16th says: Night before last, about 10 o'clock, Mathew Paulson, amalgamator at the Devil's Gate mill, Silver City, Lyon county, met with an accident which will undoubtedly prove fatal. He was in some way caught in a belt which he was trying to place on a pulley, and thrown some distance, striking against the corner of a post and crushing in his skull. The physicians called to his assistance have no hope of his recovery.

ALL the horses of the Virginia and Gold Hill omnibus line, and nearly all the work animals in Virginia, are afflicted with the epizooty to such an extent as to render them unfit for service.

ANTIMONY is selling in Liverpool at £58 to £59 for French star regulus.

QUICKSILVER has fallen in Liverpool from £14 10s to £12 per flask.

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It renders water soft, and imparts a delightful sense of coolness after washing.

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NOTICE.—All persons who wish to contribute money to the assistance of the sufferers by the late fire in Virginia City, will please make out their checks in the name of GEO. S. DODGE, Treasurer, and leave the same at Rooms 12 or 17, Hayward's Building, California street. Those sending cash will please forward to the same name and destination.

Several solicitors have been appointed, who are provided with pass-books signed by the President, Treasurer and Secretary. The Secretary will be daily in attendance from 9 A. M. to 3 P. M.

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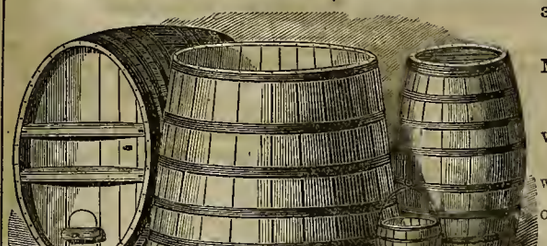

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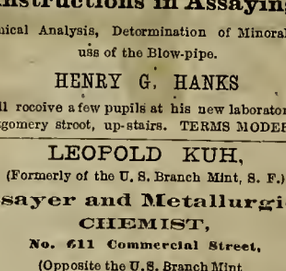

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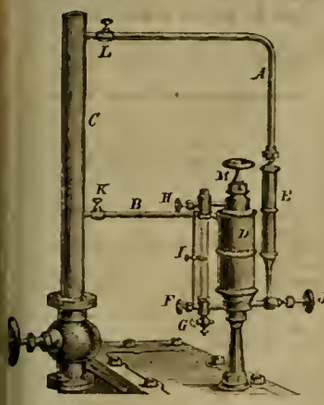

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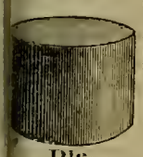

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THE PATENT

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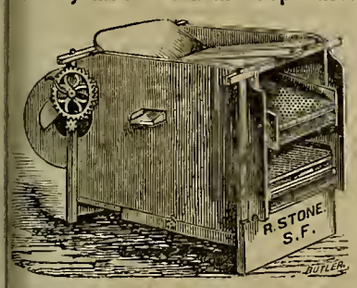

Is one of the greatest improvements of the age for cleaning and separating grain, while it combines all the essential qualities of a first-class Fanning Mill. It also far excels anything that has been invented for the separation of grain. It has been thoroughly tested on all the different kinds of mixed grain. It takes out Mustard, Grass Seeds, Barley and Oats, and makes two distinct qualities of Wheat if desired. For further information, apply to

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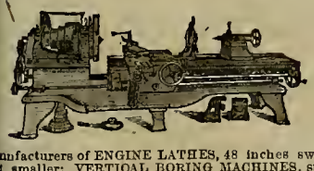

Manufacturers of ENGINE LATHES, 48 inches swing and smaller; VERTICAL BORING MACHINES, suitable for jobbing and boring Car Wheels; UPRIGHT DRILLS, 36 inches and smaller, and other Machinists' Tools.

COR. NORTH FIFTEENTH ST.
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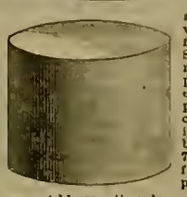
Improved Cast and Forged Steel Shoes and Dies for Quartz Mills.



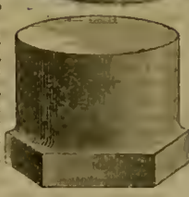
[PATENTED MAY 26TH, 1874.]

Price Reduced to 16 Cents Per Pound.

SAN FRANCISCO, November 10th, 1874.

To Supts. of Quartz Mills and Mining Men generally:

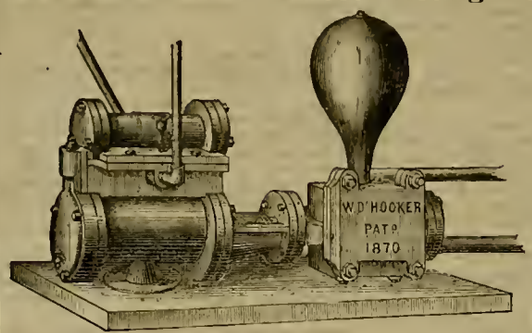
We take pleasure in stating that owing to the rapid increase in our orders, our Pittsburg Manufacturers have been compelled to add largely to their works—a new gas furnace and heavier trip hammer—and are thus enabled to reduce the cost of steel and at the same time produce SHOES AND DIES superior to any yet manufactured. We have consequently reduced the price to 16 cents per pound and solicit a trial order, guaranteeing that you will find them at least 10 per cent. cheaper than the best iron. There are no STEEL SHOES AND DIES made excepting under our patent and sold at this office, or by our authorized agents, though certain Eastern manufacturers advertise STEEL SHOES AND DIES which are only cast iron hardened by the addition of a composition. They will not out-wear two sets of common iron, though called steel. They are very brittle and are not capable of being tempered, flying from under the hammer like cast iron. Our STEEL SHOES AND DIES are in use in many of the largest mills on the Pacific Coast, and all who have tried them pronounce them cheaper and far superior to iron in every respect, even at the old price of 20 cents per pound. Their advantages over iron are cheapness on first cost, increased crushing capacity, time saved in changing and in setting tappets, increased value of amalgam by absence of iron dust and chippings, and a saving of 75 per cent. in freight. It takes 50 days to fill orders from the manufactory East. Price 16 cents per pound shipped at San Francisco. Terms liberal.



Address all orders, with dimensions, to W. R. Townsend, Secretary.

1v29-3m CAST STEEL SHOE & DIE CO., Room 4, Academy Building, S. F

Hooker's Patent Direct Acting Steam Pump.



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Cor. Fremont & Natoma streets, S. F.,

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SIMPLE, CHEAP AND DURABLE.

Adapted for all purposes for which Steam Pumps are used.

The Best Pump in Use.

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N. B.—Also manufacturer of Hooker's Deep Well and Double-Acting Force Pump. Received the Silver Medal awarded at the last Mechanics' Fair in San Francisco. 18v27-2am3m

54 BUSHELS OF CORN AN HOUR.
HARRISON'S
LIGHT, VERTICAL BURR MILLS
BARBER & BACON, MILLERS AND LUMBER DEALERS, SOUTH VERNON, VT., write July 15th:
"We have been running two of your LIGHT VERTICAL CORN MILLS for the past 6 months with remarkable results, and have ground over 30,000 bushels of corn into No. 1 meal in that time, running the grist-mill nights only, as we run our saw-mill in the day time. We have often ground in the 20-inch Mill (which weighs about 500 lbs.), 1,000 lbs. of corn in twenty minutes, or 54 bushels in one hour. Our usual night's work is about 24,300 lbs., or 434 bushels. To do this we have to run at a speed of 1,300 turns per minute, and use about a 20-horse power. You may refer parties to us for further information, and when we have tested your HEAVY VERTICAL MILL, we shall take great pleasure in giving the results."
SEND FOR ILLUSTRATED CATALOGUE AND PRICE LIST.
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New York Candles

Full Weight and 14 ounce.

Will be found on comparison to be

Unequalled in Quality.

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STEARIC ACID CANDLES

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MANUFACTURED BY THE

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THE ROOT WROUGHT-IRON SECTIONAL SAFETY BOILER has been improved and perfected by Eight years experience, and the sale of

Over 1,500 Boilers,

for all purposes. Is perfectly safe from Destructive Explosion, all parts easily accessible for cleaning. Utmost Durability, Highest Economy in Fuel, Reasonable Price. Working portion composed of Wrought-iron Boiler Tubes, tested to a pressure of 500 pounds per square inch. Steam from cold water in from *ten* to *twenty* minutes.

We refer to the following parties, among others, who are using the Root Safety Boilers:

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Humphrey & Mook.....Millerton, Cal.
Parke & Bowie.....Virginia City, Nevada.
Ohoilar-Potosi Mining Co.....Virginia City, Nevada.
Union Mill & Mining Co.....Gold Hill, Nevada.
Belcher Silver Mining Co.....Gold Hill, Nevada.
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J. B. Montgomery.....Portland, Oregon.

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STEAM ENGINES & BOILERS

From 3 to 75-horse power. Shafting, Pulleys, Hoist Gears Quartz Mills, Water Tanks, Spanish Arastras, Pumps and Pipes, Hepburn and Belden Pans, and all kinds of Machinery for sale at lowest prices by

THOS. P. H. WHITELAW,
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Highest cash prices paid for all kinds of Machinery.

WATTERSON'S

Improved Chisel.

The Improved Chisel here illustrated was recently patented through the MINING AND SCIENTIFIC PRESS Patent Agency. The improvement is adapted to all CHISELS FOR MACHINE OR HAND USE. The improvement consists of a Chisel in two parts, as shown in the engraving.

For Machine Use

We use TWO STEMS. From one-fourth inch to one-half inch, use one-fourth inch stem. For all Chisels from one-half to one inch, use one-half inch stem.

For Hand Use

Use from THREE TO FOUR SOCKETS (or upper portion) for a set of Chisels.

For further information, address

ARTHUR R. WATTERSON,
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NIMROD BAUER. RICHARD C. HANSON

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BLOCK & PUMP MAKERS,

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☞ Especial attention given to cases involving Mining, Patent or Commercial Law.

The Concentrating Works at Falun in Sweden—Continued.

[Written for the PRESS by CHAS. C. RUEGER.]

The oone of the rotary hnddles oonsists of a donble floor, the lower of one and one-fonrth inch hoards, the upper of one inch.

The pnlp and olearing water is eqnslly distrihnted over the apex of the cone hy means of a circnlar trongh or gutter. Of this gutter, one-third of the circumferenoe is allotted to the pnlp, and two-thirds to the clesring water. For the more perfect cleansing of ths product, moreover, olearing water is run on to the cone from a moveshle gutter plsced over it. On the psriphery of the huddle cone are three sqnirt pipes, at a suitable distance from each other, the first of which is one foot ten inches long, and serves for the washing off of the waste slums; the second, of the same length, for washing off the middlings; and the third, having a length of five feet six inches, serves for the washing off of the concentrsted small ore slum.

The openings in the squirt pipes have s slanting direction of 45° to the radial line, so that the wster issuing under great pressure gives the slnm a rapid motion towards the periphery of the huddle, whereby the clearing of the surface is effected more perfectly, aud since the holes can in this wise he pnt fsrther apart than in the case of the pipes perforated at right angles, the consnmptiou of clearing water is materially reduced.

The huddles yield clean small ore for the smelter, with six to fourteen per cent. copper, hesides middlings, pulp and wsstes.

The first of these products is run on to small endless helt tsbles, which are six feet eight inches loug and two feet two iuches wide, with an inclinstion of one and one-fourth inch per foot. There are fonr of these tables 0.1 to 0.4, or for each buddle one in use at present, which, as csn he seen in the drswing, are set up to each side of the fnnuel tanks. The arrangements for the accumulation of the auriferons small ore are eimilar to thoee hefore described. Reservoire are eunk for this purpose helow the floor at the head end of the table, and snch also are placed at the foot end, for the accumulation of the impoverished small ore.

The middlings from the huddle flow into the fnnnel apparatus *K* 4, where they are condensed, and are then lifted in common with the middlugs from the third gronp of percussion tables, back into the V box *e* 5, hy the aid of the elevator *l* 3.

The flood of wsste pulp paesee the condeneing funnels *K* 3, and is then lifted into the slnice *n*, *n*.

In front of, and to the side of all the fnnnel appsratus are sumps, eunk helow the level of the dressing worke floor, in which the water flowing out of the condensing fnnuele clesrs itself of slum; this mnst therefore be ehoveled out hy hand from time to time. In order that no interruption of the general operations he cansed by this work, there are several enmps, *y*, *y*, into which the water csn be run in the meantime.

For the dissolving or mixing np of the slums, etc., with water, a rotary mixer is nsed, which is set np slongside of the first fnnnel tank. The pulp so obtained is raised hy the elevstor *l* 3 hsck into the V box *e* 5, for sorting and separatiou, while the tough slimes are mixed np hy a second rotary mixer set np alongside the following funnel tank *e* 8, and run directly on to the rotsting huddle *p* 3.

The two funnel tanks, the four rotating hnddles, four endless helt tshles for the extraction of the anriferous small ore, and the rotary mixer alongside the fnnuel tank *e* 8, are in charge of one man hy day and one other hy night.

The digging out of the slnme in the varions sumps and slnices, and the charging of the aame on to the mixer alougside of the fnnnel tank *e* 7, requires ueually one workman, sometimes two by day and one other hy night.

IX.—The Discharge and Transportation of the Wastes.

It is well known to the concentrating man how considerably the digging ont of the waste sands and elume from the sumps, and their further transportation, increases the cost of concentrating operations.

This work, eo ardnons and disagreeable to those employed, is here doue mechanically.

To thie purpoee the flood of waste pulp from the various machinee, ae already mentioned in proper place, rnns firstly into funnel apparatus *K* 2 and *K* 3 for condeneation, and is thereby reduced in quantity. It is then lifted hy the elevator *l* 2 into the transporting eluice *n*, *n*, which carries it into the building *E*.

On each side of this building are eet up a row of eeven tip boxes, *q* 1 to *q* 7. The sides and bottoms of these boxes are made of three inches thick plank, accurately fitted and doweled, and are lined inside with one inch casing hoards; outside the boxee are heavily strapped with iron. The length in the clear is seven feet, the width three feet four iuches, and the depth three feet ten inchee, the capacity of the hoxes therefore 89.4 cnhic feet, or four to four and one-half tone sand.

The front end of the hoxes is hinged to a heavy cre ;) aron top, and is caused to close water tight hy means of two strong wrought iron clasps, carrying two press screws each.

A cross sluice hranches off to esch side of the transporting sluice and reaches over all the tip hoxes. Ahove the center of each hox a small funnel is attsched to the hottom of the cross sluice, into which the sands deposit, and are discharged through the half-inch orifice into the tip hox helow.

The hack end of the hoxes is fast to the sides, and has a nnmher of one and one-half inch holes ahove ons another on its center line. These are olosed while the hox is filling, with the exceptiou of the top one, throngh which the water discharges, and flows into small sumps placed heneath, there to deposit the slum still contained therein.

When one hox is full, the pnlp is tapped off, snd run into the next. To drain off the water as mnch as possihle, the holes in the hack end are opened one hy one. The screws in front are then loosened, the clasps disengaged and the hox tipped up with little exertiou to an inolination of 50°, thereby discharging its contents into a railroad car of five tons capacity plsced heneath.

Generally several hoxes are filling simultaneously, and hy mesns of the funnels in the hottom of the sluice, the weste sands can he separated into several sorts, coarse and fiue. The first of these contsins 0.3 to 0.4 per cent. copper, and is utilized in making mortar, and for several other purposes, or is thrown over the dump. The fine wastes, ahout ten to fifteen per cent. of the whole mass, is richer, aud contains 0.75 to 1 per cent. copper, sometimes even more, but in such a minute stste of division that it is difficnlt to concentrate. It is expected that the percentage of copper in these fine wastes will iu the course of time he decressed, hy suitahle attention snd skill of the operatives.

Experiments are heiug conducted at present to determine if the copper in these slums can he economically extracted hy roasting and lixiviating with sulphuric or muriatic acid.

For the further transportstion of the wastes, a rsil tramway with donble track is nsed, which extends from the hnilding *E* to heyond the dump. It has a length of 650 feet, and the difference in level hetween the places of loading and dumping is 65 feet. The cars are drawn hy wire ropes connected with a hoisting gear in the upper part of the building *E*. When the full car is drawn up, the empty one returns on the side track. The hoisting gear ie run hy an endless wire rope carried over the roof of the main hnilding, and driveu hy the turhine *G*.

For the transportation of the waste rock, which is sepsrated in the work at the picking tahles, snd of the wastes from the sluice *n*, *n*, two men are employed during six hours daily.

In the manner thns desoribed the entire mass of raw materiale moves hy the aid of mechenical appliancee through every stage of the concentrating proces, the valuahle products are separated from the harren rock hy automatic and continuously acting machinee and apparatus, as much as possihle independent of the skill of the workman, and all the products transported to their places of destination aleo hy mechanical means.

Thus may these works he considered the first example of an independent system of concentration, with s continuons action.

The great advantage of snoh works are particularly prominent where, on account of climatic or other circumstancee and conditions, as in Falun, the wages for mannal lahor are comparatively high.

However, of much greater influence on the economic resnlts thau the saving in wages, is the diminntion of the losscs hy concentratiou, which are reduced to a minimum hy the arraugements described.

It might he appreheuded hy some, that in consequence of the great nnmher of mechaniol appliancea the works become too complicated and snhject to frequent interrnptions for repairs, eto. Thia is not the case, because all the machiuee, etc., are carefully and enhstantially made, down to the smallest detail, and of the most durable material obtainahle; and to thie judicioue care it is dne, that the works ran very regularly from the etart, eo that no alterations whatever hecame necessary, and night work could he introduced in a ahort time thereafter, when the employees had hecome somewhat familiar with the handling of the machines.

Althongh the whole works consist of a syetem of simultaneoue operations, the arrangement is such that in case of repaire, or in consequence of a scarcity of water, one or the other part can he stopped without therefore suspending the operations of the whole works. The machines are repaired while the works are in full blast, for everywhere reservoirs are in readiness to receive the respective material in the meantime, or it is given to some of the neighboring machines, so that interruptions are avoided as much as possible.

The manual work requiree no coneiderable exertion, and is done entirely in contract, in euoh a way that the finished ores are paid for hy weight, and in proportion to their copper value.

[To be Continued.]

A RICH strike has heen made in the 500-ft level of the Manhattan miue, Lander county. The ore assaye $3,000 per ton.

THE importe of silver ore into Liverpool in October were ahout 480 tons, and silver-lead ore about eighty-five tons.

ABOUT 600,000 stand arms are exported from the United States annually.

The Botany of California.

It will he remembered hy most of our readers that when the State Geological Survey was stopped, hy action of the Legislsture in failing to make an appropriatiou, the volumes of the reports on Economic Geology and Botsny which were psrtually prepared failed to appear. The State uot pnblishing the volnmes or paying to have the manuscript prepared, some private gentlemen in this city snhscribed $5,000 to complete the work. Those interested in knowing how the work is progressing will he glad to read the following letter from the former chief of the survey, Professor J. D. Whitney, which was resd at the last meeting of the California Acsdemy of Sciences:

CAMBSIDGE, MASS., Nov. 6, 1875.

My Dear Sir: It appears to me proper thst I should furnish you with a statement of the progress of the Botany of California, towards which you have so liherally subscribed, and which will indeed owe its existence to your contrihntions and efforts to make others contrihnte. Professor Gray hes devoted himself exclusively to this work ever since spring, and his part, comprising the *Monopetalœ* is all in type, making about 300 pages. Mr. Watson, hotanist of the Fortieth Parallel Survey and Curator of the Harvard University Herharium, is at work on his share of the volume, the *Polypetalœ*, and from fifty to one hundred pages are in type. I see no reason why the whole volume of six hundred pages, comprising the flowering plants of California, shall not he in type (electrotyped) by January or Febrnsry. Professor Gray received $500 in full for his work, and Mr. Watson gets $200 a month. The $5,000 contributed will, I hope, pay for putting the volume in type aud all the sslsries. I hope, also, that there will he enough left to pay for printing and paper and hinding of 250 copies of the volume. The electrotyping costs just ahout $4 per page on the average. The typography is very handsome, and the work in all respects first olass. Nothing like it has been done on any State survey. The volume will have a high value for all studeute of hotanical science. Profeesor Gray hse devoted himself to it most enthusiastically. Profeesor Brewer was here all summer working on this volnme, and Mr. Watson has given hie whole time to it eince last spring. He receives a living salary for hie work, whioh is necessary, as he hae no means, and hed to lay aside other work to attend to this. Profeesor Brewer chergee only actusl expensee incurred. * * * Of course, I charge nothing. If the money does not hold out to pey for printing the volume I will pay for that myself. * * * The snhscribers could each be furniehed, in thet case, with a few hound copiee to give away, and they would have the plates (electrotyped), which they could offer to the State for five thousand dollars, and which the Legieleture ie sure, *some time or other*, to take off their hands; or, if not then, prohably eome publisher would he glad to get them at that price. From the plates the volnme csn be manufactnred, printed on good paper, and bound for ahout $1.67 per copy." It will he a large and very handsome volume, nniform in size with the other pnblicatione of the survey, hut much more closely printed. Respectfully yours,

J. D. WHITNEY.

HON. S. C. HASTINGS, San Francisco.

It will he seen from this that this valuahle work will soon appear; and it ie to he hoped that it will not be long hefore some provision will be made to pnhlish that map of the pliocene rivere which was prepared, and the volume on Economic Geology, msny facts on which must have heen gathered.

A NEW HARNWARE FIRM.—Mr. James E. Gordon has purchased the hnsiness of Pillsbury, Hussey, Adair & Co., dealers in hardware, northeast corner of Front and Pine streete, iu this city. Mr. Gordon ie well known in the bnsiness, having been head salesman at Linforth, Kellogg & Co.'s for fifteen yeare. A first class hardware business will he done by Mr. Gordon, who brings to hie new poeition energy and ahility, aa well as a most accurate knowledge and extensive experience. The only chain works on thie coast are owned hy Mr. Gordon, the office of which will now he at the store, No. 5 First street. We are glad to see the young men of California coming to the front and going into hueiness for themselves, and wish the new firm success.

NOTWITHSTANDING the etorminess of the weather the work of reconstructing the hnrned works in Virginia is heing pnshed forward at the mines. All that can be accomplished by men who are pntting forth their hest efforts is heing done to get up and inclose the new hnilding of the Consolidated Virginia and Ophir companiee. Great progrese ie heing made.

THE Napa *Register* eays the product of the Pope valley qnicksilver mines has heen, from the first to the present time, ahout $345,000 worth of quicksilver.

THE Kansas and Missonri hridge, which spans the Misesuri at Lesvenworth, is in the hands of a receiver.

No more bodies from the wrecked *Pacific* have been found.

PATENTS & INVENTION

A Weekly List of U. S. Patents sued to Pacific Coast Inventors.

FROM OFFICIAL REPORTS FOR THE MINING AND SCIENTIFIC PRESS, DEWEY & CO., PUBLISHERS AND U. S. AND FOREIGN PATENT AGENTS.]

By Special Diepatoh, Dated Washingto D. C., Nov. 23, 1875.

FOR WEEK ENDING NOVEMBER 9TH, 1875.

SOFA BENSTEAD.—Simon Bendit, S. F., Csl.

SHEEP SORATOH BOX.—I. B. Dillon, Vissl Cal.

ORE ROASTING FURNACE.—H. G. Livermore, F., Cal.

WHEEL HUB.—Wm. H. Masterman, Ssn Leo dro, Cal.

WINDMILL.—William C. Nelson, Sacramen Cal.

COUPLING FOR TRAIN TELEGRAPHS.—Andre Ryder, Oakland, Cal.

WASHING MACHINE.—Andrew Smith and Jol T. Rov, Sheridan, Nevada.

HORSE HAY FORK.—Orrin Taber, Ssnts Clsr Cal.

ART OF CURING TOBACCO.—James D. Culp, G roy, Cal.

CIGAR MOLN.—James D. Culp, Gilroy, Csl.

———The patents are not ready for delivery by t Patent Office until some 14 days after the date of iss

NOTE.—Copies of U. S. and Foreign Patents furnish by DEWEY & Co., in the shortest time possihle (by t egraph or otherwise) at the lowest rates. All pate business for Pacific coast inventors transacted wi perfect security and in the shortest possihle time.

Affairs on the Comstock.

We notice thet the *Record-Union* sent special correspondent to examine the Virgin mines and ascertsin their condition, as rumo were afloat that many of the mines we flooded. The *Record-Union's* "special" sa that the Consolidsted Virginia snd Californ are entirely cleer of wster to their lowe depths. As far as the Best & Belcher sn Gonld & Curry mines are conoerned, the fac sscertained are thet from the 1550-foot level the Curry there ie an inoline snnk to the dept of 1,550 feet, and from the hottom of this i cline a drift 500 feet long and four feet wi has heen extended into the Beet & Belch ground. Thie drift, owing to the hreaking the Curry pumps, is now full of water, whic rises in the incline to the depth of forty feet su no more.

In Virginia on every hand preparstions fo the coming winter are preesed forwsrd, su phes lsid in, and every guard poseihle ad vanced to ward off future stoppagee and de lays should the storme prove so severe as t stop traneportation over the Sierra. So fa the raine have hsd the good effect of furnishing a hountifnl snpply of water for the mills o the Carson river, permitting them to again ru to their full crnshing capacities. At the Co solidated Virginia mine, according to the Gol Hill *News*, the rebuilding of the hoisting work is advancing at ae rapid a rate as the storm state of the weather will permit; the employee notwithstsnding the heavy rain and snow, st sticking etesdily at work, doing all in the power to keep the erection of the hnildings pr greesing. The frsme of the preeent hoistin works huilding is mnch lsrger and more com modions, being one complete story higher tha the old works were before heiug hurned.

The mine is in excellent condition, a few me heiug kept at work on the different levels watching and strengthening the weak timher wherever any indication of giving way may b oheerved.

On the Ophir the frame of the hoisting work is up and covered in, so that the erection o the machinery can now he carried rapidly fo ward in spite of the stormy weather. Larg ehede for machine and carpenter shops have alao heen covered in, so a considerable portio of the employees can still prosecnte their labor in comparative comfort. A force of men sr kept at work on the 1465 and 1600-foot levels keeping the drifts and ore breasts in good re pair until the hoisting and pnmping machiner ia sgain ready for operation.

In the California mine the flow of water fro the 1400-foot level of the Consolidated Virgini has almost entirely ceased.

VICE PRESIDENT WILSON died on the morn ing of the 22d inst. The President in the orde announcing the death says:—In testimony o respect for the distinguished citizen and faith ful public servant the varions departments o the Government will he olosed ou the day of hi funeral, and the Executive Mansiou and al the Executive Departmente in Washington wil he draped with the hadge of mourning for thirty daye. The Secretaries of War and Navy wil issue ordera that appropriate military and navs honore be rendered to the memory of on whose virtues and services will he long hornr in recollection hy a grateful nation.

The Whole People as with one voice proclaim HALE' HONEY OF HOREHOUND AND TAR the sovereign and in fallible remedy for Coughs, Colds and all Broncial diffi culties. It is the National Specific for pulmonary dis ease.

Pike's Toothache Drops cure in one minute.

WOODWARD'S GARDENS embraces an Aquarium, Muse um, Art Gallery, Conservatories, Tropical Houses Menagerie, Seal Ponds and Skating Rink.

METALS.

[WHOLESALE.]

WEDNESDAY M., November 24, 1875.

African Pig fron, ₱ ton	30 00	@	36 00
Scotch Pig Iron, ₱ ton	35 00	@	37 00
Welsh Pig, ₱ ton	— —	@	38 00
Bolton Pig, ₱ ton	— —	@	40 00
Assorted Bar, bad assortment, ₱ lb	— —	@	3½
Assorted Bar, good assortment, ₱ lb	— —	@	4
Horse Shoe Bar, No. 1 to 4	— —	@	5½
Horse Shoe, No. 5 to 9	— —	@	5½
Horse Shoe, No. 10 to 14	— —	@	5½
Horse Shoe, No. 16 to 20	— 5½	@	—
Horse Shoe, No. 22 to 24	— 6	@	—
Horse Shoe, No. 26 to 28	— 6½	@	—
Horse Shoe, par keg	7 50	@	8 00
Nail Rod	— 10	@	—
Sheet Iron	— 9	@	—
Russia Iron	— 6	@	—
Other Irons for Blacksmiths, Miners, etc.	— —	@	4½
Steel—			
Cast	— 35	@	—
Spear Tin'd	— 37½	@	—
Hall's Pat	— 37½	@	40
Spring, ₱ lb	— 24	@	40
Spring, Yellow	— —	@	25
Spring, Old Yellow	— —	@	12½
Composition Nails	— 24	@	—
Composition Bolts	— 24	@	—
Sheet—English Cast, ₱ lb	— 20	@	25
Iverson & Woods' American Cast	— —	@	16½
Blister	— —	@	16½
Tool Bar	— 18	@	22
Spring Steal	— 9	@	10
TIN PLATES.			
Plate 1 C Charcoal	10 50	@	11 00
Plate 1 X Charcoal	12 50	@	13 00
Roofing Plate 1 C Charcoal	10 00	@	10 50
Block Tin	— 26	@	—
Australian	— 18	@	20
Zinc, By the Cask	— —	@	11
Zinc, Sheet 7x3 ft, No 7 to 10 ₱ lb	— —	@	11
do 7x3 ft, No 11 to 14	— —	@	11½
do 8x4 ft, No 8 to 10	— —	@	11½
do 8x4 ft, No 11 to 10	— —	@	12
Zinc, Assorted sizes	3 50	@	3 75
Quicksilver, per lb	62½	@	65

GENERAL MERCHANDISE.

WHOLESALE.]

WEDNESDAY M., November 24, 1875.

BAGS.

Grain Bags, Stand Wht	9½	@	10
Wool Bags, Hale & Co's	—	@	—
" Sawed	9½	@	10
" 6	9¾	@	10
"	11	@	11½
" 40	12	@	12½
Gunnies, China 24x40	12	@	12½
" 22x40	11¾	@	11½
" 22x40	11	@	11¼
" 22x36	9¾	@	10
Flour Sacks ¼ a	9	@	11
" ½ a	8	@	7
" ½ a	4½	@	5
Grain 60-in	12¾	@	14½
do 45-in	8¾	@	9
do 40-in	7½	@	8
Flour Sacks, 3½ lbs	45	@	50
" 4 "	50	@	52½
Grain Gunnies	8	@	8½
Valley Saga 24x36	11¾	@	12
do 23x40	11½	@	12
do 24x40	12	@	12½
Wool Bags, 24x40	12	@	12½
" 28x36	—	@	13½
Brick's "E. W."	9½	@	10
do "E"	—	@	9½

CANNED GOODS.

Apple Pie Fruits			
2½ lb cans	2 75	@	3 00
Table do	3 75	@	4 25
Jam & Jellies	4 25	@	—
Berries ½ gl	—	@	3 50
Blackberries, qr hoxl	65	@	1 90
Cherries, 3 lb	3 00	@	—

COAL—Jobbing.

Australian, Wton	8 50	@	8 75
Cow Bay	—	@	10 00
Bellingham Bay	—	@	8 50
Seattle	9 25	@	10 00
Cumberl'd	15	@	18
Mount Diablo	8 25	@	8 25
Coos Bay	—	@	8 00
Liverpool	10 00	@	11 00
West Hartley	11 00	@	12 00
Cannel	9 00	@	10 00
Wellington	13 00	@	14 00
Vancouver's Isl	10 50	@	11 00
Charcoal, ₱ sk	75	@	—
Coke, ₱ bush	—	@	50

COFFEE.

Goodwich Island	—	@	21½
Costa Rica per lb	22½	@	—
Guatemala	—	@	22½
Java	—	@	30
Manilla	—	@	21½
Mixed in os	25	@	—
Rio	27	@	—

FISH.

Cod, Dry Cod, new	4	@	4½
Cod, Case	5	@	6½
Cod, boneless	8½	@	10
Eastern Cod	7½	@	8
Salmon In Tubs	3 50	@	9 00
do ½ bbls	4 50	@	5 00
do 2 lb cans	2 25	@	2 30
do 1 lb cans	1 25	@	1 30
Cod, R. ₱ lb	5 00	@	5 50
Mackerel, Cod, bbls	12 00	@	—
do ½ bbls	1 00	@	—
Trout, Sm'k'd Her'g	40	@	50
Mackerel, No. 1, ½ bbls	9 00	@	11 00
Extra	—	@	12 00
Salmon Trout, ½ bbls	1 90	@	2 00
Extra	3 00	@	3 50
Extra mess, ½ bs	—	@	12 00
Cod Herr'g, hx	3 00	@	3 50

HARDWARE.

Axes, Smoakcag handled Axes			
$9@17; do unhandled do $13			
4—less 50c in 5 case lots.			
Axes, Smoakcag Hatchets, Shingling, No 1, $7.50; No. 2, $8; No. 3, $8.25. Do do, Claw, No. 1, $7.75; No. 2, 8.50; No. 3, $9. 25—less 10 per cent.			
Books, Hale Hook Mf'g Co. discount 33½ per cent. from			
Planes, Ohio Tool Co., discount 30 per cent. from list.			
Tacks, Pack Co's Out Tacks ½ per cent. discount and 5 per cent. extra. Finishing and Clout Nails 7½ off list; Fine Nails $7.00 per keg. Ohio Butt Co's Loose Joint Butte 50 per cent. do Fact, 10 per cent off list.			
Machine Bolts, 20@35 off.			
Square Nuts, 20@3c off list.			
Hexagon Nuts 20@3c off list.			
Wrought Iron Washers, 30@3c off list.			
Lag Screws, 15 per cent off list.			

MISCELLANEOUS.

Shingle Gluc	12½@	8	

NAILS.

Assorted sizes, ₱ keg	$3 60	@	$3 75

OILS.

Pacific Gluc Co	—	@	—
Neat's Fut No. 1	1 00	@	90
Tanners'	—	@	—
Castor Oil, No. 1	—	@	1 25
Baker's A A	—	@	1 40
Cocoanut	55	@	60
Olive Plagniol	5 00	@	5 25
do Possal	4 75	@	5 00
Palm ₱ lb	—	@	—
Linseed, raw	80	@	—
do boiled	—	@	75
China nut in cs	50	@	67½
Sperm, crude	—	@	1 40
do bleached	1 90	@	2 25
Coast Whales	47½	@	50
Polar, refined	—	@	—
Lard	—	@	—
Oleopine	—	@	28
Davoe's Brill't	—	@	—
Long Island	—	@	25
Eureka	26	@	27
Davoe's Astro'm	25	@	27½
Barrel Kerosene	23	@	25
Olive	—	@	3 50
Downar Kerose'e	40	@	—
Gas Light Oil	23	@	25

PAINTS.

Pure White Lead	9¾	@	10¼
Whiting	—	@	2
Putty	4	@	5¼
Chalk	2	@	2½
Paris White	2¾	@	—
Ochre	3	@	5
Venetian Red	3½	@	5
Red Lead	10	@	11
Litharge	10	@	11
Eng. Vermillion	—	@	2 25
Averill Chemical Paint, per gal. White & tints	2 00	@	2 40
Green, Blue & Ch Yellow	3 00	@	3 50
Light Red	3 00	@	3 50
Mstallic Roof	1 30	@	1 60

RICE.

China No. 1, ₱ lb	5	@	6½
Japan	—	@	—
Siam Cleaned	—	@	—
Patna	—	@	—
Hawaiian	—	@	7¼
Carolina	10	@	—

SALT.

Oel. Bay, per ton	10 00	@	14 00
do Common	5 00	@	7 00
Carmen Island	12 00	@	15 00
Liverpool fine	—	@	22 50

SOAP.

Castile ₱ lb	10	@	11¾
Common brands	4½	@	6
Fancy do	7	@	10

SPICES.

Cloves	45	@	47½
Cassia	23	@	25½
Citron	28	@	30
Nutmeg	95	@	97½
Whole Pepper	14½	@	17½
Pimento	—	@	15½

SUGAR, ETC.

Oal. Cube per lb	11¾	@	—
Paris Pow. do	—	@	12
Circle Granated	—	@	12
Powdered	—	@	12
Fine ornshed	—	@	12
Granulated	—	@	11
Golden C	10	@	10½
Hawaiian	9	@	10
Oal. Syrup in kgs	—	@	70
Hawaiian Molasses	25	@	27½

TEA.

Oolong, Canton, ₱ lb	19	@	25
do Amoy	28	@	50
do Formoss	40	@	80
Imperial, Canton	25	@	40
do Pingsuey	45	@	80
do Moynne	50	@	1 00
Gunpowder, Oant	30	@	42½
do Pingeney	50	@	90
do Moyune	55	@	1 25
Young Hy., Canton	28	@	40
do Pingsuey	40	@	70
do Moyune	65	@	85

TOBACCO—Jobbing.

Bright Navy	55	@	65
Dark do	50	@	55
Paces Tin Foil	—	@	75
Dwarf Twist	65	@	75
Light Pressed	70	@	80
Hard do	50	@	60
Conn. Wrap'r	40	@	60
Penn. Wrapper	20	@	45
Ohio do	15	@	20
Virgie Smok'g	45	@	1 00
Fine cut chewing, bu'ts	8 50	@	9
Fine cut chewing, bu'ts	15	@	—
Sanner fine cut	—	@	90
Oal Smoking	27	@	1 00

TURPENTINE.

Eastern	51½	@	55

Gold, Legal Tenders, Exchange, Etc.

[Corrected Weekly by CHARLES SUTRO & CO.]

SAN FRANCISCO, November 24, 3 P. M.

LEGAL TENDERS in S. F., 11 A. M., 87½ to 88¾.

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GOLD BARS, 890. SILVER BARS, 7½ and 8 per cent. discount.

EXCHANGE on N.Y., 60-100 per cent. premium for gold; on London bankers, 9% Commercial, 48¾; Paris, five francs per dollar; Mexican dollars, three to five per cent. discount.

LONDON — Consols, 93 to 93⅛; Bonds, 102⅛

QUICKSILVER in S. F., by the flask, per lb, 62½@65c.

LEATHER.

[WHOLESALE.]

WEDNESDAY M., November 24, 1875.

City Tanned Leather, ₱ lb	22	@	23
Santa Cruz Leather, ₱ lb	22	@	23
Country Leather, ₱ lb	22	@	24
Stockton Leather, ₱ lb	22	@	23
Jodot, 8 Kil., per doz	$50 00	@	$54 00
Jodot, 11 to 13 Kil., per doz	68 00	@	72 00
Jodot 14 to 19 Kil., per doz	82 00	@	84 00
Jodot, second choice, 11 to 16 Kil. ₱ doz	57 00	@	74 00
Cornallian, 12 to 16 Ko	57 00	@	67 00
Cornellian Femalos, 12 to 13	63 00	@	67 00
Cornellian Femalos, 14 to 16 Kil	71 00	@	76 50
Simon Ullmo Femalos, 12 to 13, Kil	69 00	@	83 00
Simon Ullmo Femalos, 14 to 15, Kil	70 00	@	72 00
Simon Ullmo Femalos, 16 to 17, Kil	73 00	@	75 00
Simon, 18 Kil. ₱ doz	81 00	@	83 00
Simon, 20 Kil. ₱ doz	65 00	@	67 00
Simon, 24 Kil. ₱ doz	72 00	@	74 00
Robert Calf, 7 and 9 Kil	35 00	@	40 00
French Kips, ₱ lb	1 00	@	1 15
California Kip, ₱ doz	40 00	@	50
French Sheep, all colors, ₱ dos	8 00	@	15 00
Eastern Calf for Backs, ₱ lb	1 00	@	1 25
Sheep Roans for Topping, all colors, ₱ dos	9 00	@	13 00
Sheep Roans for Linings, ₱ doz	5 50	@	10 50
California Russett Sheep Linings	1 75	@	4 50
Best Jodot Calf Boot Legs, ₱ pair	5 00	@	8 25
Good French Calf Boot Legs, ₱ pair	4 00	@	4 75
French Calf Boot Legs, ₱ pair	4 00	@	—
Harness Leather, ₱ lb	24	@	42½
Fair Bridle Leather, ₱ doz	48 00	@	72 —
Skirting Leather, ₱ lb	33	@	37½
Welt Leather, ₱ doz	30 00	@	50 00
Calf Leather, ₱ foot	17	@	¾
Wax Side Leather, ₱ foot	17	@	—

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The best, speediest, and surest method for you to obtain patents, file caveats, or transact any other important business with the Patent Office at Washington, or with foreign countries, is through the agency of DEWEY & CO., PUBLISHERS OF THE MINING AND SCIENTIFIC PRESS, SAN FRANCISCO, an able, responsible, and long-established firm, and the principal agents on this side of the continent. They refer to the thousands of inventors who have patronized them, and to all prominent business men of the Pacific Coast, who are more or less familiar with their reputation as straightforward journalists and patent solicitors and counsellors. We not only more readily apprehend the points and secure much more fully and quickly the patents for our home inventors, but with the influence of our carefully read and extensively circulated journals, we are enabled to illustrate the intrinsic merits of good patents, and secure a due reward to the inventor, besides serving the public who are more ready to give a fair trial, and adopt a good thing, upon the recommendation of honest and intelligent publishers.

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A well-constructed model is generally first needed, if the invention can well be thus illustrated. It must not exceed 12 inches in length or hight. When practicable, a smaller model is even more desirable. Paint or engrave the name of the article, and the name of the inventor, and his address upon it.

Send the model (by express or other reliable conveyance), plainly addressed, to "DEWEY & Co., MINING AND SCIENTIFIC PRESS OFFICE, SAN FRANCISCO." At the same time, send a full description, embodying all the ideas and claims of the inventor respecting the improvement describing the various parts and their operations.

Also send $15 currency, amount of first fee of the Government. The case will be placed on our regular file, the drawings executed, and the documents made up, and soon sent to the inventor for signing.

As soon as signed and returned to us with the fees then due us, it will be sent straightway to the Patent Office at Washington

For designs no models are necessary. Duplicate drawings are required, and the specifications and other papers should be made up with care and accuracy. In some instances for design patents two photographs, with the negative, answer well instead of drawings.

For further information, send a stamp for our illustrated circular, containing a digest of PATENT LAWS, 112 illustrated mechanical movements, and HINTS AND INSTRUCTIONS regarding the RIGHTS AND PRIVILEGES of inventors and patentees, which will be furnished post paid. Also a copy of NEW PATENT LAW of 1870.

When the invention consists of a new article of manufacture, a medicine, or a new composition, samples of the separated ingredients, sufficient to make the experiment (unless they are of a common and well-known character), and also of the manufactured article itself, must be furnished, with full description of the entire preparation.

For Processes, frequently no model or drawings are necessary. In such case, the applican has only to send us an exact description, an what is desirable to claim.

Address **DEWEY & CO.,**

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"Faith and Confidence"

LIVERMORE, Oct. 1st, 1875.

MESSRS. DEWEY & Co., Patent Solicitors: *Gentlemen*—Yours of the 29th ult. containing my patent to Elevated R. R. duly received, and I hereby return my sincere thanks to the MINING AND SCIENTIFIC PRESS Patent Agency for your promptness and honesty in regard to our business connections. I have received a flood of circulars from Eastern firms, desiring to deal with me, but I have declined any communication with them and prefer, as soon as circumstances will permit, to negotiate with and patronize a home institution; one in which I have full and confidence—DEWEY & Co.

Again thanking you for your promptness in securing my patent, I remain, obediently yours,

WM. H. HARRISON.

At a Stated Term of the Circuit Court

of the United States of America of the Ninth Judicial Circuit in and for the District of California, held at the court room in the city and county of San Francisco, on Thursday, the 30th day of September, in the year of our Lord one thousand eight hundred and seventy-five. Present—The Honorable Lorenzo Sawyer, Judge.

Nicholas Seibert, complainant, vs. Wm. T. Garratt, defendant—In equity.

DECREE.

This cause came in to be heard at the February Term, A. D. 1875, of this Court and was argued by counsel and thereupon upon consideration thereof, it was ordered, adjudged and decreed, as follows, viz: That defendant, William T. Garratt, was not the first or original inventor, or discoverer of the improvement or discovery claimed by him, in and by those certain reissued letters patent of the United States, number five thousand three hundred and twenty-eight (No. 5328), for an alleged new and useful improvement in lubricators, issued to said defendant, William T. Garratt, on the 18th day of March, A. D. 1873, and is not entitled to a patent therefor, and that said reissued letters patent, number five thousand three hundred and twenty-eight (No. 5328) are declared void and the same are hereby vacated and set aside by reason of their interference with those certain letters patent of the United States, number one hundred and eleven thousand eight hundred and eighty-one (No. 111,881) for a new and useful improvement in lubricators, issued to complainant, Nicholas Seibert, on the fourteenth (14th) day of February, A. D. 1871.

It was also further ordered, adjudged and decreed that complainant do have and recover of and from defendant his costs and expenses to be taxed herein.

(Signed) LORENZO SAWYER,
Circuit Judge.

The above decree has reference to "Seibert's Eureka Lubricator" for oiling the valves and cylinders of steam engines.

It has a glass gauge and condensing pipe, or reservoir, with a regulating feed valve, and works as follows: As the water of condensation is admitted, under the oil, just so fast the oil passes out at the top through a pipe into the steam pipe to oil the valves and cylinder.

Parties who infringe or purchase the infringed lubricators, will be held strictly responsible.

N. SEIBERT, Patentee,
125 First Street, S. F.

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Mining and Other Companies.

Cloverdale Mining Company—Location

of principal place of business, San Francisco. Location of works, Cinnabar district, Sonoma county, Cal.

NOTICE.—There are delinquent upon the following described stock, on account of assessment (No. 3) levied on the fifteenth day of October, A. D., 1875, the several amounts set opposite the names of the respective shareholders, as follows:

Names.	No. Certificate.	No. Shares.	Amount.
H J Cooper	5	5	$1000 00
H J Cooper	6	5	1000 00
Woods Crawford	7	1	200 00
Woods Crawford	8	1	200 00
Woods Crawford	9	1	200 00
Woods Crawford	10	1	200 00
Woods Crawford	11	1	200 00
Woods Crawford	17	2	400 00
Woods Crawford	18	3	800 00
J D Adams	19	2	400 00
J D Adams	21	2	400 00
J D Adams	22	2	400 00
J D Adams	23	2	400 00
Wright Mathews	24	3	600 00
Wright Mathews	25	1	200 00
Wright Mathews	28	1	200 00
Theodore Deming	40	5	1000 00
H C Boggs	42	15	3000 00
John K Fraser	43	1	200 00
Kimbal Favor	45	2	400 00
Kimbal Favor	46	1	200 00
Kimbal Favor	48	1	200 00
J O Crigler (not issued)	49	2½	500 00
Sarshel Bynnm	52	1	200 00
Sarshel Bynnm	53	1	200 00
Sarshel Bynnm	54	1	200 00
Sarshel Bynnm	55	1	200 00
Sarshel Bynnm	56	1	200 00

And in accordance with law, and an order of the Board of Trustees made on the fifteenth day of October, A. D., 1875, so many shares of each parcel of each stock as may be necessary, will be sold at public auction, at the office of said company, No. 305 Clay street, San Francisco, on Thursday, the sixteenth day of December, A. D., 1875, at the hour of one o'clock P. M., of such day, to pay said delinquent assessment thereon, together with costs of advertising and expenses of the sale.

ED. B. PARTRIDGE, Secretary.

Office, No. 308 Clay street, San Francisco, Cal.

Keystone Quartz Mining Company —

Location of principal place of business, San Francisco, California. Location of works, Butte Township, Sierra County, California.

NOTICE.—There is delinquent upon the following described stock, on account of assessment (No. 51 levied on the twenty-second day of September, 1875, the several amounts set opposite the names of the respective shareholders, as follows:

Names.	No. Certificate.	No. Shares.	Amount.
C H Slimpklus	37	1248	$624 00
Howard Heveus	39	624	312 00
Peter Dean	45	200	100 00
Wm Dumphy	46	200	100 00
J F Greenman, trustee	58	774	387 00

And in accordance with law, and an order of the Board of Directors, made on the 22d day of September, 1875, so many shares of each parcel of such stock as may be necessary, will be sold at public auction, at the auction house of John Middleton & Son, 310 Montgomery street, San Francisco, Cal., on the 29th day of November, 1875, at the hour of 12 o'clock M., of said day to pay the delinquent assessment thereon, together with cost of advertising and expenses of sale.

LOUIS VESARIA, Secretary.

Office, north-west corner of Pine and Sansome streets, San Francisco, California.

Lake Mining Company — Location of

principal place of business, San Francisco, Cal. Location of works, Quicksilver Mining District, Napa county, Cal.

Notice is hereby given, that at a meeting of the Board of Directors, held on the 3d day of November, 1875, an assessment (No. 4) of twenty dollars per share was levied upon the capital stock of the corporation, payable immediately, in United States gold coin, to the Secretary, at the office of the Company, Nos. 19 and 21 First street, San Francisco, Cal.

Any stock upon which this assessment shall remain unpaid on the sixth day of December, 1875, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Monday, the twenty-seventh day of December, 1875, to pay the delinquent assessment, together with costs of advertising and expenses of sale.

R. F. KNOX, Secretary.

Office—Nos. 19 and 21 First street, San Francisco, Cal.

Orleans Mining Company—Location of

principal place of business, San Francisco, Cal. Location of works, Grass Valley Mining District, Grass Valley, Nevada County, Cal.

Notice is hereby given, that at a meeting of the Board of Trustees of said company, held on the 27th day of October, 1875, an assessment, No. 8, of two dollars per share was levied upon the capital stock of said company, payable immediately in gold coin of the United States of America, to the Secretary, at the office of the company, room 8, No. 315 California street, in the city of San Francisco.

Any stock upon which said assessment shall remain unpaid on the 30th day of November, 1875, will be advertised on that day as delinquent, and unless payment shall be made before, will be sold on the 18th day of December, 1875, to pay the delinquent assessment, together with costs of advertising and expenses of sale.

GEO. P. THURSTON, Secretary.

Office, room 8, No. 315 California street, San Francisco, Cal.

Owyhee Water and Gravel Mining Company.

Location of principal place of business, San Francisco, California. Location of mines, Elko county, Nev.

Notice is hereby given, that at a meeting of the Trustees, held on the 1st of November, 1875, an assessment (No. 1) of thirty cents per share was levied upon the capital stock of the corporation, payable immediately, in United States gold coin, to the Secretary, at the office of the company, No. 405 California street, San Francisco, Cal.

Any stock upon which this assessment shall remain unpaid on the 15th day of December, 1875, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on the 15th day of January, 1876, to pay the delinquent assessment, together with costs of advertising and expenses of sale. By order of the Trustees. JOHN E. MCDONALD, Secretary.

Office, 405 California street, San Francisco, California.

Pauper Mining Company — Location of

principal place of business, San Francisco, Cal. Location of works, Owyhee County, Idaho Territory.

Notice is hereby given, that at a meeting of the Board of Directors, held on the 9th day of November, 1875, an assessment (No. 6) of twenty cents per share was levied upon the capital stock of the corporation, payable immediately, in United States gold coin, to the Secretary, at the office of the company, room 1, No. 402 Montgomery street, San Francisco, Cal.

Any stock upon which this assessment shall remain unpaid on the 15th day of December, 1875, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Thursday, the 6th day of January, 1876, to pay the delinquent assessment, together with costs of advertising and expenses of sale. By order of the board of Directors.

W. F BOGART, Secretary.

Office, Room 1, No. 402 Montgomery street, San Francisco, California.

Peytona Gold and Silver Mining Company.

Location of principal place of business, San Francisco, Cal. Location of works, Virginia Mining District, Nevada.

Notice is hereby given, that at a meeting of the Board of Directors, held on the 23d day of October, 1875, an assessment of five dollars per share was levied upon the capital stock of the corporation, payable immediately, in United States gold coin, to the Secretary, at the office of the company, room No. 11, 215 Sansome street, San Francisco, Cal.

Any stock upon which this assessment shall remain unpaid on the thirteenth day of November, 1875, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on the 18th day of December, 1875, to pay the delinquent assesment, together with costs of advertising and expenses of sale. By order of the Directors. T. J. OWENS, Secretary.

Office—No. 11, 215 Sansome street, San Francisco, Cal.

UNITED STATES
Mineral Land Laws, Revised Statutes,

And Instructions and Forms Under the Same.

We have just issued a pamphlet containing the general mineral land laws of the United States, with instructions of the Commissioner of the Land Office The contents of this pamphlet comprise all of the Government laws with relation to mineral lands of interest to the mining community, as follows: Mining Statute of May 10th, 1872, with Instructions by the Commissioner of the Land Office; Mining Statute of July 25th, 1866; Mining Statute of July 9th, 1870 Forms required under Mining Act of May 10th, 1872, as follows: Notice of Location; Request for Survey; Application for Patent; Proof of Posting Notice and Diagram of the Claim; Proof that Plat and Notice remained Posted on Claim during Time of Publication; Registers' Certificate of Posting Notice for Sixty Days; Agreement of Publisher; Proof of Publication; Affidavit of $500 Improvements; Statement and Charge of Fees; Proof of Ownership and Possession in Case of Loss or absence of Mining Records; Affidavit of Citizenship; Certificate that no Suit is Pending; Power of Attorney; Protest and Adverse Claim; Non-Mineral Affidavit; Proof that no Known Veins Exist in a Placer Claim, etc. There is also given the U. S. Coal Land Law and Regulations thereunder. The work comprises thirty pages, and will be sold, post-free, for 50 cents. It should be in the hands of every one having any mining interests. DEWEY & CO.,

Publishers of MINING AND SCIENTIFIC PRESS, S. F.

MESSRS. DEWEY & Co., San Francisco:—Please find enclosed post-office order, for which please send MINING AND SCIENTIFIC PRESS. I have been a close reader of the PRESS for three years, and regard it as the foremost mining periodical in the Union. I am glad to notice the circulation of the PRESS is increasing here and is highly prized by our best mining men. H. P,

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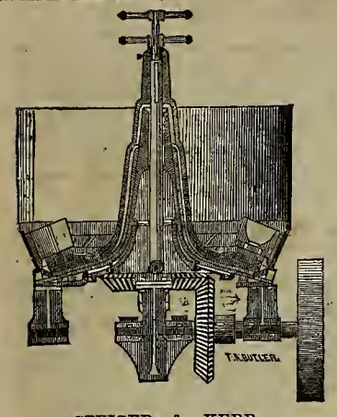

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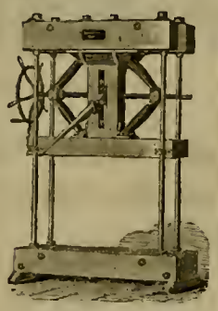

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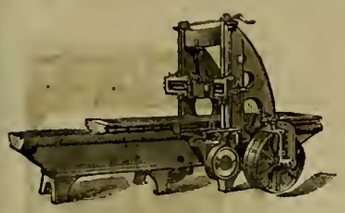

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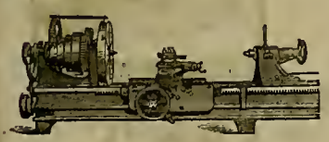

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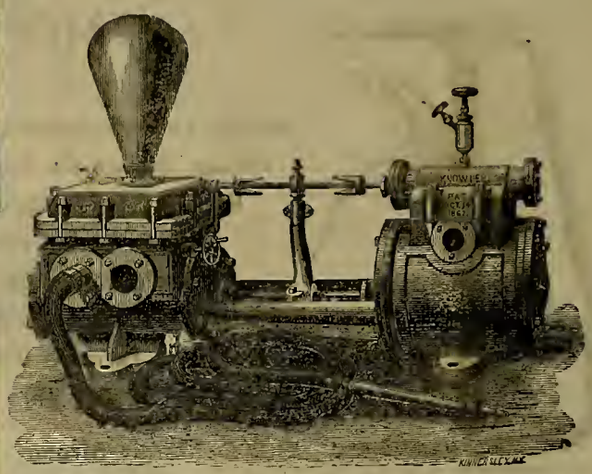

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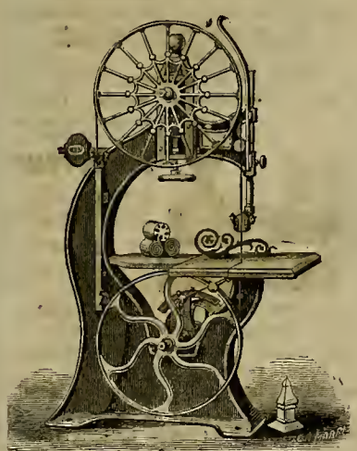

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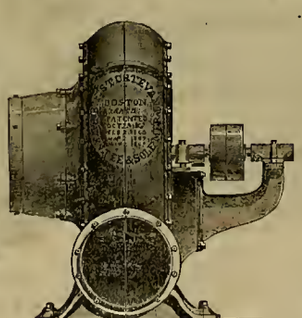

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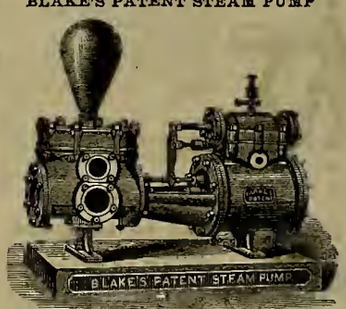

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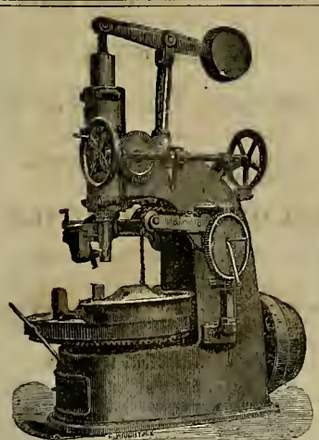

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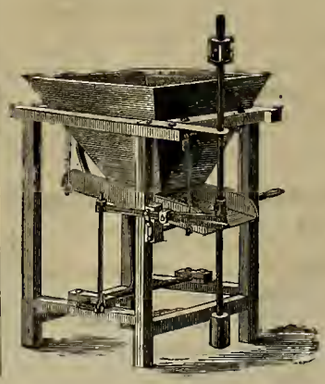

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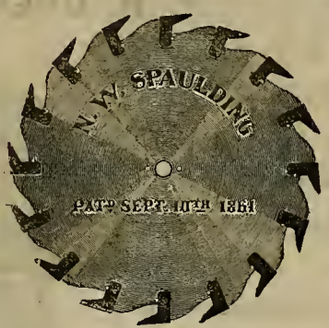

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FIRE HYDRANTS,
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A. L. BANCROFT & CO.,
721 Market Street, S. F.

SACRAMENTO, May 29th, 1875.

MESSRS. DEWEY & Co.—*Gentlemen:*

Yours of the 27th inst. is received. The patent came duly to hand yesterday, by express. Please accept thanks for your promptness in obtaining the same.

Very respectfully, DUNCAN BEAUMONT.

MINING AND SCIENTIFIC PRESS.

An Illustrated Journal of Mining, Popular Science and General News.

BY DEWEY & CO., Patent Solicitors.

SAN FRANCISCO, SATURDAY, DECEMBER 4, 1875.

VOLUME XXXI Number 23.

Japanese Iron Industry.

Our readers will recollect our having mentioned some months since that the Japanese goverument had ordered extensive machinery from England for the purpose of working certain of the iron mines in Japan. This is the first start of that government in the development of the iron industry of the country. Everything required was ordered for immediately putting up two charcoal blast furnaces at the Heigori iron mines, to be employed in reducing the magnetic iron ores in that district, which contain over sixty per cent. of metallic iron, and resemble greatly the ordinary Norwegian and Swedish ores.

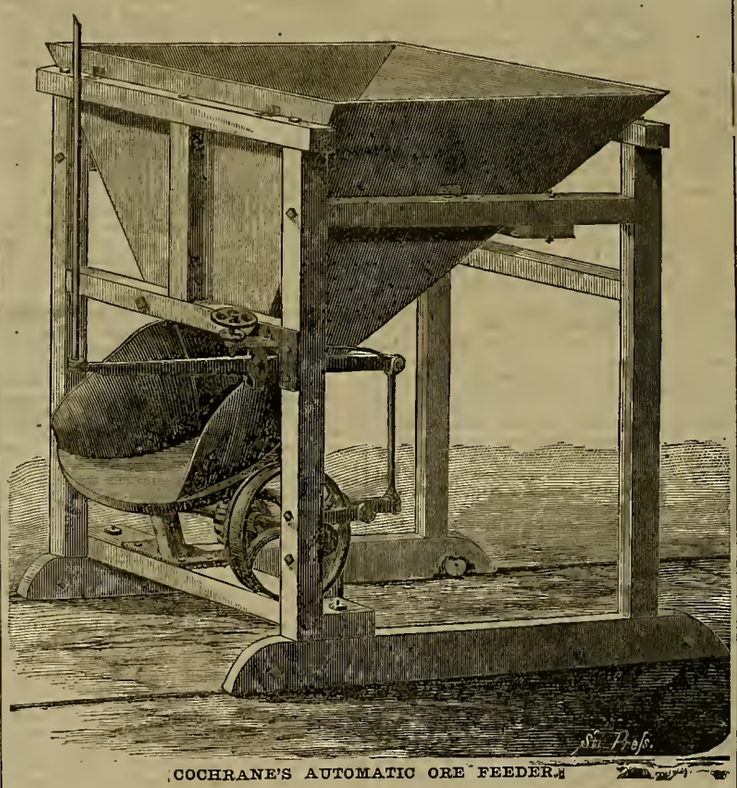
All this plant was shipped last month. The designs and details of the iron works were entrusted by the Japanese government to Mr. David Forbes, F. R. S., who has been for so many years, as consulting engineer, connected with charcoal blast furnaces in Norway, Sweden and Poland. The contract for the iron and brickwork fittings, etc., was placed in the hands of Messrs. Head, Wrightson & Co., of the Teesdale iron works, Stockton-on-Tees, whose patent hydraulic arrangements for lowering the bell are employed, as well as Whitewell's hot-air stoves, Surmaan's closed breast and all the most modern improvements. The blowing engines, which are vertical, as well as the boilers, were constructed by Messrs. Galloway, of Knott mill works, Manchester. The furnaces are to be 57 feet high, 4½ feet diameter in the hearth, 10 feet at the boshes and 6 feet at the month, and will be constructed of Japanese fire brick, with the exception of the lowest 12 feet. They are intended to turn out between 75 and 80 tons of charcoal pig per week each furnace, and to utilize their waste gases for heating the hot blast stoves and the boilers of the blowing engine. This is a very great step in advance for Japan. The plant is the most extensive and improved that could be manufactured, combining everything now known to be of value in iron working. The reputation of the gentleman who designed the details is such as to warrant the belief that no pains were spared to make everything as complete as possible and of the best character. The Japanese have competent men to manage the plant, and no doubt will soon have the whole in working operation.

Rights of Stockholders.

It will be remembered that the Secretary of the Woodville mining company was recently tried in the police court for refusing to allow stockholders to examine the books. This seemed to have little effect, for a resolution was passed by the trustees of the company giving the books into the hands of the President, J. W. Pearson, in such a manner that no one could examine them without permission from him. He then kept out of the way so no one could get at him, and the pending investigation was necessarily suspended. Mr. Pearson was then called upon to appear before Justice Joachimsen to answer the charge of refusing to allow copies of the entries in the book to be made by a stockholder. The latter action was brought under a statute enacted in 1873-4, in which the penalty for the offence charged against Pearson is fixed at $200. A. P. Needles, who has for some time past been acting as attorney for the dissatisfied stockholders, appeared as the complainant. Wednesday the case was tried, and Judge Joachimsen gave judgment for plaintiff, with costs of suit. This is the first case that has been tried under the new statute; Pearson has appealed the case to the County court, and stockholders and managers of mining companies in general will await the decision with interest. It is to be hoped that high handed operations of this sort will be summarily put down, and trustees or other officers who refuse stockholders any information concerning their own property, should be put under a ban. One thing is very certain, if this sort of thing continues much longer, there will not be many stockholders for officers to snub, for people will refuse to have anything to do with such companies. Half of these officers seem to think the mine is run for them to make money out of, not for the interest of stockholders. When they get in office they take possession of everything and look upon the other shareholders only as so many people who have to pay money and have no other rights. It has become almost unbearable, and several investigations now pending will have a fine effect in showing these people up and putting others on their guard. If half a dozen men can run a mine in opposition to half a hundred, especially when the half a hundred pay the expenses, the sooner the half a hundred drop the whole thing the better for them and the community.

An Improved Ore Feeder.

Automatic ore feeders are now considered indispensable pieces of machinery in complete



COCHRANE'S AUTOMATIC ORE FEEDER.

quartz mills, and there are not many large mills where the batteries are fed by hand. It took some time to overcome the prejudices which existed in favor of hand feeding, but after it was found that the machine fed more regularly than men, leaving economy aside, they were more generally adopted.

One serious difficulty, however, which has existed, was in getting machines to feed wet or dry, coarse or fine ore, with equal regularity, and without having to arrange the feed according to the ore in the hopper. Most of the ore feeders in the market have a forward and back shaking motion communicated to them by the drop of the stamps. One objection urged against them is that the feed has to be adjusted too often as the class of ore varies. For instance a load of quartz is dumped into the hopper and the machine feeds beautifully and with regularity. Perhaps the next hopper-full will be earthy matter mixed with lumps of quartz, and all of it more or less wet. Then the feed has to be changed so as to communicate more motion to the shaking table so that the contents of the hopper will be fed under the stamps fast enough. This soft earthy matter is, of course, crushed faster than hard quartz, while at the same time it feeds slower from the feeder, so, in order to keep the stamps properly fed under these circumstances, the machine has to be frequently adjusted.

Mr. T. A. Cochrane, a gentleman who has had an extended experience in mining machinery and especially in the direction of ore feeders, has recently contrived a "carrier" feeder which does away with the shaking motion and feeds regularly any class of ore by a very simple mechanism. These machines are now being manufactured by Joshua Hendy, No. 32 Fremont street, where one of them can now be seen in operation. This feeder, which is herewith illustrated, took the premium at the late Mechanics' Institute fair.

The mechanism, as any one can see who is familiar with this class of machines, is quite simple. As the stamp drops, the tappet strikes a rod which communicates the necessary motion to the machine. A circular inclined table under the hopper is revolved slightly at each stroke, which action causes the ore to drop off the front of the table into the battery. Two iron flanges extending from the hopper to the revolving table as shown, serve to confine the ore in its place and to push it off. A "carrier" motion carrying the load forward is communicated to the ore and the feed is regular, no matter how the ore varies in character. Wet ore will go through as well as dry, and fine as well as coarse. A hand wheel regulates the lever so as to suit the feed required, and to compensate for the wear of the shoes and dies. In case the shoes and dies wear off half an inch or so it would give too much motion to the table, which can easily be regulated by the hand lever. The objections urged against the feeders mentioned above are overcome by the improved machine. The machine feeds twenty-four inches wide.

MINT WORK FOR NOVEMBER.—The following is an exhibit of the work done by the mint during the month of November: Gold coinage, 91,000 double eagles, value, $1,820,000. Silver coinage, 517,000 trade dollars, value, $517,000; 72,000 half dollars, value, $36,000; 2,500,000 dimes, value, $250,000. Total number of pieces, 3,180,000. Total value of silver pieces, $803,000; total value of gold pieces, $1,820,000. Total value of gold and silver pieces, $2,623,000.

THE practice of allowing a discount to those who promptly pay assessments has been inaugurated by some of the mining companies.

Death of the Hon. Benjamin P. Avery.

The death of Benjamin P. Avery, U. S. Minister to China, is announced by telegraph. The news was not unexpected by the many friends who knew the state of his health at the time he accepted the position he occupied. It was hoped that the change might be beneficial, but he had enfeebled his constitution by too close application to study and literary work, and the cares of office and effects of the climate have hastened his end. Mr. Avery was born in New York, but has passed the best part of his life in California, having come around the Horn in 1849. For a time he engaged in mining, and then he kept a drug store at North San Juan, Nevada county. Soon, however, he gave up this business, and in 1855 he published the San Juan *Press*, a journal which for several years he edited with marked ability, and made it one of the leading papers in the mining region. The Marysville *Appeal*, recognizing his talents, afterward engaged him on its editorial staff. In his literary labors at this period he was associated with Noah Brooks. In 1861 the Republican party put Avery on its ticket for State Printer, and he was elected. Two years subsequently he lost the nomination, and then became connected with the *Evening Bulletin*, first as Sacramento correspondent, then as city editor, and latterly and for about eight years as leader writer. One year in addition he passed at Washington as special correspondent. In 1873 he took a vacation of about three months, and in January, 1874, he was chosen editor of the *Overland Monthly*, to which in former years he had contributed many articles. His connection with the *Overland* lasted six months, and then, through Senator Sargent's influence, he obtained the appointment of Minister to China. Mr. Avery was noted as a careful, clever writer and an upright, honest man. His genial nature and pure character made him a host of friends, who mourn his loss. Mr. Avery was one of a few who have done much for art in this city. He was one of the founders of the Art Association and School of Design, aiding both with great enthusiasm. Mr. Avery was a representative Californian and one of whom his friends were proud. He was an industrious, painstaking writer, no matter what the character of the work in hand. In common with many old Californians we remember his work on the old *Hydraulic Press* in early days, and from then until his departure from our shores we have many pleasant causes of remembrance. His career is ended, but his name will live for many a year among the thousands of friends he drew to him by his noble, upright character and amiable disposition.

FATAL MINING ACCIDENT.—A fearful accident happened at the Eureka Consolidated mine, on Ruby hill, on the 27th ult. While the cage was being lowered down the mine, the reel shaft suddenly broke, precipitating the cage down to the seventh level. John McGinnis, a shift boss, was on the cage with some heavy timbers. He was instantly killed, his body being horribly mangled. When the cage struck the seventh level station, the timbers became loosened, were hurled down the shaft to the bottom, where two miners, named Hugh Holmes and Tom McConahan, were at work. Before being able to escape, both were struck by the falling timbers, and Holmes had both legs broken. McConahan received internal injuries, which will probably prove fatal.

A LOS ANGELES dispatch of the 28th says: At the San Fernando tunnel this morning, the boiler of the engine at shaft No. 27 exploded and instantly killed Edward McCarthy; Charley Every was badly, and probably fatally, injured, and C. McKenzie, James Keavy, John Joseph and Joseph Antoine were all badly scalded, but none are thought to be fatally injured. The Coroner's jury rendered a verdict to the effect that McCarthy's death was caused by an unavoidable accident.

THE Virginia and Truckee railroad company has purchased for a depot at Virginia all the ground lying between Union and Mill, D and E streets, and the erection of buildings for the passenger and freight traffic will soon be begun.

CORRESPONDENCE.

Bald Mountain Mining District.

MESSRS. EDITORS.—Noticing an article by Mr. Gibbs, in a July number of the PRESS, upon the mines of Bald mountain, White Pine county, in which the writer speaks in flattering terms of one or more mines in that district, I would ask the privilege to briefly describe a few silver mines in the district, and, if possible, convey a clear understanding relative to the same. Prominent among the lodes is the Crown Point, so called from the famous one on the Comstock. It is situated near the summit of a lofty range, connecting with the principal mountains of the neighborhood, in Bald mountain, White Pine county, fifty miles north of Hamilton, and from ten to twelve miles in an easterly direction from Cold creek. This mine crops out boldly near the summit. Its surface has a broad lateral extension of thirty feet. The lode is opened by an incline, driven a distance of forty feet in ore nearly all the way.

The present face of the incline is in quartz, more or less impregnated with carbonates and chlorides, though of a low grade; yet the prospects of this mine are of a very promising nature, and assays may be had ranging from $18 to $128 to the ton.

The vein indicates a true formal one, having a fine clay seam one or more inches in thickness, carrying a smooth and even surface, and more or less colored with the mineral constituents of the lode. The breadth of the vein in the tunnel has nowhere been determined, as standing masses of ore mostly form the western wall of the incline.

The vein has a north and south direction and also carries small bunches of silver antimony glance, generally found in a defined direction along the line of selvage.

Less than half a mile south from the Crown Point is the Sutro mine, outcropping from the face of a bluff of silurian limestone, and is itself, so far as opened (some forty feet), from one to six feet wide. The ore from this mine is mostly chloride, and specimens will assay from $50 to $500 per ton. Indeed, assay samples might be obtained, ranging up in the thousands. But this, like all rich veins, does not carry its chlorides in one continuous stretch, but more or less barren spaces have to be passed through before rich ore is obtained. The ore vein has greatly contracted near the face of the incline, but there is good reason to believe that it will be found to widen as further sunk upon. Ore has been shipped from this mine yielding $125 to the ton, and considering the shallow depth that it has been opened up, its value can hardly be said to have been sufficiently tested.

On the western slope of the same timbered range are the croppings of two other silver veins that have been prospected to some extent. One of these, the Argentic Sulphide, is a crevice from one inch to two feet wide, has a short incline in the side of the mountain of fifteen degrees. Two tons of ore have been extracted. The ore is mostly an argentiferous sulphuret of lead or black metal, assaying $75, $262 and $576 to the ton. Not far from this last mentioned vein, and still lower down the mountain, near where the country rock is somewhat metamorphic, there outcrops in a north and south direction a vein of quartz and ore from one inch to a foot in thickness and several hundred feet in length, cutting the somewhat decomposed limestone at nearly right angles. Near each end of this vein a shallow shaft has been sunk, showing a seam of rich chlorides and sulphurets assaying from $200 to $600 to the ton of 2,000 pounds.

Besides the above mentioned silver veins and in the same district, are several copper croppings, one or two showing large bodies of mainly copper carbonates, ranging from fifteen to forty per cent., and more or less argentiferous. The district is well supplied with wood, water and grass, and the property at the present time can be bought or leased upon very favorable terms. HARMON OLMSTEAD.

Eureka, Nev.

THE TWENTY CENT COINAGE.—There is considerable speculation concerning the reason why the new twenty cent coin does not get into more general circulation. An explanation is given, as follows: There is but one way in which the twenty cent pieces can be issued from the Mint, and that is in exchange for gold coin at par. This is the law in reference to all subsidiary silver coins, and the twenty cent pieces are no exception. The Mint has turned out $231,000 in twenty cent pieces to date, of which some $5,000 or $6,000 have been paid out in the institution, $22,000 remaining in hand, and the balance having been shipped East with other subsidiary silver coin in pursuance of the plan for the redemption of the fractional currency with small silver coins. The $22,000 on hand can be obtained by any one wanting it, in exchange for gold coin, and more will be made if desired, to supply any demands that may arise. If the twenty cent pieces are not in circulation it is because they were not applied for, and those who procure subsidiary silver coin for their business purposes do not desire this variety.

Report of the Director of the Mint.

The report of the Director of the Mint for the last fiscal year has been submitted to the Secretary of the Treasury, and shows in detail the operations of the mint and assay offices during the year. The coinage was: gold, 1,739,062 ounces, value, $33,053,965; silver, 22,723,216 ounces, value, $10,070,368. An extensive refinery has been erected and put in operation in the new mint at San Francisco, and the refining capacity at the assay office at New York has been largely increased. At the Philadelphia mint additional annealing furnaces have been constructed. The coining machinery at the Carson mint has been duplicated, and the mints are now all in a very efficient condition. In discussing the coinage of the trade dollar in connection with the substitution of subsidiary silver coin for fractional currency, the director shows that it can in no way interfere with the plan of redemption, its coinage not having the least effect upon the market value of silver, as shown by the average price paid for silver bullion. After the redemption of the fractional notes, silver coins, with the exception of the trade dollar, can be issued under the coinage law in exchange for gold coins at par. This limitation will be a barrier to their excessive coinage, and the demand for bullion for that purpose must, after two or three years, be quite small. The trade dollar has been well received in China, and the director thinks that if authority were given to coin at our Western mints smaller denominations of silver coins of the same standard, they would no doubt find a ready market at different ports, and gradually work their way into the interior of the Chinese empire. Under the provisions of the first section of the Act of January 14, 1875, the mints have purchased to the 31st of October last 9,183,417 ounces of

Silver Bullion,

At the average price of $1.11 4-10 per standard ounce. The average price in London has been at the rate of $1.12 4-10 per standard ounce—the coinage rate of the fractional silver coin being $1.24 4-10 per standard ounce. Since the first of February, 1875, the mints have coined $7,820,908 in fractional silver coin, and the treasury and mints held on that date $1,500,000. Adding to these amounts the coinage for November, which may be set down at $600,000, would give a total of fractional silver coin in the treasury and mints on the 1st of December next of $10,000,000. The director treats at some length on the policy of redeeming fractional notes in silver coin. The cost of maintaining the fractional currency during the past year was $14,107,462. This does not include the expense of handling it at the subtreasuries and depositories, which, if added, would probably show

The Total Expenses

To be equal to about five per cent. on the annual issue, and corresponding with the interest on the amount of bonds which may have to be sold to procure say thirty-six millions in gold, the value in silver bullion of which would give silver coin of the nominal value of forty-five million dollars. The total expense attending the manufacture of the coinage of the last fiscal year ($43,854,708) was $889,370, or about 60 per cent. of the expense of maintaining fractional silver currency. In this estimate the seignorage realized on the silver and minor coinage ($436,105) has not been considered as reducing the cost of the coinage, the same being regarded as a gain to the Government, and not an earning by the mints. The director suggests an increase in the legal tender of

The Trade Dollar

And fractional silver coins, from five to ten dollars. The financial measures adopted by Germany, France and other countries, and their bearing upon the money disturbances of the last three years, are carefully reviewed by the director, who states that whenever Germany shall have its great monetary reform fairly under way, and France sets free her immense specie receipts, the active demand for gold will no doubt cease the United States, and they may then safely undertake the acquisition of a sufficient stock of coin for the

Resumption of Specie Payments.

The extent of the falling off of silver is shown by the fact that the gold value of the principal legal tender coins of European countries has of late averaged about 8½ per cent. less than their nominal or total value in the moneys which they respectively represent. In speaking of the change in the relative values of gold and silver, the director states that no further distinction of exclusive gold standards appears to be probable for some time to come, and that an increased demand for silver may be reasonably expected, but not sufficient to cause a material alteration in the present valuation of gold and silver, which is about 1 to 17. Under the title of "Money and the Money System of the United States," the director states at length the general principles which govern monetary systems, the importance of maintaining a uniform

Standard of Values,

That all experience has proved the precious metals, and particularly gold, to be the least variable and the best adapted for a circulating medium of all known substances; the units of money of account of all countries, as assayed in modern civilization, were originally based on, and declared by law to be represented by a certain weight in metal in the form of coins, and by being so fixed became a basis of exchange and the measure of contracts. The discussion of many of the money systems for the United States soon after the adoption of the Federal Constitution and the passage of the Act of April 2, 1792—establishing gold and silver as the monetary standard—are referred to, and the statement made that no Act of Congress before that of February 15, 1862, made anything but the precious metals a legal tender. This is pronounced to have been a radical departure from the sound principles on which our money system was originally based, and could only be justified as a war measure in a time of imminent peril. The director concludes his observations under this head as follows:

A Forced Paper Currency

Is well known to be, from various causes, subject to frequent fluctuations in value, and, unlike the precious metals, is wanting in the property of self-adjustment under the operation of supply and demand, and for these reasons alone must always prove an uncertain system on which to conduct the business and exchanges of a country. The developments of the Comstock lode in the State of Nevada form a special subject, a careful examination of the Consolidated Virginia and California mines having been made by the director and Professor R. E. Rogers, of the University of Pennsylvania, in July and August last. The director estimates the annual product at $50,000,000 from the Comstock mines alone, about forty-five per cent. of which will be gold, and that a production nearly equal to that of the Comstock may be anticipated from other domestic sources during 1876. Professor Rogers, in his conclusion, and in which the director concurs, states that from much of the data obtained by the examination and on an inspection of official surveys, exhibiting galleries and crosscuts, it would seem fair to conclude that with proper allowances the ore to-day equals an amount which, taken at the actual assays, would give an ultimate yield from the two mines of

Three Hundred Millions of Dollars.

But to guard against a chance of over-estimation, take assays at one-half that which has been ascertained, which would place the production at not less than one hundred and fifty millions of dollars. In making these estimates Professor Rogers says: "With a view to making due allowance for interruptions to the continuity of the body of ore which lies between the 1500 and 1600-foot levels, the whole of the ore which is contained between the 1400 and its deeper levels is thrown in and not embraced in the estimates, and the very promising developments below the 1550-foot level, assays of which are very high, have been omitted in the calculation." The director, in concluding his report on the Comstock mines, says: "The favorable condition of the precious metal mining industry is due to judicious expenditures of

A Large Amount of Capital

In extensive enterprises by men of superior energy and business qualification. Nearly all the mines on the Comstock, as well as the hydraulic gravel mines in California, and mines in other localities, as a general rule, have made heavy drafts on labor and capital before any returns on the outlay were secured. Notwithstanding the improvements which have been made in mining and in the reduction of ores, the business is one of uncertainty and hazard; and taking one year with another the expenses no doubt equal, if they do not exceed, the production. Many of the present large yielding mines were originally discovered by adventurous and daring prospectors, who are always advancing into unexplored localities and enduring hardships and danger, which would soon discourage the boldest were it not that under the liberal and fostering policy of the Government discoveries which they make become their own property, subject to conditions looking to a certain degree of exploration and development before a complete title can be acquired.

The First Capital

Which follows these prospectors is generally sunk, and but a small proportion of the mines are continuously worked, many being totally abandoned after considerable expenditure has been made. These facts show that the policy pursued by the Government with reference to the precious metal mining interest has been eminently wise and should be continued." The director estimates the specie in the country on June 30th, 1875, at $167,614,803. The money system of China, Japan, coinage and several other articles of an important character are contained in the balance of the report. Dr. Linderman, Director of the Mint, will shortly begin the preparation of his report upon the location of the new United States mint, which it is proposed to locate somewhere in the Mississippi valley. Some of the competing cities have not yet sent the information called for. Those who have not complied with these regulations are requested to do so at once, so that their representations may have a place in the coming report, which will be made to the President.

POTATOES FOR EUROPE.—Europeans appear to entertain a most wholesome dread of the American potato disease, which is due to the ravages of an insect, called by the scientists *Crysomela decemlineata*, but which some of our farmers, for short, call 10-lineata. The German government has peremptorily forbidden their introduction into that country, under any present circumstances; while King Oscar, of Sweden, is willing to admit them if the potatoes are thoroughly washed, and the packages in which they are imported are submitted to a baptism of fire at the port of entry. The Colorado bug receives profound attention wherever he appears—confound it.

An Important Revelation.

An English journal pronounces the treaties lately negotiated by Mr. Burlingame between this and several European governments and that of China as mere shams. It claims that the embassy by which the treaties were executed and which accompanied Mr. Burlingame was a deliberately planned Chinese deception, of the knowledge of which, however, Mr. B. was ignorant.

The reason given for this conclusion is the assertion that the treaty was never published in the Peking *Gazette*, the official organ, and that the high functionaries of the empire are not bound by any treaty or law which has not been duly published therein. If the treaty was never so published it is quite clear that it is not acknowledged there; and yet that treaty is the only foundation upon which the relations of this country stand with China.

It is barely possible that English jealousy may have distorted the facts in the case; but the statement is one which should at all events be enquired into by our minister at Peking, and its truth or falsity set at rest.

The Chinese government is one which no one acquainted with its character will think incapable of such duplicity if means can be found for carrying it out.

Be the facts as they may, there appears to be good reason to believe that the English government give them credence, and this fact is given as the reason for the demand recently made by the British minister at Peking that the punishment of the murderer of Margery and all the other acts of reparation to England shall be inserted in the Peking *Gazette*, as an official recognition that such acts have been decreed by the government, and thus been established as precedents. This prompt and decisive action of the English government in establishing their rights under the treaty, by subsequent official recognition of the legality of its penalties, should prompt our own government to take some steps to learn definitely upon what footing our relations stand with that proud and slippery people.

The Future of Mariposa.

Our town of Mariposa, we repeat, is looking up once more. There are causes silently at work which will, at no distant day, bring back the ancient glories of Mariposa again. There is too much productiveness in our foothills and valleys, and in the hillsides themselves, to remain long uncultivated. And, we might add, there is too much gold in our immediate vicinity, obtainable with moderate labor, not to attract miners to unearth it. Right here at hand we have Missouri gulch, Specimen gulch, Mormon bar and various other places which have not as yet been more than fairly prospected, and which it is well known are rich with gold, not to say anything of the Fremont lode, at the foot of the town, on which the famous old mill stands, which has ground out its millions. Let any one take a ride over the ranch of our friend Snyder, the Pine Glen ranch belonging to John Mathews, and the Laird ranch, formerly owned by Skelton, and see what industry has done, and then look at the hundreds of other places contiguous to the town of Mariposa, which can be made just as valuable, and the conclusion cannot be resisted that from the increased flow of immigration into the State, we will eventually draw population within our boundaries to take up these lands and cultivate them. Among the causes alluded to, which will resuscitate our town, is the fact, there is too much good sense, too much enterprise, and too much money in the possession of the members of the Mariposa land and mining company not to perceive the immense benefits to result to their estate in this county by cutting a canal and introducing water along the divide which runs through it. The success of similar enterprises in the State has stimulated them to seriously consider the subject, and that they will move in the matter shortly cannot well be doubted. This company, whom so many look upon as destructive to the best interests of the county, may yet prove its salvation. When this great work, which has become a necessity, is commenced, then may we expect to see the iron horse snorting into our town to awaken our people from their lethargy. The subject has already been mooted, and a branch road connecting with the Southern Pacific, should not be treated with indifference. In truth, the outlook is favorable, and the probabilities are strong that real estate will shortly assume proportions and take an upward tendency.—*Mariposa Gazette.*

ENGINEERS OF THE SUTRO TUNNEL.—A question having arisen about the names of the engineers appointed by the President to examine and report on the Sutro tunnel, we have consulted one of the officers of the regular army, and learn that they were Lieutenant-Colonels H. G. Wright and John G. Foster, Corps of Engineers, U. S. A.; and Prof. Wesley Newcomb, of Ithaca, N. Y., a mining and civil engineer; Capt. W. R. King, Corps of Engineers, U. S. A., secretary of the commission.—*Alta.*

SHUT DOWN.—The Krom concentrating works at Galena have been stopped in consequence of the wet weather, and we see by the *Reveille* that the Manhattan works at Austin, which are of a similar character, are about to do likewise. In the Krom concentrator the ore is passed between rollers and through screens, and it cannot be treated by this process while wet or even damp.

SCIENTIFIC PROGRESS.

Proof that Electricity is not a Fluid.

An electric spark, however powerful, cannot be made to pass any distance, however small, through a perfect vacuum. It is retarded just in proportion to the nearness to which a vacuum is produced. The degree of perfection in a vacuum may thus be accurately measured. We possess, says the *Manufacturer and Builder*, a tube, in which the two platinum wires are only a quarter of an inch apart, but the vacuum is so perfect that the spark from a large Ruhmkorff coil, which in air passes easily over twelve inches space, and in rarefied air twelve feet, or perhaps any distance, can not be made to pass over the space of only a quarter of an inch of such a vacuum.

If proof were wanting of the non-existence of the so-called electric fluid, it is here; if electricity were indeed a subtle fluid it would pass easier through an absolute vacuum than through rarefied air; but the reverse is the case.

It behaves thus similar to sound, which can not be propagated through a vacuum, even if imperfect. This proves that sound progresses by a certain motion of the molecules of the medium which propagates it; and in the same way the experiment mentioned proves that the existence of an electric fluid is as apocryphical as that of a sonorous fluid would be, and that electricity is simply propagated by a certain motion of the molecules of the materials which we call electrical conductors, and is therefore merely a mode of motion—the same as heat is a mode of motion.

But for heat we have no experiment so directly proving its immateriality as the above experiment proves it for electricity. We are not yet able to make a vacuum so perfect that no caloric rays will traverse it; notwithstanding this, the idea of a caloric fluid has been abandoned by all advanced philosophers, and the theory considering heat as a mode of motion must be acknowledged to be established; how much more then are we entitled to consider electricity as a mode of motion, having succeeded in making a vacuum through which it cannot manifest its action.

Fruit in Prehistoric Times.—Carbonized apples of small size, identical with those growing wild in the woods of Switzerland, have been found abundantly in lake bottoms, and in a tolerable state of preservation. Mr. Messikommer discovered on one occasion more than three hundred of them lying close together. They are often cut in halves, more rarely in three or four parts, and were evidently dried for consumption during winter. Whether a larger kind of apple found at Robenhausen was cultivated, or a wild-growing species, remains undecided. Professor Oswald Heer, of Zurich, who has published an interesting work on lacustrine vegetable remains, inclines to the former view. Wild pears were treated in the same manner; but they are far less common than apples, which must have formed a much-sought article of diet. Among other vegetable remains accumulated in the lake mud may be mentioned hazel-nuts and beech-nuts, both in great plenty; also water chestnuts, which doubtless were collected and eaten by the lake-men, as they are in Upper Italy at this day. Their present occurrence in Switzerland appears to be restricted to a tarn in the canton of Lucerne. There have further been found abundantly the stones of sloes, bird cherries, and wild plums, and seeds of the raspberry, blackberry, and strawberry, showing that these fruits of the forest were used as food. According to Dr. Keller, the lake colonists of the Stone Age drew their sustenance chiefly from the vegetable kingdom. Their animal food evidently was acquired by hunting rather than by the breeding of cattle, considering that in the accumulations around the piles the bones of wild animals outnumber those of the domestic species. Milk, we may assume, formed an important article of their diet.

To Fix Magnetic Curves.—The following neat methods of fixing the beautiful curves made by iron filings on paper, under the influence of a magnet, are from an interesting article in the *Electrical News*, describing the practical instruction in electricity and magnetism at the South Kensington science school:

1. Make a solution of gall nuts. Brush over sheet of paper with solution; remove superfluous moisture by blotting paper. Place damp paper over curves, press evenly, carefully lift paper; dry quickly, and shake off filings. A permanent impression in ink will be left on the paper. 2. Fix pair of magnets to one side of square of glass, coat other side with very thin gum water; when plate is quite dry, dust fine iron filings over gummed surface, tap, then breathe gently on plate. Gum is thereby softened and curves fixed.

Nature of the Tails of Comets.—It is known that the iron-nickel meteorites often contain hydrogen in occluaion, but Wright has discovered by means of the spectroscope that the stony meteorites contain the oxids of carbon instead of the hydrogen, and it is given off at so low a temperature that it is often sufficient to mask the hydrogen. The amount of these gases, according to Wright, is sufficient to form the tail of a comet, while the spectrum of their tails corresponds, or rather is identical, with these gases.

Copper Pipe Electrified by Steam.—M. Donato Tomasi says, in a late number of *Comptes Rendus:* "When a current of steam is made to traverse, under a pressure of five to six atmospheres, a copper tube of two to three mm. diameter wound spirally around an iron cylinder, the latter becomes so strongly magnetic that an iron needle placed some centimetres away from the steam magnet is energetically attracted, and remains magnetized during the whole passage of the steam current through the tube." In continuation of this, M. Maumene, in the same journal, quotes the following observations: "The important experiment of M. Donato Tomasi should, it seems to me, be interpreted by a very different consideration from that of the author. Heat does not act so as to produce 'a new source of magnetism.' It produces a thermo-electric current, generating the observed magnetism, and is set up by the difference of temperature between the interior surface of the copper spiral traversed by the steam and the exterior surface exposed to the air. M. Tomasi ought to be able to reverse the current, and consequently the poles, by causing the heat to act so as to warm the exterior surfaces, at the same time maintaining the interior surfaces colder."—*Engineer.*

Molecules—Their Relation to Pressure.—Every substance is now supposed to be composed of an immense number of molecules, which, even in the solid state, are never entirely at rest, and, in the gaseous, are in a state of perpetual violent commotion, rushing about in straight lines in all directions with inconceivable rapidity; and it is this perpetual bombardment, as it has been called, by these little particles, that explains the known pressure of gas on the walls of any containing vessels, the incessant impact of the molecules producing the effect of one continual pressure, just as upon the eye a succession of rapid flashes of light have the effect of one continuous flame. Of course the molecules, although they are supposed to be separated for a very considerable distance from one another, are perpetually meeting and rebounding, and thus their velocity is interfered with, but there is a certain residuum of speed left, resulting in a mean velocity for the whole. This mean velocity indicates also temperature, and, for the same substance at one pressure, the same mean velocity is always accompanied by the same temperature.

Action of Plants on Impure Water.—At a recent meeting of the Societe Centrale d'Horticulture de France, Jeanuel related the following experiments with water containing putrid matter:— In the month of May, sixty grammes of water, which had been used for steeping haricots until it had become offensive, and which the microscope showed to be full of *bacteria*,—small animalculæ, supposed to be the ordinary agents of putrefaction,—was placed in a glass, and the root of a young growing plant plunged therein. An equal quantity of the same water was placed beside it in a test glass at the same time, without a root. The water in the second glass remained infected; that containing the living root, on the contrary, was pure at the end of the fourth day; all the *bacteria* had disappeared, and had been replaced by large infusorial animalculæ of kinds found only in potable water. Water containing putrid meat was treated in the same way, with the same results. It was found that it was only necessary to immerse the root of a living plant therein for five days, to remove all the ill odor and render the water pure and sweet.

The Limit to the Carburation of Iron.—Dr. Percy gives 4.4 per cent. as the maximum of carbon able to combine with iron. Karsten gave 5.1 per cent., stating that with this proportion a fixed compound was formed, represented by Fe_4C. The author could trace no decided difference in combined carbon between white and gray cast iron. The maximum he asserts to be 4.06 per cent., and that any surplus of carbon is in the form of graphite. If an iron containing this quantity solidifies quickly, it is homogeneous, and retains in the solid state the whole of the carbon, whereas, if cooled slowly, it is not homogeneous, there being combined and free carbon, and probably pure iron.

Hot Glass a Conductor of Electricity.—Mr. Whitehorn, of London, has discovered that glass, although a non-conductor at ordinary temperatures, becomes a good conductor at red-heat; even at 212° Fahr. it conducts some electricity; at 330° it conducts six times better, while at 570° it conducts forty times better than at 330°. It thus appears that solid and melted glass is very much like solid and melted ice in its relation to electricity; for cold, dry ice is almost or quite as perfect a non-conductor as cold, dry glass.

Professor F. E. Nipher suggests the following optical experiment: Observe a white cloud through a plate of red glass with one, and through green glass with the other eye. After some moments transfer both eyes to the red glass, opening and closing each eye alternately. The strengthening of the red color in the eye, fatigued by its complementary green, is very striking.

Faraday established the fact that gases are but the vapors of liquids possessing a very low boiling point.

MECHANICAL PROGRESS.

Vulcanized Fiber—A New Water-Tight Joint.

We have already made mention of a new and remarkable material which has been called "vulcanized fiber." The uses for this material have already become quite numerous, and a large company has been organized in New York for its manufacture, which is said to be already doing a large line of business. New uses for the material are constantly being developed. The latest novelty in this direction is a water-tight joint, which seems one of those simple improvements the value of which is apparent at a glance. This joint is described in the *American Artisan* as follows:

The nature of this vulcanized fiber is such that, while it is absolutely insoluble in hot or cold water, oil, alcohol, naphtha or ether, yet it expands by exposure to moisture. This property has been availed of in making this joint, which certainly accomplishes its object most effectually. The boards or planks are jointed with square edges, and at the same time grooved by a circular saw of proper thickness to any depth desired. In these grooves is inserted a tongue of hard rolled vulcanized fiber, and the boards are driven closely together. Should any water leak through the joints to the tongue of vulcanized fiber, it will cause it to expand, and peck the groove tightly, and thus arrest its further progress.

This use was discovered by Mr. E. Waters, of Troy, the celebrated paper boat builder, who has built a number of wooden skiffs in this manner, thereby dispensing with all calking, adding greatly to the strength and stiffness of the boats, and considerably reducing their weight. He asserts (after severe tests) that boats constructed in this way never leak a drop under any circumstances.

Should the boards shrink a considerable distance apart, yet so long as the tongue remains in both grooves, the joints will always be water-tight. Of course, these tongues can be made of any desired thickness and width, so as to adapt them to all kinds of structures.

It seems to us not easy to over-estimate the importance of this device, and the multiplicity of uses to which it can be applied. In addition to small boats, it will be valuable in ship-building for ceilings, bulkheads, decks, etc., and particularly for deckhouses and the light upper works of steamboats. On railroads it will be used for car roofs, water tanks and stations; and for refrigerating cars, which require to be air tight, it will be invaluable. A prominent physician has suggested that if the ceilings, walls and floors of hospitals were constructed in this manner, it would admit of their being thoroughly washed down with hose every day or two, and thus keep them perfectly free from virus, and greatly improve their sanitary condition. Even in private dwellings and business warehouses, if the floors were laid in this manner it would obviate all damage to ceilings from bursting water pipes, or faucets left running; and, in case of fire, would restrict the damage by water to one story.

We are informed that to render all the floors of a first-class four story dwelling absolutely water-proof, in this manner, would not add more than from $125 to $150 to the cost of the house.

By reference to our May number, it will be observed that we spoke of journal bearings, gibs, powder press plates, valves, etc., made by this company. In addition to these articles, they are now producing a very excellent sheet packing, which for many purposes is far superior to rubber, and sold for less money. For either hot or cold water, petroleum, oil, turpentine, etc., it is claimed to be better than anything in the market, and sales for this purpose are stated to be large.

The "elastic fish bolt washers," and "oar box washers," or "back straps" made of this material, are now regularly used on thirty or more of the principal railroads. The works of this company are at Wilmington, Delaware.

Superheated Steam in Common Engines.—In Rounebeck, Bremen, an engine has been nearly completed by Herr Trossin which, it is thought, will solve the problem, which for nearly thirty years has engaged the attention of inventors, of the utilization of superheated steam in common engines. The answer to the problem has been found in the new application of a physical law, and the use of a peculiar lubricant. An engine working with superheated steam needs only half the ordinary amount of coal, the boiler and grate can be smaller by one-half, the supply of water by one-third, and the air-pump and condenser are equally reduced to half their usual space. The improvement has been patented in England, Belgium and other countries, and can easily be applied to engines of the existing type.

Steel Wire Rope.—Steel wire rope has replaced iron wire rope with advantage in several collieries in Prussia, particularly in Westphalia. In all the pits, however, it has been found that cast steel rope must be lubricated at least once a week, and laid on one side on the least appearance of fraying. At the Saarbruck collieries the experience of other places was repeated, that steel rope could be need of a smaller strength than iron, but required a greater drum cylinder.

The Demagnetization of Watches.

We have already alluded to the trouble often occasioned by the magnetization of watches, and we now clip from the last number of *Scribner's Magazine* a simple method for demagnetizing these indispensable pocket companions:

"Watches worn by students and others in technical laboratories are often rendered useless by being magnetized by the magnets used in such places. Magnets kept in the house often create equal mischief by being laid near watches, and much time and expense are sometimes needed to demagnetize them before they can be made to work. A serious case of this kind of injury recently led Professor A. M. Mayer, of the Stevens' Institute of Technology, Hoboken, to experiments which resulted in a very simple method of demagnetization. The magnetized watch was laid upon a table in the neighborhood of a common compass needle. Each hour on the face was then placed in turn before it to discover the location and intensity of the magnetism in the watch. The movement of the compass showed the north and south pole to be located (say) at the figures V and XI, while the neutral points were at VIII and II. The watch was then held in a horizontal position before a large bar magnet, the south pole of each being together. A gentle tilting motion was given to it for some moments, and, on trying the watch again before the compass, a sensible decrease of magnetism was observed. The process was repeated till the sensitiveness of the watch at that pole was nearly extinguished, when the same thing was tried with the north pole of the watch. After a few trials and comparisons, the magnetic influence was found to be removed, and the watch readily resumed its work."

Car Building for the World.—John Stephenson, whose name is seen on so many of our cars in this State, is the great street car builder of the world. A late visitor at his shops in New York speaks of him thus: He is now over sixty; as hale and vigorous as when he was thirty; under-sized, stocky, robust and cheery; a mechanic of the James Harper school. He makes cars for the world. No nation can compete with or undersell him. While I was talking with him he was making a contract for cars for Bombay. Twelve cars were ready for Liverpool. Others were on the wagon for London. Another lot are for Australia, Norway, Austria, St. Petersburg, and also America, and over our boundless Continent. Liverpool cars are double deckers; but Americans won't ride in them. All English care have the windows fastened down, and they can't be sold unless they are. These cars the English cannot make, though they have had the pattern for a number of years. Nor can that wonderful nation make a rubber car spring. All are made here. Mr. Stephenson ships no cars. He delivers all his work in New York. Each nation, company, or man who trades for a car pays for it in New York. No contract is taken unless the contractor has a hanker in New York who will pay for the car when it is done. Mr. S. builds nine cars a week. He can take an order and have a car ready to ship in four days. Each car costs $1,000, gold.

A Substitute for Hydraulic Lime.—Zeiodelite is a comparatively new material, which has latterally come largely into use in France, as a substitute for hydraulic lime. It is said to be much superior to that material for uniting stone and resisting the action of water. It is made by mixing together sulphur and pulverized stoneware and glass, in the proportion of nineteen pounds of the former to forty-two of the latter. The mixture is exposed to gentle heat, which melts the sulphur, and then the mass is stirred until it becomes thoroughly homogeneous, when it is run into suitable moulds, and allowed to cool. This preparation is proof against acids in general, whatever their degree of concentration, and will last an infinite time. It melts at about one hundred and twenty degrees Cen., and may be re-employed without loss of any of its qualities, whenever it is desirable to change the form of an apparatus, by melting at a general heat, and operating as with asphalte. At one hundred and ten degrees it becomes as hard as stone, and therefore preserves its solidity in boiling water. Slabs of zeiodelite may be joined by introducing between some of them paste heated to two hundred degrees, which will melt the edges of the slabs, and when the whole becomes cold it will present one uniform piece.

The English Eighty-one-ton Gun to be Eclipsed.—According to the *Kolnische Zeitung*, Krupp is making preparations for the construction of a 124-ton cannon. This enormous gun will throw steel bolts weighing more than 2,200 pounds each, and will require a load of powder weighing 400 pounds. It is estimated that the projectile will pierce at a distance of 3,200 feet the heaviest plates, of 23.8 inches thickness, now used on the English ironclads, and that its extreme range will exceed seven miles and a half.

American Small Arms.—The Sharps rifle company, of Hartford, is experimenting with a new rifle which can be fired three times in a second.

Sales at S. F. Stock Exchange.

FRIDAY, A. M., Nov. 26.

1290 Best & Belcher....50@49
950 Belcher.....
45 Bullion.....@46
40 Choller.....69@69½
142 Con Virginia.....31¾@31¾
10 ....do.....30@31¾
2250 California.....
400 ....do.....
1755 C Point.....31½@29½
50 ....do.....h 30...31
20 Confidence.....19½
70 Exchequer.....11
100 Empire M.....5½
110 Gould & Curry.....18
170 Hals & Norcross...28@35
1025 Imperial.....8½@8¾
1725 Justice.....37
370 Julia.....11½@11¼
390 Kentuck.....13@13½
1295 Lady Bryan.....@13½
575 Mexican.....19½@19
1235 Ophir.....48½@47½
1095 Overman.....50@51
155 Savage.....18@17¾
920 S Nevada.....13@13¾
565 Union.....9@9¾
635 Yellow Jacket...79@81½

AFTERNOON SESSION.

100 Advance.....4
1425 Andes.....3½@
30 Alta.....2
250 Amazon.....12@
340 Belcher.....22@22½
420 Baltimore Con.....3@2
990 Oso Con.....1¾@1⅞
145 Caledonia.....16½@16
600 Consolidated.....35@32½
775 California.....66@65¾
360 Crown Point.....29¾@30
70 Choller.....68
150 Dayton.....
160 Eureka Con.....16@16½
590 Eldorado S.....1½@1⅜
75 Florida.....3@3¼
540 Gila.....30@27
200 Gregory.....
50 Hussey.....50c
895 Justice.....34½@35¾
255 Jefferson.....4¾@4¾
10 Schneider.....
130 Kossuth.....2¾@2½
470 Leopard.....10@10½
640 Lady Wash.....2¼@2
200 Leo.....1¼@
1090 Lewiston.....2
170 Meadow Valley.....2¾@3
375 Mansfield.....1.00
15 No Belle.....2
1125 New York.....1½@1¾
200 N Carson.....32½@35c
635 Ophir.....46¾@47½
100 ....do.....8 30...4
20 Occidental.....3¾
310 Orig G Hill.....35@32½
300 Prussian.....1½
50 Poorman.....50c
100 Pacific.....1
375 Raymond & Ely.....18@1
455 Rock Island.....3@2¾
50 Silver Hill.....8½@
125 Utah.....12@10½
1975 Woodville.....2¼@2
500 ....do.....h 20...15
175 Wells-Fargo.....20@25c
160 Y Jacket.....8

SATURDAY, A. M., Nov. 27.

80 Alpha.....18@17½
255 Baltimore Con.....3¼@
1850 Belcher.....23@25½
25 Bullion.....45@44
595 Best & Bel.....47@48¼
400 Bullion.....17¼@18
30 Choller.....69@69¾
1970 C Point.....31@29½
385 Con Virginia.....31¾@31
20 ....do.....h 5...31
10 ....do.....h 10...32
3825 California.....67@67½
20 ....do.....h 30...68½
190 Caledonia.....16@16¾
90 Challenge.....
520 Confidence.....21
430 Dayton.....5½
1425 Empire Mill.....5½@5¾
130 Exchequer.....11¼
100 ....do.....b 5...12
940 Eureka Con.....16¼@17½
1015 Gould & Curry.....17¾@17½
20 Hale & Nor.....35
350 Imperial.....8½
2410 Justice.....38@38
740 Julia.....11¾@11
320 Kentuck.....14¾@14¼
15 Knickerbocker.....2¾
2140 Lady Bryan.....21½@2¾
305 Mexican.....19½@19¾
435 Meadow Valley.....3
900 New York.....2¼@2
2005 Ophir.....46¾@48
100 ....do.....h 5...47
685 Overman.....53½@55
2020 Occidental.....3½@3¾
450 Rock Island.....3@2¾
100 Ray & Ely.....19
35 Savage.....86@81
20 Sierra Nevada...14½@14¾
75 Seg Belcher.....40@41
300 Succor.....62½@60
390 S Hill.....10@8¾
615 Union Con.....9½@8
220 Utah.....12@11¾
405 Yellow Jacket.....83@82
50 ....do.....h 5...80

MONDAY, A. M., Nov. 29.

100 Alpha.....18
95 Bullion.....50@45
1815 Best & Bel.....54@55½
100 ....do.....b 5...56
10 Belcher.....24@26
580 Buckeye.....
1035 Crown Point.....30@29½
50 ....do.....h 5...30
300 Con Vir.....33¾@34
3280 California.....
200 ....do.....b 90...72
180 Confidence.....22@22½
410 Choller.....81@81
230 Empire Mill.....
210 Exchequer.....12@11½
845 Gould & C.....19@19½
385 Hale & Nor.....38@39½
160 Julia.....
3835 Jostice.....
990 Julia.....11½@12½
685 Kentuck.....14¼@14¾
3120 Lady Bryan.....24@24
400 ....do.....30...24½
490 Mexican.....20½@21½
550 Overman.....57@6
1305 Ophir.....50@50½
50 ....do.....b 30...51
1350 Sierra Nevada.....16½@17
255 Savage.....90@86
20 Seg Belcher.....76
1210 Union Con.....10@9¾
50 ....do.....h 5...9¾
150 Y Jacket.....84½@83

AFTERNOON SESSION.

20 Am Flag.....1
160 Advance.....1½
1010 Andes.....3½@3⅞
1760 Alta.....2
345 Amazon.....1¾
150 Belmont.....1½@1¾
554 Cal Con.....1@3¾
1500 Europa.....1¼@
10 Eclipse.....
4080 Gila.....3½@3¾
400 Hussey.....50c
100 Jackson.....
90 Jefferson.....4½
740 Kossuth.....3
100 Leopard.....10@10½
800 Leo.....1¾@1
300 Lady Wash.....2½@2⅝
2220 Leviathan.....2¾@2⅝
1255 Crown Point.....28¾@27¾
70 Choller.....68
90 Caledonia.....15
245 Empire Mill.....
10 Exchequer.....10½
1360 Gould & Curry.....19@18
110 Hale & Nororess...35@34
725 Imperial.....8¾@8⅞
1830 Justice.....42@40
400 ....do.....h 30...33½
250 Julia.....12@11¾
250 Kentuck.....13@12
535 Lady Bryan.....13¾@13¾
1380 Mexican.....19½@20
100 ....do.....b 5...20¼
1265 Ophir.....51½@49½
50 ....do.....b 5...50
260 Overman.....47@46
90 Savage.....76@74
495 Sierra Nevada.....14@13½
100 ....do.....h 30...14
475 Con Virginia.....32½@30
1200 Union Con.....9@9¾
355 Yellow Jacket...72@73½

AFTERNOON SESSION.

500 Alps.....25c
170 Advance.....4¼
350 Alta.....2
315 Aodes.....
200 Amazon.....1½
475 Baltimore Con.....2¼@2⅜
885 Best & Belcher..50@50¾
300 Coso Con.....2@1¾
25 Challenge.....5½
350 Cosmopolitan...35@40c
252 Con Virginia...310@314
150 Dayton.....5
110 Eureka Con.....15½@16
250 Eldorado S.....1½
75 Florida.....3
975 Gila.....3¼
230 Golden Char.....75c
500 Hussey.....50c
405 Jefferson.....4½
3230 Justice.....36½@38
495 Kossuth.....2½@2⅝
100 Knickerbocker.....2¾
275 Leopard.....10½@10¾
500 Lady Wash.....2
600 Leo.....1¾
1080 Leviathan.....2⅝@2⅞
200 Meadow Valley.....2¾
240 Mansfield.....1.00@1.07
610 New York.....1½@1⅝
100 Niagara.....65c
1070 Ophir.....47¾@47
200 Occidental.....4
269 O G Hill.....2¼@2¼
850 Pacific.....1
100 Prussian.....1¾
1000 Raymond & Ely.....19
208 Sil Hill.....8¾@8
100 Utah.....13½@13
1715 Woodville.....3@3¼

SALES OF LAST WEEK AND THIS COMPARED.

WEDNESDAY A.M., Nov. 24.

1525 Best & Bel.....50@51
365 Belcher.....20@19¾
4150 California.....8@69
200 ....do.....b 5...69
415 Con Virginia.....31½@31
1255 Crown Point.....28¼@27¾
70 Choller.....68
90 Caledonia.....15
245 Empire Mill.....
10 Exchequer.....10½
1360 Gould & Curry.....19@18
110 Hale & Nororess...35@34
725 Imperial.....8¾@8⅞
1830 Justice.....42@40
400 ....do.....h 30...33½
250 Julia.....12@11¾
250 Kentuck.....13@12
535 Lady Bryan.....13¾@13¾
1380 Mexican.....19½@20
100 ....do.....b 5...20¼
1265 Ophir.....51½@49½
50 ....do.....b 5...50
260 Overman.....47@46
90 Savage.....76@74
495 Sierra Nevada.....14@13½
100 ....do.....h 30...14
475 Con Virginia.....32½@30
1200 Union Con.....9@9¾
355 Yellow Jacket...72@73½

AFTERNOON SESSION.

500 Alps.....25c
170 Advance.....4¼
350 Alta.....2
315 Aodes.....
200 Amazon.....1½
475 Baltimore Con.....2¼@2⅜
885 Best & Belcher..50@50¾
300 Coso Con.....2@1¾
25 Challenge.....5½
350 Cosmopolitan...35@40c
252 Con Virginia...310@314
150 Dayton.....5
110 Eureka Con.....15½@16
250 Eldorado S.....1½
75 Florida.....3
975 Gila.....3¼
230 Golden Char.....75c
500 Hussey.....50c
405 Jefferson.....4½
3230 Justice.....36½@38
495 Kossuth.....2½@2⅝
100 Knickerbocker.....2¾
275 Leopard.....10½@10¾
500 Lady Wash.....2
600 Leo.....1¾
1080 Leviathan.....2⅝@2⅞
200 Meadow Valley.....2¾
240 Mansfield.....1.00@1.07
610 New York.....1½@1⅝
100 Niagara.....65c
1070 Ophir.....47¾@47
200 Occidental.....4
269 O G Hill.....2¼@2¼
850 Pacific.....1
100 Prussian.....1¾
1000 Raymond & Ely.....19
208 Sil Hill.....8¾@8
100 Utah.....13½@13
1715 Woodville.....3@3¼

THURSDAY A. M., Dec. 2.

165 Alpha.....19@19½
1150 Best & Belcher..63@61½
170 ....do.....h 5...62½
50 ....do.....s 5...62¼
1595 Belcher.....29¼@30
100 Bullion.....51@50
1670 Buckeye.....14½@13¾
310 Choller.....86@89
1630 California.....71@70
210 Caledonia.....20@21
160 Con Virginia...385@382
365 Confidence.....20@19
530 Crown Point.....28¾@27¾
100 ....do.....h 5...32
150 Exchequer.....14@13¾
550 Empire Mill.....5¾@5¾
2015 G & Curry.....22¾@23
85 ....do.....h 5...22½
355 Hale & Nor.....44@44½
520 Imperial.....8¾@9
100 ....do.....h 5...9
2315 Justice.....51@48
50 ....do.....h 30...51
3040 Julia.....16@16½
500 ....do.....h 30...16¾
115 Kentuck.....16@15¾
1860 Lady Bryan.....20@18
500 ....do.....s 30...2
220 ....do.....h 5...19½
640 Mexican.....21½@21¾
1875 Ophir.....58@56½
91 ....do.....h 5...57¼@57
1000 Overman.....58¾@60
820 Savage.....19@17
270 ....do.....h 30...19½
1365 Sierra Nevada...30...19½
220 ....do.....30...20
10 Seg Belcher.....84
645 Union Con.....10@10¾
210 Yellow Jacket..58¾@61

AFTERNOON SESSION.

250 Alps.....50c
50 Am Flat.....1½@2
710 Aodes.....3¾@3½
600 Alta.....2¾
580 Amazon.....3¼@3⅝
110 Advance.....4¾
800 Belcher.....29@29¾
150 Baltimore Con.....3¾@3½
1280 Coso.....1½@1¾
35 Gosmopol.....50c
1160 California.....70@67½
50 Dayton.....5
120 Eureka Con.....17½@16
200 Europa.....1¼
140 Florida.....3
500 Glasgow.....1½@1¾
100 Gould & Curry.....23¾@24
100 Hussey.....50c
150 Jefferson.....4¼
70 Knickerhooker.....2½
30 Kossuth.....3¼@3½
800 Leopard.....10@9¾
160 Lady Wash.....2¼@2¾
690 Leviathan.....2
100 Leo.....1¾
1000 Mides.....6½@6¾
145 Meadow Valley.....3½@3
30 No Belle.....2⅞
230 New York.....2¾@2¾
100 N Carson.....33½@34
60 Occidental.....3¾@4
300 O G Hill.....3
5 Pioche.....50c
50 Prusslan.....1
770 Prospect.....1
200 Raymond & Ely.....18½@19
760 R Island.....3½@3¾
380 S Hill.....9¾@9½
5 S Justice.....3½
480 S California.....2¾
70 Utah.....13¾@14
1480 Woodville.....2@2¼
800 Wells-Fargo.....30c

Mining Stocks.

The stock market hss been "booming" this week, and Californis street is again in an excited condition. The prominent stocks on the Comstock show the greatest rise, very few of the acknowledged "wildcats", having followed enit as yet. Ophir, Consolidated Virginia, Ssvage, Chollar, California and a few others have made some pretty good npward flights, slthough fluctnations have been rather frequent. The scenes in the Board and on the street look like old times again after the long depression, and the hrokers are jnbilant over the rush of bnsiness. How long the "rise" will keep np, of course no one can tell, hut the general impression is that it is the long postponed "fall rise." Last August everything looked promising for a fine msrket; but the unforeseen events that snbseqently arose, seemed as though they would deter it for an indefinite time; and so they would almost any other branch of bnsiness bnt mining stocks. Stocks possess such a wonderful elasticity, that they are now, to-day, in a little over three months from the time when the first terrihle reverse csme, in nearly as good a position as they were in the middle of Angust. The depression in prices has been continned so long that it gave a color of truth to the ststements usually made when the market is down "that it will never go up again." This happens over and over again, however. The fluctuations give no evidence of a declining market, as it is always a psrt of the progrsmme to loosen the thnmb screws in an npward movement to catch the short interest; however, prices may go lower still before a permanent rise is sustained. Our stock tables show the fluctuations from day to day, which will show how the market has varied.

How Prudence Saved Life.—A letter from Wilkesharre, Pa., states that the most extensive and serious mining casualty ever known iu Wyoming valley occnrred at the Channcey and Grand Tunnel mines, between Plymouth and Nanticoke, about two and a half miles south of the former place. About two weeks ago Mr. Roberts, one of the proprietors of the Chauncey mine, noticed that the roof of the opening was working in a most extraordinary manner, aud was convinced that the mine was doomed to a certain calamity. Ahout 11 o'clock on the morning of the 10th inst. he gave orders for the men to leave the mine as scon as possible, and remove as much of the company's property as conld he taken ont. On the spur of the moment, the miners, to the nnmber of 125, left at 12 o'clock, taking with them the implements of their calling, and two hours later the mine caved in. The effects of the cave were terrific. Huge houlders were thrown ont of the mouth of the tunnel by compressed air, as if they had been pebhles, and the shock of the crash was like an esrthquske.

MINING SHAREHOLDERS' DIRECTORY.

Compiled every Thursday from Advertisements in the Mining and Scientific Press and other S. F. Journals.]

ASSESSMENTS.—STOCKS ON THE LIST OF THE BOARDS.

Company.	Location.	No.	Amt. Levied.	Delinq'nt.	Sale.	Secretary.	Place of Business.
Balmont M Co	Nevada	6	50	Oct 6	Nov 9	Dec 6	Frank Swift	419 California st
Calsdonia S M Co	Washoe	15	3 00	Nov 1	Dec 4	Dec 23	R Wegener	414 California st
Cederberg G M Co	Cal	5	50	Nov 9	Dec 9	Dec 30	R Brown	215 Sansome st
Cherry Creek M & M Co	Cherry Creek	5	25	Oct 21	Nov 29	Dec 27	D F Verdenal	409 California st
Chollar-Potosi M Co	Washoe	8	5 00	Oct 14	Nov 17	Dec 7	W E Daan	419 California st
El Dorado S Cone M Co	Nevada	7	1 00	Oct 13	Nov 16	Dec 7	Wm Willie	419 California st
Empire M Co	Idaho	11	50	Oct 23	Nov 29	Dec 20	W Willie	419 California st
Empire S M Co	Nev	3	50	Nov 5	Dec 11	Jan 3	L Herrmann	
Gould & Curry S M Co	Washoe	24	1 00	Oct 26	Nov 27	Dec 18	A K Durbrow	309 Montgomery st
Hale & Norcross S M Co	Washoe	48	6 00	Nov 9	Dec 11	Dec 31	J F Lightner	Nevada Block
Ida Elmora M Co	Idaho	19	50	Oct 16	Nov 18	Dec 10	W Willis	419 California st
Illinois Central M Co	Idaho	4	50	Oct 12	Nov 16	Dec 7	R H Brown	402 Montgomery st
Imperial S M Co	Washoe	25	1 00	Nov 9	Dec 14	Jan 4	W R Dean	419 California st
Jostice M Co (New Stock)	Washoe	17	1 00	Nov 26	Dec 20	Jan 18	J S Kennedy	Merchants' Ex
Lady Bryan M Co	Washoe	10	1 00	Nov 30	Jan 4	Jan 25	F Swift	419 California st
Lady Washington M Co	Washoe	6	50	Nov 4	Dec 9	Dec 28	H C Kibbe	419 California st
New York Cone M Co	Washoe	16	1 25	Oct 27	Dec 1	Dec 20	H C Kibbe	419 California st
Naw York M Co	Washoe	7	75	Oct 27	Dec 1	Dec 20	H C Kibbe	419 California st
North Bloomfield Gravel M Co	Cal	40	1 00	Oct 21	Dec 3	Dec 20	T Derby	320 California st
Overman S M Co	Washoe	23	3 00	Oct 12	Nov 16	Dec 7	Geo D Edwards	414 California st
Pioche S M Co	Ely Dist	11	50	Dec 1	Jan 11	Feb 8	C E Elliott	419 California st
Pioton M Co	Washoe	9	25	Nov 26	Dec 27	Jan 14	S Phillio	408 California st
Poorman G & S M Co	Idaho	4	50	Nov 24	Dec 29	Jan 18	W Willis	Nevada Block
Raymond & Ely M Co	Pioche Dist	5	3 00	Nov 5	Dec 14	Jan 10	T W Colburn	418 California st
Rock Island G & S M Co	Washoe	5	50	Oct 7	Nov 10	Dec 2	J W Clark	418 California st
Savage M Co	Washoe	20	5 00	Oct 8	Nov 10	Nov 29	E B Holmes	419 California st
Sheba S M Co	Nevada	3	10	Oct 27	Nov 29	Dec 22	A Halsey	200 Montgomery st
Tiger M Co	Cornucopia	2	10	Oct 29	Dec 8	Dec 28	Frank Swift	419 California st
Troy Cons M Co	Washoe		20	Oct 22	Nov 26	Dec 17	S O Herhert	535 Clay st
Union Cons S M Co	Washoe	8	50	Oct 11	Nov 13	Dec 6	J M Buffington	311 California st
Utah S M Co	Washoe	11	2 00	Oct 14	Nov 22	Dec 10	W E Dean	419 California st
Utah S M Co	Washoe	11	2 00	Oct 19	Nov 22	Dec 10	W E Dean	419 California st
Woodville G & S M Co	Washoe	12	1 00	Nov 4	Dec 8	Dec 27	W M Helman	309 California st
Woodville Con M Co	Washoe	4	1 00	Nov 4	Dec 8	Dec 27	W M Helman	309 California st

OTHER COMPANIES—NOT ON THE LISTS OF THE BOARDS.

Black Bawk C al M Co	Cal	1	5	Oct 25	Dec 24	Jan 15	H A Powell	520 Montgomery st
Cariboo Hvdranlic M Co	Plumas Co	Cal	1	20	Nov 1	Dec 4	O W Reed	Sacramento City
Cons Pee M Co	Peavine District	9	25	Oct 13	Nov 13	Dec 13	J H Borland	Reno, Nevada
Constitution M Co	Cornucopia Dist	2	10	Oct 29	Dec 4	Dec 24	Frank Swift	419 California st
El Dorado Water & R G M Co	Cal	12	20 00	Nov 15	Dec 16	Dec 31	H Elias	427 Montgomery st
Equitable Tunnel & M Co	Utah	11	20	Nov 12	Dec 18	Jan 7	O S Healy	Merchants' Ex
Excelsior Q M Co	Cal	3	5	Oct 8	Nov 10	Dec 2	R Von Pfister	Merchants' Ex
Geneva Cons M Co	Cherry Creek		20	Oct 11	Nov 15	Dec 6	I T Milliken	302 Montgomery st
Geyser Q M Co	Cal	2	10	Nov 20	Dec 27	Jan 24	F H Rogers	Academy Bldg
Great Eastern Cons Q M Co	Cal	2	25	Oct 30	Nov 30	Dec 18	G Kelley	331 Montgomery st
Howard Hill M Co	Grass Valley	Cal	5	50	Nov 26	Jan 5	Jan 27	F J Hermann	418 Kearny st
Kearsarge Con Q M Co	Cal	2	15	Nov 4	Dec 10	Dec 30	J McHaffie	105 California st
Kelsey G & S M Co	Cal	14	5	Sept 27	Nov 17	Dec 9	J H Sayra	331 Montgomery st
Kennedy M Co	Cal	11	1 00	Nov 1	Dec 6	Dec 27	A Wissel	210 California st
Lake Mining Co	Napa Co	Cal	4	20 00	Nov 3	Dec 6	Dec 27	R F Knox	19 & 21 First st
London Quicksilver M Co	Napa Co	Cal	3	60	Sept 30	Nov 10	Dec 10	A Halsey	200 Sansome st
Los Prietos M Co	Cal	4	30	Nov 12	Dec 31	Jan 25	S H Smith	6 Montgomery Av
Mariposa Land & M Co	Cal	3	1 00	Nov 30	Dec 31	Feb 1	L Leavitt	309 California st
North York M Co	Plumas Co	Cal	9	50	Nov 2	Dec 23	A Martin	520 Washington st
New Coso M Co	Inyo Co	Cal	1	50	Oct 28	Nov 30	Dec 23	D F Verdsnal	409 California st
Oceanic Quicksilver M Co	Cal	2	50	Oct 22	Nov 23	Dec 13	C G Funk	438 California st
Ocean View Q M Co	Cal	1	50	Nov 4	Dec 5	Dec 28	D Buck	309 Montgomery st
Orleans M Co	Cal	6	2 00	Oct 27	Nov 30	Dec 18	Geo F Thurston	315 California st
Owyhee Water & Gravel Co	Nev	1	30	Nov 1	Jan 15	Jan 15	J E McDonald	405 California st
Panther M Co	Cornucopia	2	25	Oct 29	Dec 1	Dec 20	Frank Swift	419 California st
Peytona G & S M Co	Nevada		5 00	Oct 25	Nov 30	Dec 18	T J Owens	215 Sansome st
Pioneer Fluming Co	Cal		5	Nov 30	Dec 17	Jan 12	W Aug Knapp	116 Leidesdorff st
Stanislaus River M Co	Cal	6	20	Oct 21	Dec 17	Dec 31	W Stuart	113 Leidesdorff st
South Comstock G & S M Co	Washoe	3	25	Nov 11	Dec 16	Jan 4	J M Buffington	309 California st
Table Mt Alpha M Co	Cal	9	10	Oct 29	Nov 30	Dec 20	L Lcavitt	401 California st
Union Gravel M Co	Cal	12	1 00	Oct 21	Dec 3	Dec 20	T Derby	320 California st
Ward Ellie S M Co	Nevada	4	10	Oct 22	Nov 29	Dec 18	J M Buffington	311 California st
Wetzel M Co	Nevada	4	20	Nov 11	Dec 13	Jan 4	D A Jennings	401 California st
West Point G & S M Co	Cal	2	10	Nov 10	Dec 31	Dec 13	L Kaplan	Merchants' Ex
Woodside M & M Co	Cal	3	25	Nov 24	Jan 4	Jan 24	J Glassman	335 Montgomery st
Young America M Co	Nevada	1	25	Oct 27	Nov 29	Dec 18	R H Brown	402 Montgomery st

MEETINGS TO BE HELD.

Name of Co.	Location.	Secretary.	Office in S. F.	Meeting.	Date.
Coe G M Co	Cal	A Treadwell	426 California st	Annual	Dec 15
Empire Mill & M Co	Washoe	C S Curtis	419 California st	Annual	Dec 15
Golden Sun G M Co		Joseph Pentascost	702 Market st	Annual	Dec 13
Kentnck Q M Co	Cal	H V Clarke	204 Front st	Annnal	Dec 3
Lord of Lorne G & S M Co	Washoe	S H Carlisle	13 Fremont st	Annual	Dec 13
Mammoth Cona M Co	Cal	J W Buffington	311 California st	Annual	Dec 9
Mexican M Co	Nevada	C L McCoy	419 California st	Annual	Dec 7
Ophir M Co	Washoe	Jos Marks	419 California st	Annnal	Dec 15
Troy Cone G M Co		S C Herhert	535 Clay st	Annual	Dec 13

LATEST DIVIDENDS (within three months)—MINING INCORPORATIONS.

Name of Co.	Location.	Secretary.	Office in S. F.	Amount.	Payable.
Black Boar Quartz	Cal	W L Oliver		25	Sept 13
Oone Virginia M Co	Washoe	Chas H Fish	401 California st	10 00	Nov 11
Empire G M Co	Sierra Co	C Collischon		5 00	Aug 17
Empire M Co	Nevada Co	Cal D A Jennings	401 California st	50	Sept 15
Eureka Consolidated M Co	Nev	W W Traylor	419 California st	1 00	Aug 5
Excelsior M & M Co		Frank Swift	419 California st	1 00	April 10
Gilla S M Co	Nevada	W Anz Knapp	116 Leidesdorff st	25	Aug 16
Indian Queen M & M Co		A K Durbrow		50	Oct 11
Jefferson S M Co		C A Sankey	331 Montgomery st	50	May 15
Leopard M Co		R H Brown		50	July 15
Lyon Mill & Mining Co	Washoe	E F Stone	Hayward's Bldg	50	Aug 18
Manhattan S MCo	Nevada	Chas S Neal	419 California st	1 00	June 15
Northern Belle M & M Co		W Willis	419 California st	1 00	Oct 15
Oneida M Co		L Kaplan	Merchants' Ex	50	Aug 21

Mining Summary.

The following is mostly condsnsed from journals published in the interior,in proximity to the mines meotioned.

California.

BUTTE.

Good Claims.—Oroville *Mercury*, Nov. 26: We met upon the street J. M. Frost, of Wyandotte, who has heen stopping the past summer up above Stawberry valley. He informed ns that some of the richest mines in the country are to be fonnd on or near the line between Ynba and Butte. Attention hss been turned in that direction recently, aud work enough done to warrant the ahove sssertion. He gave ns something of a description of some of the claims, from which we can come to no other conclnsion than that that place will be as mnch sought after as the rich gold fields of Cherokee.

Mining.—An abundance of water is now had at the claim of W. C. Hendricks & Co., in Morris ravine, and the earth is washed away very rapidly. Every spot of the hedrock that is left hare is snre to he covered with cosrse pieces of gold, that are enough to do one's soul good to look at. The only difficulty with the claim is that a portion of the hill npon the right hand slides down as fast as worked away, and therefore it requires a great deal of work to olear off a small spsce. But after a good run the golden shower that seems to have fallen upon the hedrock amply pays for the labor expended.

A Double Canal for Mining Tailings.—Marysville *Appeal*, Nov. 20: The Spring Valley mining company, at Cherokee, Bntte county, hsve just completed an extensive enterprise which is expected to relieve the oompany from annoying lsw snits for dsmage to lands below. Lsst spring work was commenced on the canal, which is 400 feet in width, with double channels, each abont 30 feet in width and about 350 feet apart, with emhankment approximating abont five feet in hight on the outside, with a fall of about fonr feet to the mile. The compsny have expended ahont $400,000 in obtaining right of way. Through this osnal or canals the compauy expect to rnn their tailings into the tules on the Sacramento, striking a point not far above the North bnttes. This enterprise was designed by Messrs. Moore & Morgan, of the company, though snbseqnently modified by N. A. Hsrris, engineer of the company, with the assistance of engineer T. W. Reece, of this oity, who hss given the matter some considerable attention. The enterprise is expected to prove successful, and a precedent for other mining companies. The contract was taken by Mr. Bullsrd and Bsyliss Bros., of Bntte county, and the work has been most satisfactorily performed, giving employment to 200 men with steam horse scrapers, which were worked night and day. The canal is to be extended.

EL DORADO.

New Mill.—El Dorado *Republican*, Nov. 25: Work on the new mills and hoisting works on the Chnrch Union mine, nnder the snperintendence of Dan. Wickham, is progressiug fsvorably. There are now two shafts down 300 feet each on this property, and good pay rock hss been taken from both. We saw a speoimen from one of these on Mondsy that was exceedingly rich. With the new and improved machinery now heiug pnt on it we have every reason to helieve that it will soon rank with the best of our mines.

INYO.

Coso.—Coso *Mining News*, Nov. 25: Good progress has been msde in all the workings of the Defiance mine, and the yield of ore has been abont eqnal to the amonnt removed by the ore teams, which have been hsnling constantly. The winze in the sonth drift is now down sixty feet in good ore of soft grey carhonstes, the extent of which is not known, ss

the only effort being made is to attain depth, and no cross-cutting has yet been attempted at this point. The south drift is now in 130 feet and is yielding large quantities of first-class ore, the character of which is grey carbonate, imbedding large kidneys of rich galena. The upraise at the termination of the main tunnel has reached a distance of fifty feet from the starting point, and is being pushed rapidly to the surface for air and ventilation. It has passed through the ledge walls and is not now yielding ore. The north drift is still in good ore, and the yield from every point in the mine is satisfactory in the extreme. About fifty tons of ore are now daily being hauled to the furnace, so that when ready to start a good supply will have accumulated. The strike in the Bella Union, one of the Coso Consolidated mines, is described as follows: At a point in the 120-ft level, running east 20 feet from the main incline, the vein was cross-cut to explore the ore body at that point, and at this writing it is found to be from 15 to 18 feet in width, without yet reaching the hanging wall. The ore is of the richest character yet found in this mine, the assays running over $300 per ton, and the extent of the ore body not yet fully ascertained. From the cross-cut drifts are now being run east and west, and have progressed each way for a distance of about 15 feet, and the face of each is in the same extra quality of ore. From this opening about 16 tons of rich ore is being raised daily and wheeled on to the ore dumps without any assorting, as every ounce of it contains the richest carbonates and galena mingled. The main east drift has now reached a point 150 feet east from the main incline on the 120-ft level, and continues in ore, as it has all the way from the cross-cut 120 feet back of it.

MONO.

Benton Mines.—Cor. Inyo *Independent*, Nov. 20: Mill and mining matters are, if any difference, progressing. The mines of the Indian Queen mill and mining company have gained a place in the front rank of mining property, and the company has already more than paid the original cost price out of the proceeds of this summer's run. Mr. Mack's mill and mine, (the Camanche) are scaling the barricade of debt, and bringing the proprietor out beyond the reach of Old Obligation to any man. A. B. Williams' mill and mine are just now under attachment and injunction for the non-payment of old security debts. But we still believe he will dissolve these injunctions, and yet produce many "Benton hits."

NEVADA.

Important Discovery.—Nevada *Transcript*, Nov. 27: A company composed of Peter Johnston, Frank Beatty, D. Wellington and others, have for a long time been running a tunnel into the ridge on the south side of Deer creek, out near Hughes' ranch, with a view to strike an ancient river channel, which it was conjectured ran through there. There have been indications of striking gravel for some time, as we some months ago stated. A few days since the perseverance of the company was rewarded by striking the lead. At last they have found gravel, and it prospects first-rate. It is said the gold can be seen all through the dirt. Some think the channel follows the ridge, but others think the old Coyote lead, which was so rich until worked out, extends in the direction of the present find; but Deer creek, or some other cause, cut out the break between the two points. At all events the discovery is a very important one and created considerable excitement here when known. It opens up another mining field close to town, and from what we can learn it will be a very rich one. We congratulate the company on their very good luck.

PLUMAS.

Gopher Hill.—Plumas *National*, Nov. 20: The heavy rain started the water through the Plumas mining company's ditch, and the big pipes are now tearing down the gravel. Mr. D. Folsom informs us that they commenced piping on Wednesday, running 1,700 inches of water. The lake at the head of the ditch is filled to the extent that they can safely count on thirty days' run, unless a heavy fall of snow should close up the ditch. The company expect the ground now being piped to pay $500 per day. They are splendidly fixed for work, and will make "heaps of money" this year.

The Storm.—The rain storm which commenced on Sunday lasted almost without intermission until Thursday night, and was the heaviest storm that has occurred in this vicinity for years. It was accompanied by a strong, and at times a violent wind. The snowfall has been comparatively light, not over two feet of snow having been deposited on the higher mountains, and unless more falls soon, the roads will not be permanently closed. The rain has been a glorious thing for the miners, as it has thoroughly saturated the ground, and prepared it for the heavy snows which are sure to come later in the season. The prospects ahead for the miners were never more flattering, and the indications are that good times are coming.

TUOLUMNE.

The Confidence.—*Union Democrat*, Nov. 20: This mine is turning out ore sufficient to employ the crushing power of twenty stamps. The increase of rock will in a short time probably necessitate the running of the remaining stamps, 20 in number.

Gold Hunters.—Amateur prospectors will probably range the gulches and ravines tomorrow in search of nuggets, provided of course that the weather is fair.

Track in Order. — The track from the Spring Gulch mine to the mill is in running order and the work of crushing will probably be commenced in a few days.

Drifting.—In the Lady Washington mine the work of drifting from the shaft north and south still progresses and the rock encountered is of a fine quality.

Waiting for Water.—At the Soulsbyville mine hoisting works only are running, a lack of water preventing the running of the mill. The rains, however, will obviate this difficulty.

About to Clean Up.—At the Grizzly mine near Summerville the mill is still running, as they have a small amount of ore to crush before cleaning up. The batteries look well and there is every prospect of a most satisfactory result.

Nevada.

WASHOE DISTRICT.

Belcher.—Gold Hill *News*, Nov. 24: Daily yield, 420 tons of ore. This ore is being sent to the mills for reduction just as fast as it reaches the surface, and is of much better milling quality than for some time past. The ore breasts are looking finely, and the upper levels of the mine are yet far from exhausted of their rich ores. The water is steadily held at a point in the main incline below the 1600-ft station, so as to permit of the driving ahead of the prospecting drifts on the 1600-ft level. Everything in and about the mine is working finely, and the prospects of the Belcher are evidently looking up.

South Comstock.—Face of cross-cut still in very favorable vein matter, and something better should be met with before long. No water to trouble. Thus far the developments at this level simply go to show that all the company has to do is to sink deeper in order to find a good paying ore-body where the ledge is more concentrated.

Globe Consolidated.—At the third station level the drifts both north and south are in very promising ledge matter, the ledge at that point showing wide and the quartz being of an excellent character. Nothing new of other portions of the mine.

Consolidated Virginia.—The lower levels of the mine are kept in good repair, and a few tons of ore are hoisted daily through the Gould & Curry shaft. The C. & C. shaft is going steadily downward at the rate of 4 ft per day. The rock in the bottom works well, and the water has given no trouble whatever since the new pump was started up. It is now down 865 ft. If the good weather holds for a few days longer, the Consolidated Virginia will soon be able to begin hoisting her rich ores as usual.

Lady Bryan.—Sinking the main shaft is making good progress. Sinking the winze below cross-cut No. 5 on the 250-ft level is making excellent headway. This is intended for an air winze, and will greatly assist when completed the working of the south portion of the mine. Two cross-cuts are being run on the ledge, one east and the other west, at a point in the south drift 380 ft south of the shaft. Both of these cross-cuts are in very favorable quartz.

Julia.—Sinking the main shaft is making splendid progress; the bottom is soft ledge material, quartz and porphyry. The main south-west drift on the 1400-ft level is steadily advancing, the face showing very encouraging prospects.

Imperial-Empire.—Daily yield, 50 tons of ore, the average assays of which range from $50 to $65 per ton. The ore bressts on the 1900 ft level are gradually widening out and promise a much more extensive body and better yield than was expected when the opening of the level was commenced.

Bullion.—The north drift on the 2000-ft level is steadily advancing. The north drift on the 1700-ft level is going steadily forward, following the west wall of the ledge, the face in quartz and ore of a very promising character.

Sierra Nevada.—The north and south prospecting drifts, on the 700-ft level of the old shaft, are steadily advancing without any important changes to record.

Leviathan.—The cross-cut west, at the 420-ft level, is discontinued, having reached what is thought likely to be the west wall of the ledge. The ore-body is shown to be about 40 ft wide, and the face of the main drift north still continues in good ore, showing that its extent in that direction is not yet defined.

North Consolidated Virginia.—Occasional streaks of quartz and soft ledge material pitching steadily to the eastward, are encountered in the shaft, indicating that the main ore vein is not far away, and that when drifting is commenced there will be no great distance to run to strike the ledge.

Amazon and Glasgow.—The north drift on the second station level is in a distance of 46 ft, the face of the drift in fine looking quartz. The south drift on the same level is in 25 ft, the ore giving good assays, and the vein looks strong and promising. There evidently is a strong improvement over that of the ore vein on the level above.

California.—Sinking the winze below the 1550-ft level is going steadily forward, the bottom still in good ore. The face of the north drift on the same level is also still in fair ore. The frame of the battery mill is up, and is being covered as rapidly as possible.

Lady Washington.—The prospects for soon striking the main ore vein are growing more favorable every day. The flow of water is considerable, but gives no trouble, as the new pumping machinery handles it with the most perfect ease.

New York Consolidated.—Drifting at the 800-ft level, near the bottom of the shaft, is commenced. The material is porphyry, clay and quartz of the most promising character. The new machinery works well, and what water flows in at the bottom of the shaft is easily handled.

Dayton.—Sinking the shaft was suspended four or five days ago, in order to put in a tank station and another lift-pump, at the depth of 540 ft in the shaft.

Chollar-Potosi.—Daily yield 60 tons of ore, the assay value of which is $27 per ton. No change in the appearance or yield of the old ore producing sections of the mine.

Sullivan. — Tunnel still advancing at a lively rate in splendid looking ledge matter, showing streaks of low grade ore. When the proposed steam hoisting machinery is erected, the company will go in for seeking deeper.

Gould & Curry.—The repairs to the balance bob, which was broken last week, were but little more than completed, before a section of the pump rod parted in the shaft, creating still further delay and trouble.

Silver Hill.—The connection between the up-raise from the 4th station level and the winze below the 3d, is completed, which will greatly benefit the ventilation of that portion of the mine.

Savage.—The pumps are kept steadily at work draining the water from the 2200-ft level, with every prospect of soon getting the flow well under control. The machinery works well and every effort is being used to get the water down so as to resume prospecting at the very earliest moment possible.

Overman.—The south drift on the 900-ft level is steadily advancing, at the rate of 4 ft per day.

Leo.—Steady headway is being made in both drift and cross-cut. The face of the main drift is still in ledge matter of good character, and the material in the face of the cross-cut is improving in quality.

Woodville Consolidated.—The erection of the pumping machinery is making favorable progress, the woodwork being completed and most of the machinery in place.

Justice.—Drifting and cross-cutting at the 600-ft level is going ahead as usual, with plenty of good pay ore in sight and being shipped to the mill for reduction.

Original Gold Hill.—North drift running in low grade ore, with improvement in both quality and quantity, the last day or two. The south ore body is getting developed into good working shape, and the extraction of ore for milling will be commenced shortly.

Yellow Jacket.—The work in the drifts on the 1940-ft level has been delayed for the past 3 or 4 days by a breakage of some of the pumping gear.

North Carson.—Milling ore from the upper workings, the results of which will be good, judging from the excellent average assays obtained.

Florida.—Work in west drift progressing well, with very favorable indications of a good ore body being found when the main portion of the ledge is intersected.

Rock Island.—The ore vein on the 650-ft level is opening up more favorably as the drifts advance to the southward.

Nevada.—The winze from the east cross-cut shows improvement, the grade of the ore being higher, and the general body of it being stronger and better defined.

Hale & Norcross.—About 100 ft of the shaft is retimbered, and the remaining portion is being pressed to completion as fast as the work can be accomplished.

Cosmopolitan.—Lively prospecting going on at the various favorable points, with good results.

Utah.—The erection of the new hoisting works and machinery is making steady headway.

West Belcher.—Drifting north, following the ledge, and preparing to take out pay ore for milling, when connection with the old incline shall be made.

Sutro Tunnel.—Face of header in hard rock, but the Burleigh drills make good headway in it. Total length of tunnel last evening, 11,556 ft.

Crown Point.—Daily yield, 300 tons of ore. There is little or no change in any portion of the mine. Work is progressing well at all points.

Best & Belcher.—Owing to the delays of the Gould & Curry pumps, nothing is being done in the mine below the 1500-ft level.

Arizona.

Mining Affairs.—*Arizona Citizen*, Nov. 20: Messrs. Silverberg and D. A. Bennett returned the other day from the Patagonia mountains, whither they had been to inspect the mining property hitherto worked by Messrs. Fish & Bennett. Mr. B. informs us that Mr. Silverberg is much pleased with the mine, and, like all others who examine it, believes it a very valuable property. We expect to soon announce definite arrangements for extensive and improved reduction works on it.

During the week six thousand five hundred pounds of very rich silver ore was received here by Governor Safford and associates from their mine in the Pinal mountains. The ore is sacked awaiting transportation to Yuma, and thence to San Francisco. Careful assays show the lot to be worth an average of over $900 per ton, and one chunk of 300 pounds is believed to be worth $300. Many pieces of the ore show metallic silver. Arrangements are made for continuous shipment of ore. One interest was some time ago sold for $5,000 cash and another for several thousand, and in both cases the sales were made to enlist men of means and experience, rather than to part with the property. The Governor feels that he now has a prospect of getting a "funeral stake" without ceasing to divide up his salary with the thousand and one who almost daily insist on a part of it. This will be such good news to his thousands of warm friends, that we cannot refrain from giving it publicity.

Work still goes ahead on the "Old mine," Ostrich lode and mill, as well as other mining property.

Supt. Schemerhorn, of the Salero company, was in town lately and purchased and took out supplies, including an outfit for a blacksmith shop. He is developing the extent of some of the company's claims in a sensible way, and says machinery will be procured when he finds paying ore in quantities to justify the erection of works.

L. M. Jacobs & Co. have this week purchased $800 in gold; Wood Bros., 14 ounces; Zeckendorf's, 56 ounces; E. N. Fish & Co. $300, and other firms smaller lots.

Idaho.

The Owyhee Mines.—Idaho *Statesman*, Nov. 23: We had a long talk with Mr. Simon Harris, of Fairview, Owyhee county, about the mines and mining operations in Owyhee. Between 500 and 600 men have worked in the mines during the summer, up to about the 1st of October. Since then several of the mines have shut down, and the force at the present time is between 200 and 300. This force will be employed all winter. Since the Oro Fino mine started up it has seemed to bear the palm over all the other mines. The mine is under the superintendency of Mr. J. Catlow, who is working 100 men, and keeps 3 mills running, or in other words, 50 stamps. This mine will run all winter.

The Golden Chariot and Minnesota mines and companies have been consolidated, and they are now putting up new hoisting works of the most substantial character. They work about 20 men, but are not working any in the mine. They expect to get their new machinery running about the 1st of December. They will increase their force and work 30 or 40 men this winter. This is considered one of the best mines in the camp. This company paid their men for 2 months, last Saturday, up to the 1st of this month.

The South Chariot is working about 40 men; will probably work all winter; their men are also paid up. Mr. James I. Crutcher is the superintendent; he is also superintendent of the Panper mine. This mine has shut down, but they are pumping the water out. They have worked about 25 men the past summer, and are 2 months behind on their pay.

The Poorman mine is working about a dozen men. They had to suspend awhile, but have paid off one month in cash and one month in 30-day checks. The checks are bank checks and pass readily in paying debts or for goods. They have a good body of ore in this mine; and ought to go ahead successfully. D. Hoyt is the superintendent.

The Empire mine is running about 20 men. Russ Carter is the superintendent. Have not crushed much ore for some time back. Have been behind, but have recently paid off with checks.

The Mahogany mine has worked about 100 men the past summer. They have had to shut down, and are 3 months behind on their pay roll; but are keeping the water pumped out of the mine.

The War Eagle mine has shut down; worked from 15 to 40 men the past summer, and are 3 months behind on their pay roll.

The Ida Elmore is shut down; worked about 35 men last summer, and owe 2 months' wages to the miners.

Montana.

Montana Gold.—Helena *Independent*, Nov. 18: Since the first of last May the First National bank and L. H. Hershfeld & Bro., of Helena, have shipped East, in bullion and gold dust, two million dollars, the product of the summer mining. This gratifying exhibit in the production of precious metals will be additionally enhanced when the statement is made that it is nearly all from surface mining, and taken from mines immediately around and adjacent to Helena. With improved machinery and larger capital invested in the enterprise, this county alone could furnish six millions of gold annually to the coinage of the country. Indeed, there is scarcely a mining district in Montana but what can do as well under circumstances at all favorable to mining operations. With such a showing as this, Montana has no need to dread the rivalry of other sections. The day is not far distant when it will be the greatest gold producing country in the United States. All that we need is population and ordinary facilities for the development of our wealth.

Lucky Find.—A miner named Miller, near Butte City, is reported to have found in an ordinary gravel rock a specimen of surface gold worth $2,800. The rock, which has the appearance of an ordinary boulder, is literally seamed with gold. It had been laying on the ground near the gulch where a number of men had been working all summer, and had attracted no attention until accident threw it in the way of Mr. Miller, who casually picked it up, and found that he had come into possession of a golden bonanza. The gold is of the finest quality, and there is strong proba-

(Continued on Page 364.)

Geology of the Black Hills.

In the following extract will be found the most interesting portion of Professor Jenny's report as telegraphed to the Chicago *Inter-Ocean:*

That portion of the hills which is designated aa Harney'e Peak gold field ia almost wholly in Dakota and extends about fifty milea north and south, with an average breadth of nearly twenty miles, covering an area of not less than 800 equare miles. The valuable gold deposits, however, are found in the valleys of the streams which drain that area, the gold being derived from the disintegration of the quartz ledges, which are very numerous in the rocks of that region.

The most extensive and valnable deposits of auriferous gravel discovered during the paet seeson were in the valleys of Spring and Rapid creeks and in their tributaries, where in almost every case the gravel bars are very advantageously situated for working and many natural circumetances contribnte materially to the profitable extracting of the gold which they contain.

Timber of suitable size and quantity for the construction of flumea and sluices is abundant. The water supply is in most localities ample, and the fall of the streams sufficiently great to enable the watsr to be readily carried above the level of even the more elevated bars and deposited gravel.

While aa yet there have been discovered in the Black hills no deposits of gravel sufficiently rich to be profitably worked in the primitive manner with pan or rocker; yet there are many bars in the Harney Peak field, especially npon Spring creek, tho forks of Castle and Rapid creeks, and the valleys of those mountain streama, which, when skillfully worked by gangs of miners with sluices, will yield a good return for the labor employed and the moderate capital required to be invested. But little could be done in a single season in prospecting the numerous aggregated quartz veins of this region, some of which undoubtedly contain gold. I have procured abundent samples by testing their value by assay.

The Bear Lodge gold field, situated in the extreme northwestern portion of the hills, is wholly in Wyoming and entirely separated from the Harney Peak region. It does not exceed fifty square miles in area; the gold deposits are small compared with those on Rapid creek, and are remarkable for the absence of quartz in the gravel, the gold being derived from the disintegration of feldspar, porphyry carrying regular massee of iron, and manganese ore.

It is difficult to determine the agricultural resources or climate of the Black hills by the observation of a single season, especially as I could gain but little information concerning the severity of the winters or the prevalence of early and late frosts. The Black hills rise like an island from an ocean of grass covered and treeless plains, watered by occasional and ecanty snpphes of rain, and the winds in passing over these plains gather some moisture, which they part with as rain, being chilled by contact with the colder and more elevated region of the central portione of the hills. The reeult of thia is the prevalence of frequent though not heavy rainfalls, giving to the hills a most beautiful climate. There is scarcely a day from May to August without one or two showers, yet owing to the dryness of the atmosphere the climate is bound to be very healthy. During the past season after August 1st, very little rain was experienced, and some of the smaller streame contained water only in pools. That this is a remarkable rainfall, in a region where the average fall does not exceed ten inches for the whole year, does not appear, but I can only judge by observation on the growth of the plants and treea.

The abundance of the trees and the coarseness of their grain, as well aa their growth of plants on dry hill sides exposed to both sun and wind, tend to show that the season which I witnessed was by no means a very anomalous one, though the amount of rain may have been somewhat greater than usual.

The area of land suitable for cultivation from the mountainous character of the region ia limited as compared to the vast area embraced in the hills, but the soil along the streams and in most of the valleys is deep and fertile, and will be sufficient for the requirements of the popnlation which the hills will support as a stook raisiug community. I should say, from the observationa I have had the opportunity to make, that at least one-twentieth of the 3,000 sqnare miles embraced in the Black hills may be fairly described aa arable lands, and that near these lands lying near the streams and continuing through the hilly country are large tracts of land forming the surface of the hill eides which, whilo not arable, will afford fine grazing, largely enhancing the lands to which they are contignous.

Among the rocky areaa of the Harney'e Peak range and in the uorthern portion of the hills there are regions where the grassea are comparatively wanting, but geuerally throughout the whole area of the hills a luxuriant growth of the fineat grassea ia to be found, even covering the ground under the ahade of the pine trees upon the elevated divides between the streams.

The abundance and fine qnality of the grasaes, and the shelter afforded to stock by the deusely timbered slope and deep valleys, will make it a regiou well adapted to etock raising purposes.

The timber of the hills ia a variety of pine known as yellow or heavy pine. The grain of the wood ia straight, rather coarse, aplitting readily; and where the trees have escaped the action of fires and violent galee, good, straight logs, free from knots, and forty to eixty feet in length, and from twelve to twenty-four inches in diameter, can be obtained in abnndance. Spruce of good quality is found among the canons in the interior, and white birch, oak, and elm of medium size among the hills on the eastern slope.

The water throughout the hills is excellent in quality, mostly derived from springs among the limestone or the granitic or sohistose rock. Only in localities among the foothills is it contaminated by alkali.

There waa no evidence found that the Indians ever lived in the hills or ever visited them, except in the spring to cnt lodge poles, or occasionally stop and hunt deer among the foot-hilla while passing from the agencies to the Upper Missouri. The only reason advanced for the cause of their not living in the hills is the prevalence of severe thunder etorms and the frequency of trees being strnck by lightning.

The Rain-Fall.

The approach of the rainy seeson is always regarded with unusual interest in California, as on its character depends the general prosperity of the state for the ensuing year. The rain-fall here is not only very irregnlar from year to year, but it also varies greatly in different sections. The average rain-fall in San Francisco is about twenty inchee, while at Stockton it is but little more than half that amonnt, and a little farther down the San Joaquin valley it is considerably less than one-half. In this connection the following table, compiled for three seasons by the Engineer's department of the Central Pacific railroad company, will be read and studied with intereet:

California.

Stations.	Seasons. 1874-75.	'73-74.	'72-73.
San Francisco	18	23	18
Niles	12	14	14
Livermore	12	12	10
Ellis	9	9	8
Stockton	11	15	11
Sacramento	18	24	11
Rocklin	13	22	16
Auburn	28	35	25
Colfax	37	48	33
Alta	39	47	—
Emigrant Gap	42	69	53
Summit	49	—	39
Truckee	21	28	22
Boca	15	20	10
Marysville	14	25	14
Chico	19	25	15
Tehama	13	14	11
Red Bluff	14	17	14
Redding	9	—	—
Modesto	8	10	7
Merced	10	—	11
Davisville	12	18	12
Fairfield	19	21	15
Calistoga	26	29	—
Petaluma	18	26	14
Nevada and Utah.			
Reno	5	5	4
Wadsworth	4	4	2
Hot Springs	7	4	2
Brown's	5	3	2
Humboldt	5	3	5
Winnemucca	10	8	10
Iron Point	7	2	10
Battle Mountain	7	6	5
Beowawe	9	4	4
Carlin	5	7	4
Elko	3	6	8
Halleck	5	4	5
W lls	13	17	17
Cedar	13	11	20
Toano	9	9	10
Terrace	7	2	2
Promontory	11	11	5
Corinne	13	12	14
Ogden	14	11	14

It will he observed that the points at which these observations are taken are along the main railroad lines, and in directions nearly central across the State north and south and east and west, and extending in an easterly direction over the Sierraa across the State of Nevada, and into the Territory of Utah.

The rain-fall is quoted at the summit of the Sierra, 7,000 feet ahovo the level of the aea, where it measenres an average of forty-four inches. Twenty miles beyond that point it decreases to about one-third that amount, or fifteen inches. Passing through the State of Nevada the fall varies from twenty inchee on the highest ridges to four inches in the lowest valleys.

In California, when the averagé at San Francisco reaches twenty-two inches, that amount has generally heen found sufficient to secure good crops throughout the State. When the amount here reaches thirty inches it is accompanied by destructive floods, and when it drops to or below fifteen inches a desiructive drouth is sure to follow. During the winter of 1863-64 only ten inches of rain fell in thie city, and we conecquently experienced the terribly destructive drouth of 1864. Thus far the present season indicates a flood year.

Although the average amount of rain-fall in any given section should be largely considered in selecting a location for farming in California, the productiveuess of a location is not always in proportion to the amount of rain which falls upon it; for some portions of the State will produce a hetter crop of any given product with eix inches of rain than can be secured from other sections with twelve or even twenty inches. The difference in yield is often aa largely due to the topography of the country, the general characteriatios of the soil and atmosphere, as to the amount of rain-fall.

Arrangements for the Centennial.

The Act of Congress which provided for "celebrating the one hundredth Anniversary of American Independence, by holding an International Exhibition of arts, manufactnrea, and products of the soil and mine," authorized the creation of the United States Centennial Commission, and entrusted to it the management of the exhibition. This body is compoaed of two commissioners from each State and Territory, nominated by the respective Governors, and commissioned by the President of the United States. The enterprise, therefore, is a distinctly national one, and not, as has sometimes been steted, the work of a private corporation.

The exhibition will be opened on May 10th, 1876, and remain open every day, except Sunday, until November 10th. There will be a fixed price of fifty cents for admission to all the buildings and grounds.

The Centennial grounds are situated on the western bank of the Schuylkill river, and within Fairmount park, the largest park in proximity to a great city in the world, and one of the most beautiful in the country. The park contains 3,160 acres, 450 of which have been enclosed for the exhibition. Besides this tract, there will be large yarde near by for the exhibition of stock, and a farm of forty-two acres has already been snitably planted for the tests of plows, mowers, reapers, and other agricultural machinery.

The exhibition buildings are approached by eight linee of street cars, which connect with all the other liuea of the city, aud by the Pennsylvania and Reading railroads, over the tracks of which trains will also run from the North Pennsylvania and Philsdelphia, Wilmington and Baltimore railroade. Thus the exhibition is in immediate connection with the entire railroad system of the country, and any one within ninety miles of Philadelphia can visit it at no greater cost than that of carriage hire at the Paris or Vienna exhibition.

The articles to be exhibited have been classified in aeven departments, which, for the most part, will be located in appropriate buildinga, whose several areas are as follows:

DEPARTMENT.	BUILDINGS.	ACRES COVERED.
1. Mining and Metallurgy, 2. Manufactures, 3. Education and Science,	Main Building.	21.47
4. Art,	Art Gallery,	1.5
5. Machinery,	Machinery Building,	14.
6. Agriculture,	Agricultural Building,	10.
7. Horticulture,	Horticultural Building,	1.5
Total,		48.47

This provides nearly ten more acres for exhibiting space than there were at Vienna, the largest international exhibition yet held. Yet the applicationa of exhibitora have been so numerous aa to exhaust the space, and many important classes of objects must be provided for in special buildings.

An important special exhibition will he made by the United Statee Government, and is being prepared under the supervison of a hoard of officers representing the eeveral executive departments of the Government. A fine building of 4½ acres is provided for the purpose, space in which will bo occupied by the war, treasury, navy, interior, postoffice and agricultural departments and the Smithsonian Institute.

The Women's Centennial Executive Committee have raised $30,000 for the erection of a pavilion in which to exhibit every kind of woman's work. To this collection women of all nations are expected to contribute.

The list of special buildings ie constantly increasing, and present indications are that their total number will be from 200 to 250. Most of the important foreign nations—England, Germany, Austria, France, Sweden, Egypt, Japan and others—are putting up one or more structures each for exhibiting purposes, or for the use of the commissioners, exhibitors and visitors. Offices and headquarters of this kind, usually of considerable architectural beauty, are provided by the States of Pennsylvania, Ohio, Indiana, Illinois, Michigan, New Jersey, New York, Connecticut, Massachusetts, New Hampshire, Missouri, Kansas, Virginia, West Virginia, Nevada, Wisconsin, Iowa and Delaware, and it is likely that others will follow tho example.

A number of trade and industrial associations, which require large amounts of space, will be provided for in epecial buildinge. Among these are the photographers, the carriage builders, the glass makers, the cracker bakers, the boot and shoe manufacturers, besides quite a number of individual exhibitore. The great demands for space will probably render this necessary to a considerable extent, especially for exhibitors who have been tardy in making their applications. In the main exhibition building, for example, 333,300 square feet of space had been applied for by the beginning of October by American exhibitora only; whereas the aggregate space which it has been possible to reserve for the United States Department is only 160,000 square feet, about one-third of which will be consumed by paseage ways.

The machinery building, like the others, is already fully covered by applioations. There are about 1,000 American exhibitore in this department, 150 Englieh and 150 from other European countries—which is about 250 more than entered the Vienna machinery exhibition. Extra provision is being made for aunexes to accommodate the hydraulic machinery, the steam hammers, forges, hoisting engines, boilers, plumbers, carpentors, etc.

Power in the machinery hall will be chiefly supplied by a pair of monster Corlise engines. Each cylinder is 40 inches in diameter, with a stroke of ten feet; the fly wheel ie 31 feet in diameter and weighs 55 tons; the horse power is 1,400 and the number of boilers is 20. This engine drives about a mile of shafting.

For the art exhibition, the most eminent American artiets are understood to he at work, and it may be confidently stated that, especially in the department of landscape painting, the United States will present a finer diaplay than the public has heen led to expect. Quite aside from the contribntiona of American artists, applications from abroad call for more than four timee the exhibiting space afforded by the great Memorial hall. Provision for the surplua will be made in temporary fire-proof buildings, thongh all exhibiting nations will be represented in the central art gallery.

The Secretary of the Navy has arranged that a United Statea war vessel shall call next spring at convenient European ports, to collect and transport hither to the exhibition the works of American artists resident in Europe. Among the ports thus far designated, are Southampton for England, Havre for France, Bremen for Germany, and Leghorn for Italy, to which, if desirable, othera may be added.

Mr. Bell, the eminent English sculptor, who designed the groups for the plinth for the great Albert memorial in Hyde Park, London, is reproducing in terra cotta, at the celebratsd worke in Lambeth, the one which symbolizes Americoa. The figures in this group are colossal, covering a ground space of 15 feet square. It will probably be placed in the great central gallery, opposite the principal entrance.

The art exhibition will include, in addition to the works of contemporary artists, representative productions of the past century of American art—those, for instance, of Stuart, Copley, Trumbull, West, Alston, Sully, Neagle, Elliot, Kensett, Cole. These, as well aa the works offered by living artists, will be passed upon by the committee of selection, who will visit for the pnrpose, New York, Boston, Chicago, and other leading cities, in nrder to prevent the needless transportation to Philadelphia of works of art not up to the standard of admission.

A large number of orders and fraternities have signified their intention to hold gatherings at Philadelphia during the period of the exhibition. Among those which may now be enumerated, are the Grand Lodge of Pennsylvania, Indepeudent Order of Odd Fellows; the Grand Encampment, Independent Order of Odd Fellows; Grand Lodge, United States, Independent Order of Odd Fellows; Grand Commandery Knights Templar; Grand Army of the Republic; Presbyterian Synod; Caledouian Club; Portland Mechanic Blues; Welsh National Eistedfodd; Patriotio Order Sons of America; California Zonaves of San Francisco; an International Regatta; the Life Insurance Companies; National Board of Underwriters; State Agricultural Society; 2d Infantry, N. G. of California; Philadelphia Conference, Methodist Episcopal Church; Cincinnati Society California Pioneer Socicty; American Dental Convention; Catholic Total Abstinence Union of America; Independent Order of B'nai Brith; National Alumni Association; Salesmen'e Association; 5th Maryland Regiment; American Pomological Society; Malster's Association of the United State; Army of the Cumberland; Humboldt Monument Association; Christopher Columbus Monumeut Association; Board of Trade Convention; International Typographical Congress; Rifle Association of the United States; Centennial Legion; Philadelphia County Medical Society; International Medical Congress; Old Volunteer Fire Department of Philadelphia.

MINING THE GREAT CIVILIZER.—The London *Mining World* discourses on tho effects of mining on civilization at conaiderable length, and very logitimately concludes as follows: It is not too much to eay that all the civilization of which we hoast may be traced to the application of the metals and to the use of coal. Wherever nations have learned to mine and work metals, they have become powerful and rich, subduing their neighbors either by force of arms or by greater industrial activity, and in either case acquiring their wealth. In the earlier stages, those who possessed the metals made an easy prey of their rivals, and in the present day nations mining their coals and metals do in a better and more elevated sense outstrip their competitors and become the masters of the world. All history teaches that those nations which learned to mine and work metals became wealthy, powerful and civilized, whilst those which have had no mining industries or no metallic manufactures have remained in a state of barbarism, and that such at the present day is the distiugnishing feature of eavages. Mining industry is, indeed, the foundation of all civilization and the chief basis on which all industries must rest, as well as being at the aame time the principal element of progress. Without it the working clasa could gain little beyond the mere necessities, and, as we have often shown that coal and iron are the first requisites of national prosperity, so it is to mining that we must refer the advancement of the present age.

THE cost of maintaining the inaane at the Stockton asylum is forty-three cents per capita per diem, which is less than the cost of maintaining any other similar institution in the United States.

Useful Information.

Notes on Iron.

A flanged tire bar, 5 in. x 1.8 in. and contains 10.2 square inches, requires upward of 200 tons pressure on a pair of ordinary shears to cut it open. In one experiment 210.6 tons were required.

A new railway bar has been known to break in three pieces on simply falling from a wagon.

A cast iron pillar, loaded with 97-100ths of its calculated ultimate breaking strain, bore the load six months and then broke.

Locomotive tires are gradually extended in circumference by the friction to which they are subjected. They often become so loose upon the wheels as to require to be taken off and set new.

Steel swells in hardening. Iron absorbs carbon and swells in case-hardening, as well as in conversion into steel. Forgings of scrap iron are liable in case-hardening to absorb carbon unequally, and to twist or vary, owing to the irregularities of the iron.

In punching long angle iron with closely pitched holes, as for riveting, the iron is stretched, often half an inch in ten feet, and a different template should be used in laying off the holes in such iron, so as to allow for the stretching.

Cast steel, when hardened to too great an extent, has been known to explode violently. A case was reported in the *Franklin Institute Journal*, for 1844, where a hardened steel step or bushing 1¾ inches in diameter, having a one-eighth inch hole, exploded with a report like a pistol.

A steel wire or bar of steel of whatever diameter, having a tensile strength equal to 150,000 pounds per square inch, would just support its own weight, if 8 3-5 miles (46,166 feet,) long and suspended freely from one end.

Forgings which have been hammered when early cold often prove very brittle, a quality occasionally attributed to crystallization. Such forgings, however, if brought to a good heat and allowed to cool slowly, recover their toughness.

Hard cast iron, when cast in very large masses, and allowed to cool slowly, is found to become soft. Heavy guns, when cast solid from hard iron, are found to bore easily.

The strength of 1¼ inch bolts made of a given quality of iron, being twenty-three tons per square inch, Mr. Brunell found the strength of one-inch bolts of the same iron to be twenty-five tons to the square inch, while three-fourth inch and five-eighth inch bolts of the same iron bore respectively twenty-seven and thirty-two tons per square inch.

By successively reheating and reworking Swedish iron, Mr. Wm. Clay found that while the original tensile strength was 43,904 pounds per square inch, its strength at the sixth reheating was 61,824 pounds. Subsequent working reduced the strength until at the twelfth heating it again stood at 43,904 pounds.—*Exchange.*

To Make Leather Water-Proof.—The *Bayerisches Industrie und Gewerbeblatt* contains the proceeding, which has been patented in Bavaria, for rendering hose of fire engines completely water-tight, so as to withstand the greatest pressure. The hose are, after they have been cleaned and dried, impregnated with a mixture of 100 parts of glycerine of 24° R. and 3 parts of carbolic acid, which may be done either by drawing the hose through the liquid, or better still, by brushing it well in. Thus treated, the hose are said to preserve a certain degree of dampness, without, however, being liable to rotting in the least degree, and so suffering deterioration in quality and durability. The brass fittings of the hose are attacked only imperceptibly by the acid contained in the composition; but even this may be easily prevented by giving them before impregnation a coating of weak shellac varnish, or by greasing them well with tallow. The hose must be cleaned every time they have been used, dried, and impregnated anew with the liquid. As it does not affect the mixture, hose prepared in the above manner do not freeze easily at low temperatures. If the preparation named is effective as stated when used in connection with hose, it should be especially valuable for an application for leather boots for miners'

To Fix Paper on Drawing Boards.—Take a sheet of drawing paper and damp it on the back evenly with a wet sponge and clean water. While the paper is expanding, take a spoonful of wheat flour, mix with a little cold water, and paste it a modarately thick paste; spread the paste round the edge of the drawing paper one inch wide with a feather, then turn the drawing paper over and press the edges down on the board. After this take four straight pieces of soft wood, three-fourths of an inch by two and three-fourth inches wide; place them on the edge of the drawing paper, and put a large book or heavy weight on each corner to make the paper adhere firmly to the board. In about an hour's time the paper will be straight and even, and will be ready for executing a drawing. When the drawing is finished, take a sharp knife and cut at one corner of the paper, then take a scale, and cut it around the edges, and the paper will come off easily. Turn over and take the dry paste off with a knife, and all will be perfectly clean, and no paper will be wasted.

New Speaking and Hearing Trumpet for Divers.—An apparatus patented by Bremen & Co., of Kisl, and introduced for trial into the German Imperial Navy, not only enables the diver to communicate with those at the air-pump, but also to hear distinctly, to a depth of sixteen fathoms, every word spoken at the surface. The absolute safety of the diver being thus secured, it is expected that they will be able to work for smaller wages, thus rendering their services available in many cases in which they otherwise would be too costly. It is said that the invention is very simple, and can be attached, without much expense, to any diving apparatus. The main principle involved is the application of vibrating metallic plates for the propagation of the sound, without, however, allowing them to come in contact with the water.

New Use for Molasses.—In consequence of the low price of molasses, attempts are being made in France to introduce it in the place of manure. It is used either in a liquid form, diluted with seven parts of water, or as a powder; and just at this moment it is cheaper than ordinary manure, while it contains all its essential elements in equal abundance. As soon, however, as the cold weather comes on, the molasses will again be required for cattle-feeding purposes, and will probably rise to a price at which it would be useless for manure.—*Jour. of App. Science.*

The molasses above referred to is that obtained in the process of the manufacture of sugar from beets. Such molasses at the Sacramento sugar factory is used for distilling purposes, and converted into brandy.

New Use for Sawdust.—Sawdust can be converted into a liquid wood, and afterwards into a solid, flexible and almost indestructible mass, which, when incorporated with animal matter, rolled and dried, can be used for the most delicate impressions, as well as for the formation of solid and durable articles, in the following manner: Immerse the dust of any kind of wood in diluted sulphuric acid, sufficiently strong to affect the fibers, for some days; the finer parts are then passed through a sieve, well stirred and allowed to settle. Drain the liquid from the sediment, and mix the latter with a proportionate quantity of animal offal, similar to that used for glue. Roll the mass, pack it in molds, and allow it to dry.

Match Marks upon hard-finished walls may be removed by rubbing the walls with a bit of pumice stone. Prevention is better than cure, and if mats made of sandpaper, cut in circular or hexagonal shapes, fastened upon pasteboard, and bound with bright colored braids, with a ring attached to a sack, are hung near the match-box, these unsightly disfigurements may be entirely prevented.

Good Health.

The Philosophy of the Lungs.

The office of the lungs, in its relation to health and life, is so important in the human organism, that everybody ought to understand it.

The work performed by the lungs is of two kinds. First, they endow with life the elements which repair the wear and tear of the body. The stomach digests the food we eat, but has no power to make that food into blood. The product of digestion is a white fluid, devoid of life, and possessing in itself no power of assimilation. It is sent to the lungs to be vitalized—or, in other words, endowed with life, and made capable of entering into combination with the tissues of the body. This white fluid is called chyle, and when the lungs have acted upon it, becomes bright red blood, in which condition it is sent to the heart to be distributed throughout the system. Every breath we draw manufactures a certain quantity of new blood. It is in this way that the food we eat imparts strength and health to our bodies.

No sooner is one meal digested by the stomach, and made into blood by the lungs, than the sense of hunger returns to tell us we must eat again. If we do not heed this demand for more food the making of new blood stops and the body grows weak. This renovation of the blood is going on unceasingly. The quantity of new blood made depends on the size of the lungs. A man with small lungs only breathes a small quantity of air, and can only make a proportionate quantity of blood. With large lungs more air is inspired, and consequently more blood is made. This is why those having large lungs are strong, muscular men, while others with small lungs are thin and weak. It is a law of nature, and you cannot find in all the world an instance of a stout, muscular man with small lungs. The nutrition of the body is governed by the size of the lungs and the freedom of the breathing.

This being the case you can understand how essential it is to health and strength that the lungs should always be kept free from obstruction. If you permit colds to settle on the chest, and the mucous lining of the air tubes to become congested and inflamed, you by that prevent the lungs from doing their appointed work, and inevitably lose in flesh and strength thereby.

This explains the reason why all lung diseases are characterized by loss of flesh. That malady called consumption is so named from this very peculiarity. The body consumes or wastes away, because the lungs are obstructed by tubercles. So, also, of catarrh and bronchitis, though in a less degree. They impair the blood-making power of the lungs by clogging the air tubes with phlegm and mucous, and in this way injure the general health, and weaken the body. To remedy this weakness and increase the flesh, it is common to advise, in these lung cases, all kinds of nourishing food, under the delusion that the fault is in the stomach. But they do not good, for the reason that assimilation does not take place in the stomach. The stomach may be supplied with the strongest nourishment, and may perfectly digest it, and yet the patient will continue to lose in proportion to the extent the lungs are diseased. But improve his breathing, and from that moment, without any change in his diet, he will begin to gain.

Good health depends on the rapid transformation of matter—on the constant introduction of new elements of nutrition into the blood, and the constant expulsion of old, worn out elements from the blood. This brings us to the second duty performed by the lungs. They not only give us our strength by making new blood from the food we eat, but they purify the old blood by casting out its most corrupting impurities. Every breath we draw comes back from the lungs loaded with carbonic acid. Carbonic acid is formed by the combustion of the fatty tissues of the body. In this way animal heat is generated and the warmth of the body maintained. Its formation is essential to life. It takes place every moment of our being and must be expelled by the lungs as fast as it is formed or our health suffers.

Now put these facts together and you cannot fail to understand why all lung diseases are so dangerous to health. Catarrh, bronchitis, and consumption all have their seat in the air passages through which we breathe. They obstruct the lungs, and by that impair nutrition and corrupt the blood. If the blood is not sufficiently renewed by the introduction of fresh elements it loses its power of imparting nutrition. If it is not only poor in quality, but impure through the failure of the lungs to effectually remove the carbonic acid, its circulation spreads weakness and derangement through all the organs of the body. It does not impart to them the strength necessary to the performance of their own functions. The brain and nervous system show their distress by chills and fever, headache and pain—the heart by a fitful pulse and feeble circulation, the liver by torpor and biliousness, the stomach by capricious appetite and loss of tone, and so on. It is thus that we have in all lung cases a wide range of symptoms, many of which you would suppose to be entirely independent of the lungs, when in reality they all spring directly from their condition.

Now, on the subject of treatment. Suppose your general health to be impaired in the way explained, you could not expect any permanent benefit to result from treating the loss of flesh, bad circulation, torpid liver, disordered nerves, etc., while their cause remains in operation. Their cause is the state of the lungs, and these are but the effects or symptoms. No cure ever yet resulted from such a course. No remedy devised by man can cure the symptoms while their cause remains in force. Restore the function of the lungs and all these general effects will disappear of their own accord. The most that is ever accomplished by treating symptoms is a little temporary relief, while, by going to the root of the evil, and trusting the lungs, the disease itself and the symptoms disappear together, and the cure is radical.

In explaining these matters I have endeavored to give the reader an insight into some of the higher mysteries of medical science, which as yet are but imperfectly understood, even by the general profession. The philosophy of respiration teaches the paramount importance of the lungs over all organs of the body, the injury which results to health from even the slightest obstruction of their function, and indicates clearly the remedial means which alone can guide to success in the treatment of lung complaints.—*Robert Hunter, M. D.*

Poisoning by Arsenical Wall Paper—Not Green.—Cases of arsenical poisoning occasioned by living in rooms the walls of which were covered with paper colored green by arsenite of copper have frequently been recorded. Lately a case of arsenical poisoning has come under my notice, caused by inhaling the dust from paper not colored green. The family of a gentleman, Mr. Jones, residing in New Ross, suffered so severely from symptoms usually produced by arsenic that he was induced to get the wall paper of his house examined. Out of seven kinds of paper, six were found to contain arsenic. No. 1, an olive-green paper, with deep green flowers and gold-like lines, contained an immense amount of arsenic in the two green colors and the "gold." No. 2, a faint lavender-watered paper, contained arsenic in large amount. No. 3, a white paper with green flower, contained a very large amount of arsenic. No. 4, a paper with red and green flowers on a gray ground, was highly arsenical. No. 5, a dark olive-colored paper, with gilding, did not contain much arsenic. No. 6, a pale green and white paper, also contained only a small amount of arsenic—much less than was put on the lavender paper. Mr. Jones' family had not suffered from symptoms of arsenical poisoning until shortly after the house was papered with the above; and the symptoms disappeared shortly after they left the house preparatory to the removal of the paper.—*The Medical Press.*

Domestic Economy.

Choice Treatment of Foods.

In the choice of foods we cannot exercise too much care. It is cheaper to procure only the very best articles. All vegetables and fruits should be grown on the best soils, and the fertilizers used should be well decomposed and not fresh and rank. Partially decayed food of whatever kind should be avoided. For breads, the best white wheat is none too good. If grown in new soil it is likely to be better and to contain abundance of the mineral matter so needful to health. Fruits for eating without cooking should be ripe, tender and not too tart; while those for cooking may be either sweet or sour, but they must possess the peculiar quality of retaining when cooked their best flavors. Potatoes should be fresh and ripe—old ones are less wholesome, especially when they have been exposed to the light and air, and bruised by much handling, or long exposed to the cold.

Animal food should be chosen with great caution. Only healthy animals should be used for eating. They should neither be too old nor too young, too fat nor too lean. In butchering, all the blood should be removed from the body, as otherwise the flesh putrefies readily. It should be thoroughly cooled before eating. It is also desirable that the animal be not killed for several hours after eating or after fatigue. The long journeys animals are sent on crowded, filthy cars, render their flesh unwholesome.

The treatment of animal food is a matter of importance. Why do we cook it at all? First, to render it more pleasing to the sight; second, to develop its best flavors; and third, to render it digestible and palatable. Flesh cooked too much is rendered innutritious and indigestible; if cooked too little, it is disagreeable eating. Liebig said he would never have flesh subjected to a higher temperature than 170° F., except for a few minutes after it is put into the pot, when it may be submitted to a temperature of boiling water in order to coagulate the albumen into a sort of crust on the outside to hold in the flavors that might otherwise be evaporated. In roasting meat, also, let the heat at first be high, and gradually decrease to the boiling point for the same reason. Stewed meats are more wholesome and nutritious than any other. The process renders flesh tender and succulent and easy of digestion.

Fish Flour.—A novel and remarkable article of food, prepared from the products of the ocean, has lately been brought prominently forward—this is fish flour. It is not as yet manufactured in any great quantity, as the article is still new in the market, and consequently there is no great demand for it. The flour is prepared in Norway, from dried cod-fish of the first quality; it is thoroughly desiccated and then ground in a mill. There are two qualities, the coarse and the fine-ground. It is especially the former which has found favor with the public; from it an excellent dish of preserved fish can in a short time be prepared; while the finest ground is used for fish puddings, a dish highly appreciated in Norway and Sweden. In Catholic countries, in localities where there is no regular supply of fresh fish, it is presumed this article will be more particularly important.

Barley and Bread Soup.—Take three ounces of barley, one and a half ounces of stale bread crumbs, one and a half ounces of butter, one-half ounce of salt, and one quarter ounce of parsley. Wash and steep the barley for twelve hours in one-half pint of water, to which a piece of carbonate of soda, the size of a pea, has been added; then pour off the water not absorbed, and add the crumbs of stale bread, three quarts of boiling water, and the salt. Digest these in a salt-glazed covered jar, in the oven, or boil them slowly in a well tinned covered pan, for from four to six hours, adding the chopped parsley, with the butter, thirty minutes before the expiration of the time of boiling.

Horseradish Sauce.—Grate as much horseradish as will fill a breakfast cup, mix with it two teaspoonfuls of powdered white sugar and one each of salt and pepper, a dessertspoonful of made mustard, and enough vinegar to make the whole as thick as thick cream. A small cupful of cream is also a great improvement. To use with roast beef the sauce is heated by being placed in a jar in the oven till warm, but it must not boil; and it is very good cold, to eat with various cold meats. Double the quantity may be made at a time, and it will keep for some weeks if bottled.

Buckwheat Cakes.—One quart of buckwheat flour and a half a pint of Graham meal. Mix with lukewarm water into a batter, stir in a teacupful of good yeast sponge or a half cent's worth of bakers' yeast; mix in an earthen or stone vessel, and set over night in a warm place to rise. If the temperature and yeast have been just right, the batter will be light and sweet, and not need soda. It should be considered a mistake when the ferment needs neutralizing, and care taken to set cooler or correct the yeast.

Cheese Sandwiches.—Take two-thirds of good cheese, grated, and one-third of butter; add a little cream; pound all together in a mortar; then spread it on slices of brown bread or gems; lay another slice over each; press them gently together, and cut in small square pieces.

MINING AND SCIENTIFIC PRESS

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San Francisco:

Saturday Morning, Dec. 4, 1875.

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RENEW YOUR SUBSCRIPTIONS.—With encouraging rains, good mining prospects, a rapidly increasing population, public improvements and new manufacturing and industrial enterprises springing up throughout the coast, we believe the ensuing year will be one of such progress and importance that no subscriber of the PRESS can afford to miss the record of events and discoveries which will be reported in the successive issues of this journal.

THE Centennial Commissioners for Nevada have agreed to the following: "*Resolved*, That we respectfully request the people of California and Oregon to join us in the erection and maintainance of a building sufficient to accommodate the people from the Pacific Coast, to be known as the Pacific Coast headquarters."

FIRE was put under the boilers at the pan department of the California mill on the 22d ult. for the first time. The mill will be started up in a few days on tailings saved from the Consolidated Virginia mill during a number of months past.

THE Storey county papers now estimate the total loss by the Virginia fire at $10,000,000. Insured for $2,500,000. This is largely in excess of the first estimate.

Ball's Sweeping Dredge.

Those who have recently been in the vicinity of the old ferry slips, between Broadway and Vallejo street wharves, have probably noticed a peculiar large dredging machine, which gave no apparent indication of its nature until the hinge scows, filled with mud, were towed away from it by an attendant sprite in the shape of a steam tug. No long pole extends into the air as in the clam-shell dredge, and no moveable buckets are seen bringing their load from the bottom of the bay; therefore, although the general impression of the machine is that it is a mud digger, there were no apparent indications of its being at work, except that spoken of. Nevertheless, it is hard at work, but, contrary to the usual preconceived notions of such machines, performs its labor quietly and thoroughly without making any great noise or splashing mud in every direction.

This dredge is of a new design, by John A. Ball, and is at present engaged on a contract for the city. The new features of the machine are several, and the whole is a very ingenious contrivance, complete in all its parts. This is, in some respects, an experimental dredge, being the first one built by Mr. Ball with all his improvements combined. It is called "Ball's sweeping dredge."

The "sweeping" arrangement, which is a prominent feature, is very simple, but effective, and so far has worked in a manner to exceed the expectations of the inventor. The dredge (which is described hereafter) is so attached to an auxiliary scow as to admit of its being swung back and forth across a channel or slip on the radius of a circle, without the necessity of having any anchors down or lines stretched from dock to dock to manipulate it.

A dredge tender, or scow, twenty by sixty feet, is held in position by four "spuds" or beams, which are dropped down, one from each corner, into the mud. This fixes it firmly in place. A "tongue," like the large tongue of an ox wagon, joins the tender and dredge together, the end on the tender being fixed on a pivot. From each end of the tender projects a heavy beam to the outer end of which a chain is attached. This chain passes from the end of one of the beams across the front of the dredge and then back to the beam on the opposite end of the tender. A bight in the chain passes around a reversible pulley connected with the machinery on the dredge.

Now, when the dredge has started work on one side of the slip or channel, a strain is constantly kept up on one side of the chain. This has the effect of slowly and gradually bringing the dredge across to the other side of the channel, without interrupting the digging, or hoisting any spuds to move. The tender all the time remains stationary, being held by its spuds; but the dredge is swung across a channel 200 feet wide, digging mud all the time, without stopping the machinery. The speed of the lateral motion of the dredge can, of course, be regulated to suit the character of the ground being worked.

The tongue which joins the tender and dredge together can be shortened or lengthened at pleasure. Accordingly, when the dredge has worked across the channel, the pivot on the tongue is raised and moved back two feet, which brings the dredge two feet nearer the tender. Then the strain is brought on the other end of the chain, and the dredge is "swept" back across the channel, digging in new ground two feet nearer its tender. This operation is repeated until the dredge and scow are brought together, when a large spud is dropped from the dredge to keep it in place while the tender is being moved back. Two lines from the dredger revolve two shafts on the tender, by which means the four corner spuds are raised and the tender moved out to the end of the tongue, when the spuds on the tender are dropped again, that on the dredger raised, and the dredger commences its work once more.

It will be seen from this that the machine will dig across a channel, 200 feet wide and two feet deep, eight or ten times without having to handle any anchors, spuds or lines, saving a great deal of time usually consumed in changing position. If necessary, the space can be dug to the required depth, say from two to thirty feet, without having to change; but it is usually desirable to dig over the surface two or four feet each time, and go over it again until the necessary depth is attained.

The improvements in the digging apparatus itself are many, various changes in details over those before built having been made. The principle is that of having large buckets or scoops attached to an endless chain, pass down an inclined "ladder," and up again, each bucket dumping its load as it comes to the top. Although the principle itself is not new, such a radical variation has been made from similar dredges in existence that all the details are changed. In the first place the buckets, instead of passing down under the ladder and up over the top, pass down the top and up on the under side, thus gaining advantages hereafter explained. Then again, the buckets are very large and have a patent self-dumping bottom which is substantial and strong, and which works very effectively.

The endless chain, which passes down over two large six-foot pulleys at the bottom of the ladder, is made of heavy wrought iron. Friction rollers are placed every few feet in this chain, and it is so arranged as to run both down and up on a track, which carries both the weight of the buckets and chain. By this means the friction is reduced to a minimum. There are ten buckets placed at equal distances apart, and each holding one and three-quarter cubic yards of mud or earth. These buckets are fifty inches wide on the cut.

The main shaft at the upper end of the ladder carries two three-foot pulleys four feet apart, and around each of these pulleys, the heavy endless chain passes, going around similar pulleys at the bottom of the ladder. The buckets are secured to these chains at equal distances apart, being connected with the chains at a point below their middle line. A link connects their upper ends with a cross bar which connects the chain. As these buckets come to the pulleys at the upper end of the ladder an automatic arrangement releases a hinged gate or bottom, while the buckets are passing around the wheel, so that the contents are dropped into the scows underneath. As the bucket passes still further over the wheel the hinged bottom falls back shut of its own weight and remains closed until it again comes to the top. The buckets are armed with heavy wrought iron teeth on the cutting edge, so as to stand any strains to which they may be subjected. There are no springs or ratchets connected with this opening device, it being quite simple in operation, but difficult to describe without engravings.

The power is derived from two 15x15 vertical engines and two large boilers, 16x4. The engines are geared up to gain power. The scow itself is 94x31 feet. It is very heavily and strongly built, being composed really of three scows joined together by heavy timbers so as to make one solid structure. The ladder is inclined down between the two smaller fore and aft sections, and the buckets accordingly pass between them. The after end is supported by another large scow, so as to leave a space of thirty feet laterally between it and the other two sections. This space is necessary to float the mud scow in under the dredge, so that the buckets can dump their contents into them. A scow is floated in under the buckets and gradually passed through to the other side, being loaded on its way. This avoids confusion with the tug, as it leaves an empty scow on one side and takes the full one from the other without unnecessary backing and filling. All the splashing and mud throwing is done, therefore, on the inside of the machine, where it falls back into the scow.

The raising and lowering of the ladder is effected by a very simple means, and is all accomplished by machinery, without stopping the digging operations at all. In the upper part of the dredger, over the machinery and entirely out of the way is a small car rigged like a saw-mill carriage upside down. By applying the power and drawing this car back it draws a chain which passes over a pulley down to the lower end of the "ladder," and thus hoists the ladder, and regulates the depth of the digging.

The dredge is now working on a contract for the city at 12½ cents a cubic yard, which is a margin over actual expenses, but it is not a sufficient price. Mr. Ball has taken out 25,000 cubic yards of mud. It is admitted by all who have seen the machine run that no one tug can take away the mud as fast as it is filled into the scows. Some little difficulty has been experienced from the fact that the machinery sunk the scow lower than was expected, leaving a small margin for the scows, when light, to pass under to be loaded. This will be remedied by raising the scows from below, without changing or moving any of the machinery or upper works. The whole dredge, including extra expenses for experimenting, etc., cost upwards of $35,000.

They were dredging this week twenty feet below low tide, or an average depth of about twenty-four feet. It was not until this machine was at work on the Oakland bar, that the former prices for dredging came down to any fair figure. Those who had the city dredging for several years at fifty cents a cubic yard and afterwards for thirty-six cents, sold their machine to the city. It is claimed that the Ball is the most economical dredge yet invented, and that it will do double the work in the same space of time that any other dredge can do. The scows, of 105 cubic yards, are filled in from nine to fifteen minutes, the average time being less than twelve, or about nine cubic yards per minute. Mr. Ball is confident that in digging solid clay or hard pan, such as usually has to be blasted for other machines, he can dig at nearly the same speed that he digs the mud.

Mr. Ball has a number of patents on the machinery, in the United States and principal foreign countries. He has had quite a struggle for several years to introduce his machine to public favor, considerable opposition being manifested by interested parties; but now having a capitalist associated with him as a partner he is able to make contracts for work or make such improvements as suggest themselves. As very little can be understood about the machine by looking at it from the wharf those interested in such thing will be courteously received on board should they wish to examine the machinery.

THE Trinity *Journal* says: "Miners throughout the county are now washing with a full supply of water. Most of them will do more work before christmas this year than was done the whole of last season."

A MINERS' Union will shortly be established at Pioche.

Notices of Recent Patents.

Among the patents recently obtained through Dewey & Co.'s SCIENTIFIC PRESS American and Foreign Patent Agency, the following are worthy of mention:

STEAM ENGINE BOILER.—Joseph Enwright, San Jose, Santa Clara county, Cal. This invention relates to certain improvements in the furnaces of steam boilers in which a large central flue is employed, having a grate in its front end, and a combustion chamber behind, with small return flues. The invention is especially intended to fit the furnace for using straw as a fuel, and it contemplates the use of what the inventor calls a ring grate behind the ordinary grate, so that he is enabled to do away with the extension mouth piece which is now attached to the furnace doors for that purpose. The invention further consists in an adjusting plate by which the size of the door opening may vary to fit the furnace for burning straw or wood; and lastly in the use of a cylindrical extinguisher or shield, containing a water hearth or floor, so that the loose straw is prevented from being blown about by the wind and any cinders or burning straw which may drop will be extinguished by the water. These improvements enables the inventor to make a portable or field boiler perfectly safe, and also makes it equally serviceable in burning straw or wood.

PLOWING MACHINE.—Theodore C. Stark, No. 631 Mission street, San Francisco. This invention is an improved machine for plowing and cultivating the soil, which can be either propelled by steam or drawn over the ground by horses. In this machine the inventor uses a series of ordinary plows ranged across the rear end of the wagon or plow frame, the main feature of the invention consisting in the employment of two or more parallel independent sliding plow-beams, to each one of which one or more plows is attached. These sliding plow-beams are so connected with pulleys, cranks or equivalent mechanism, that as the wagon or plow-frame progresses they are separately and alternately drawn upon, so that the plows which are attached to each beam, after they are pulled forward by the semi-rotation of its crank or pulley, will remain stationary during the back movement of the crank or pulley, while the other plows are being drawn forward in the same manner, thus drawing the entire series of plows through the ground while only one beam with its plows are working at one time. One, two or three plows can be attached to each beam, or even more if desired, but the inventor does not propose to use more than three to each beam or compound beam. At the forward end of each beam is an adjustable foot, by means of which the depth to which the plows are to be run is regulated. A curved handle is also provided which passes up through the platform directly above the plows, so that a person standing on the platform can adjust the point of the plows in the ordinary manner of holding a hand plow. Each beam is connected with one arm of a crank lever which is pivoted upon the platform, so that each beam and its gang of plows can be raised entirely out of the ground if desired. The inventor claims to provide a plowing machine which will draw a large number of plows with the same power that is required to draw a single gang.

BATTER FEEDER FOR CAKE MAKING.—Dennis H. Lafferty, San Francisco, Cal. This is an implement of domestic use, and is employed to feed the batter of which cakes are made upon the iron where they are to be cooked, with rapidity, and so as to obviate all waste and dripping. A suitable vessel with a handle, having its bottom conical in shape, is employed to hold the batter. At the bottom of the conical portion is a hole for the contents to pass. A stopper on the inside always lies over the opening by its own gravity. A rod projects from the lower end of this stopper, so it will be seen that where the vessel is lowered sufficiently to allow the stem to touch the iron, the valve or stopper is raised and thus a portion of the contents will escape. By raising the vessel the valve will be instantly closed and further flow cut off. With this invention no difficulty is experienced from drippings, as the flow is cut off so short by raising the vessel.

TRACTION WHEEL FOR HARVESTERS.—Wm. O. M. Berry, San Francisco, Cal. This machine relates to certain improvements on traction wheels, and more especially such as are employed on headers and mowing machines. It consists first in the employment of bars or ribs placed angularly across the face of the wheel, the angles being so great that before the end of the rib at one side has left the ground, the end of the next rib at the other side of the wheel face will be resting upon the ground, thus making the thread continuous and preventing the machine from sliding upon side hills. The second part of the invention consists in the construction of a peculiar double cup, shaped nut, having channels made in its outer face around the shaft or axle, and the spokes of the wheel pass the edge of this hub into these openings, where they are held by nuts so that the can be set up at any time.

ANOTHER vein of superior coal has been struck at the Utter mine, Coos bay, above the vein heretofore worked and of good quality good for blacksmithing purposes.

Raising Water by Compressed Air.

Want of water is one of the commonest inconveniences of life to all who live outside of cities, and most owners of country places spend a good deal of time in considering how to get such a supply as they want. Leaving hand labor and gravitation out of the account, there are three sources of power available—steam, water and wind. For raising water for private use steam would not often be economical, as in addition to the first cost of engine there must be a continued outlay for fuel and attendance. A water wheel is seldom available, especially in this country, as it requires a considerable stream which has at least a moderate fall. A hydraulic ram also needs a fall and a good deal of water. If either of these conditions is lacking its use is out of the question.

Wind power remains to be considered. It costs nothing; the wheel will run in the night as well as the daytime and with no attention. Wind wheels have become numerous in California, and in many places where irrigation is required or large quantities of stock are kept, are an absolute necessity. But granting the efficiency and economy of wind power there may be great question as to the best means of utilizing it. It was found on trial that the wind wheel was so often wrecked in violent storms, and wheels were constructed of such a nature as to partially close when the force of the wind reached a certain point, and thus diminish the resisting surface. The rudder has also been pivoted in such a way as to automatically turn on one side during a violent wind, and thus bring the wind wheel with its side instead of its face to the gale. Great numbers of machines, working on one or the other of these plans, are now in use.

In any such wheel there are several moving parts exposed to the weather, and the number of parts is also a disadvantage. If wheels with fixed fans and rudders could be safely used, they would of course be preferable, on account of their superior simplicity. This has been rendered possible by a plan of making a wind wheel compress air, which is then used to force water as required. The crank meets an elastic resistance at each stroke instead of the solid shock communicated from the piston of an ordinary pump and the weight of a long plunger rod is also dispensed with, as the air pump is fastened directly unto the casting that supports the wind wheel. This form of mill, as made by the Hartford Pump Co., is shown in Fig. 1 of the accompanying engravings, where it is represented as pumping water from a spring at a distance. From the air pump the compressed air is conducted through a half inch iron pipe (common gas pipe), any necessary distance, to the automatic pump, Fig. 2, which is submerged near the bottom of the well, and this pump, where the compressed air does its work, is the principal feature of this apparatus. Any other motive power may be used to compress the air, but no other pump can use the air advantageously when it is compressed. The following description and the cut will give a clear idea of its construction and mode of operation. It consists of two submerged cylinders or water chests fastened to and resting upon a frame which forms the bottom, and in turn rests upon a pivot, giving the chests a certain amount of vertical motion, say three or four inches. Each cylinder has in the bottom a valve opening upward to admit the water, and also at the bottom on the inner side a discharge pipe for the water. These discharge pipes unite in a common upright main.

Attached to the chests at the top, and directly between them, is the air valve, *A*, which determines the passage of the compressed air alternately from one chest to the other. The connection of parts is such that by a very simple arrangement this valve is operated by the rise and fall of the water chests, as will be seen by reference to the cut. The compressed air is always directed into the lower chest

When a certain amount of water has been expelled the chest is lighter than the opposite one and has a tendency to rise. When this tendency becomes sufficiently strong to overcome the resistance of the lever which operates the valve, the chest rises, the valve is changed and the compressed air is instantly diverted to the opposite chest, which now occupies the lower position. The valve at each motion opens a suitable escape for the compressed air which has already raised its bulk of water, and so allows the chest just emptied to refill through the valve in the bottom. The pump being entirely submerged, is non-freezing; the water pipe should be taken out of the well below frost depth, and the well should be kept covered in winter. Fig. 3 represents a section through the air valve and shows how the air passes in the different positions of the valve.

The operation thus described in detail is, in practice, extremely simple and certain. In the water chests the compressed air takes the place of a piston, thus saving the friction which necessarily exists where a piston moves in a cylinder and its rod through stuffing boxes. The application of power as variable as wind, through a perfectly elastic medium, is in itself a great economy.

The various parts of the windmill and pump are well made and durable, and the machine is little likely to get out of order or be affected by frost. The valves and valve seats are made of composition. All the wearing surfaces are turned and bored, the primal boxes are babbited and provided with self oilers, which keep all the parts well lubricated. The windmill can be placed several hundred feet from the well if desired, or if necessary to secure good exposure to the wind. The agent informs us that one machine in actual operation has the windwheel and air pump over a quarter of a mile distant from the automatic pump, and in this case the water is carried still farther and lifted 65 feet. This is a very decided advantage, as springs are usually situated in valleys where a windmill could hardly be placed to work with power and regularity unless perhaps in a lofty tower.

Fig. 1. HOUSE, BARN, SHEDS, ETC., SUPPLIED WITH WATER FORCED UP BY COMPRESSED AIR.

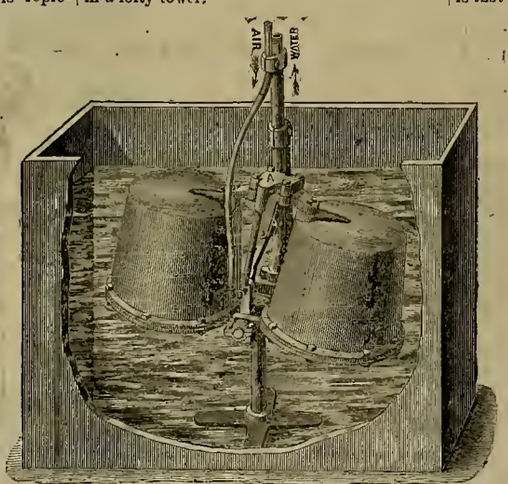

Fig. 2. Automatic Pump of Hartford Pump Company.

Fig. 3. Section Through Slide Valve.

The absolutely silent working of the apparatus is a great point in its favor, as well as the fact that, though the windmill is not "self-regulating" in the ordinary acceptation of that term, it nevertheless is so strongly made that the most violent storms, except such perhaps as might unroof the barn upon which it stands, have no other effect upon it than to make it pump the more. No rapidity of pumping can cause it to suck up gravel and so derange the pump, as windmill pumps so often do. It is necessary to oil it once a month, and this is probably all the attention it requires.

One would imagine, after seeing this apparatus in operation, that each country residence should enjoy the same advantages as to water as city houses. Every one is satisfied that if water has constantly to be drawn by pumping, or still worse, by more primitive arrangements, an injurious economy in its use is always the result, and that this is especially the case on farms, no one will doubt. A mechanical way, therefore, by which plenty of water can be raised in a reservoir not only from a neighboring well, but even from a distant brook, so as to save cattle the daily journey through all kinds of weather is a desideratum which especially stock-farmers appreciate. This apparatus can be seen in operation and examined in detail at No. 31 Beale street in this city, at the office of J. E. Holloway, general agent for the Pacific States.

Antimony.

Every month or so we receive letters from persons who have found large bodies of antimony ore, who desire to sell the mines here or deliver the ore. Almost every one of these persons supposes he has something few others have and consequently expects something big out of it. We have mentioned the fact a number of times that the market here is limited for this class of ore, and that only that of a certain percentage is bought at all. A great deal of the ore which is found falls below the marketable average, and is of no use. In other cases the mines are situated at a distance from railroads, and cannot therefore compete with mines which have good facilities for transportation.

The lowest grade of ore saleable in this city is that containing 50 per cent. antimony. Below that it is worthless. The lowest grade that will pay to be shipped to England is 60 per cent. The value of this ore, according to percentage, in this market is as follows:

50 to 55 per cent	$40	per ton
55 to 60 "	42.50	"
60 to 65 "	45	"
65 to 70 "	50	"

These are the prices given for ore delivered here sacked and sampled. It must have been properly sacked and properly sampled before it will be bought. The sampling costs from $2.50 to $5 per ton and the sacking according to how it is packed, so these expenses have to be taken into consideration by producers.

The market, as stated, is limited and liable to be glutted at any time, which frequently happens. So far as we know, no very large fortunes have been made from antimony as yet, although perhaps within a few years a better market for the product will be found.

THE Placer *Herald* says: There is talk of transferring the contract for the completion of the Nevada County narrow guage railroad to other parties.

Our Home Industries.

Bridge Building.

The rapid advance made in the civilization of the interior counties of the Pacific States has rendered necessary the construction of bridges to span the multitudinous streams which wend their way to the seaboard. The inestimable qualities of iron in the construction of bridges has been acknowledged to be chief among the essentials that go to make up a solid, convenient passage over streams; but the heretofore, and still existing, high price of iron in adaptable shape for the purpose, has caused science to examine into the utility of less costly material, and led ingenious men to devise such methods as to equal, in many respects, the greater tensile qualities possessed by bridges constructed exclusively of cast or wrought iron. While cast iron is remarkable for rigid, inflexible nature, wrought iron becomes superior on account of toughness. A number of such bridges now span our streams, but their value, in point of cost, makes them not only undesirable, but impossible to be employed generally.

In order to remedy any deficiency that may exist in the want of metal, wood has been employed in the construction of bridges with such success as to make the want of iron a matter of no great moment, with exception of where wide rivers or streams are to be spanned, and when the span must possess great tensile power or ability to bear the weight of innumerable tons. On the Pacific coast no greater success can be instanced than that exhibited in the patented wooden structure, controlled by the Pacific Bridge Co., of this city. We allude to the "Smith patent truss bridge," which is composed almost exclusively of wood and adapted to the span of wide streams. This bridge is capable of forming a span varying from 230 to 275 feet, perfect safety demonstrated by numerous practical tests, and capable of resisting the load of one ton to the lineal foot. As every locality, and object of bridge, suggests to the engineer the condition of its practical working capacity or power to uphold the passage of heavy weights, so the character of the bridge we name is determined according to the span necessary to unite two divided objects or divisions of land.

The Smith patent truss bridge possesses the requisite tensile qualities as well as those of an æsthetical character. The latter is only secondary, as the utility of the bridge to span wide streams is the main object, and the cause that can be assigned for the superiority of this bridge over all similar wooden structures on the Pacific coast. In almost every county in California, and also in Oregon, this bridge may be seen in different lengths and widths, every instance of them affording corroboration of their superior nature. The company possesses the sole right of the bridge named on this coast.

The Pacific Bridge Co. was organized at Oakland in 1872, under the efficient Mr. W. H. Gorrill as President, and Mr. C. H. Gorrill, Secretary and Treasurer. The business increased so rapidly that a removal of the office and works shortly after to this city was deemed necessary. The sphere of this company's operations increased wonderfully and until they extend to the manufacture and building of wooden and iron bridges, wharves, gates, dams and all kinds of heavy framework. Also sole agents for Smith's patent truss bridge, Klog Iron Co., Cleveland; Smith's iron combination bridge, of Toledo, Ohio, etc. The works are located at the corner of Fourth and Berry streets; office, No. 606 Montgomery street, in this city.

The company employed the last summer on an average upward of 250 men, in the several occupations we have named. One of their late works was the construction of the Oakland brick sewer, which has been pronounced by competent engineers equal, if not superior, to any similar work in the United States.

This company has at its head gentlemen of practical knowledge, skill and efficiency to devise means for the successful accomplishment of any work rendered necessary by circumstances, and where such necessity becomes obvious. Such are Mr. C. H. Gorrill, President, and Mr. R. W. Gorrill, Treasurer, whose wide practical experience in the art and comprehensive knowledge regarding works of the character named, is attested in the performance of some of the most difficult undertakings ever accomplished on the Pacific coast.

WORK on the stamp department of the California mill, on F street, Virginia, is being prosecuted with the greatest activity, and it is expected that it will be in running order by the 10th of January, 1876.

Lower California Mines.

In speaking of the mines of Lower California the Los Angeles *Express* says: "The Minerva mine is situated about three miles from San Rafael, the Pueblo and Trinidad both being about two miles from the town. A splendid natural road, with good grade all the way, leads from these mines to the town of San Rafael and to the bay of Ensenada, rendering the importation of machinery and supplies very convenient and inexpensive. Plenty of wood is in the neighborhood, and can be placed there for $5 per cord. A large and perennial stream of water is also within three miles of the mines.

The Minerva vein has been penetrated by tunnels to depths varying from 50 to 90 and 125 feet. The vein varies in thickness from eighteen inches near the surface, to five feet at the greatest depth mentioned. Over $50,000 have been taken out of this mine from year to year by the Mexican process of hogging it and working it in rude arastras. The vein is between granite and slate, and a fair average of the rock, from repeated impartial tests, gives $56 to the ton.

The Trinidad has been found to be immensely rich in pockets, and has been tunneled to a depth of 140 feet. By the same methods described above, upwards of $70,000 have been taken from this mine. We have ourselves seen a five-pound specimen of the ore, which contained upwards of $100. Single pockets have been struck which contained $20,000.

Pueblo, which is probably the best and most reliable of all these mines, has been penetrated to a depth of 225 feet. At that depth the vein is about three feet wide, and it yields an ore which averages $80 to the ton. There is abundance of ore in both the Minerva and Pueblo, with the chances of very rich returns on small outlays in the Trinidad.

Owing to the peculiar method of working these mines adopted by the Mexican population, there are easily 5,000 tons of ore lying outside the mines, which may be relied upon to yield, on milling, from $25 to $40 per ton. Working the mine with the disadvantage we have described, these persons worked only the richest ore.

The mines described have been inspected by a number of experts, amongst others by Jerry Miller, who was sent there some time ago by Mr. James A. Pritchard. Miller pronounced them excellent, and the facilities for working them admirable. The same judgment was pronounced upon them by Ferguson, another noted expert, and by an expert sent down to examine them by the Messrs. Frontier, Belmont and Bosch. And last, but not least, they are heartily endorsed by our informant.

The latter understands the present status of the mines to be that the Minerva, Trinidad and Pueblo have been consolidated by a San Diego company, of which Capt. Wm. A. Winder is President, A. B. Hotchkiss (District Attorney of San Diego county), Secretary, and Father Antone D. Uhach, Vice President. The Messrs. Gatewood, Hanlon, and others of San Diego, are the trustees. He learned that they are about to effect a lease of the mine to some heavy San Francisco capitalists, reserving to themselves one-fifth of their gross yield as a rent. We are glad to learn that these rich deposits will be made to add their quota to the circulating medium of the world, which they are so richly capable of doing.

DANGERS OF HYDROGEN TOY BALLOONS.—The Abbe Moigno calls attention to the need of placing restrictions on the sale of the miniature balloons inflated with hydrogen, which have lately appeared as a novelty in the Parisian toy shops. The case of a cabman is instanced, who was very severely burned about the head and eyes, by an explosion inadvertently caused while reaching into his vehicle, by placing the end of a lighted cigarette near to one of these balloons that had been left therein by a child. —*Les Mondes.*

AMERICAN PLATE GLASS.—The production of plate glass, but recently introduced into this country, is making very rapid progress. There are now three polished plate glass manufactories in the United States—one each at New Albany, Ind., Louisville, Ky., and St. Louis, Mo., and one rough plate glass factory, at Lenox, Mass.

THE *City of Peking* has gone into the dry dock at Hunter's Point to carry out the strengthening process. It is said that the company have engaged the dock for six weeks for her and probably other of their vessels.

It is said that there is more Orange county butter sold in New York, than could be made in that county if it was as large as the entire State of New York.

THE stamp mill of the California mining company will go into operation about the 10th of January next.

AN engineer from the Black hills reports gold at twenty cents a cord and bread at eleven dollars a crumb.

THE *Coso Mining News* is the name of a paper which has been started in Darwin, Inyo county.

A BILL will be introduced in the legislature for the suppression of quackery.

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In addition to American Patents, we secure with the assistance of co-operative agents, claims in all foreign countries which grant Patents, including Great Britain, France, Belgium, Prussia, Austria, Victoria, Peru, Russia, Spain, British India, Saxony, British Columbia, Canada, Norway, Sweden, Mexico, Victoria, Brazil, Bavaria, Holland, Denmark, Italy, Portugal, Cuba, Roman States, Wurtemberg, New Zealand, New South Wales, Queensland, Tasmania, Brazil, New Grenada, Chili, Argentine Republic, AND EVERY COUNTRY IN THE WORLD where Patents are obtainable.

No models are required in European countries, but the drawings and specifications should be prepared with thoroughness, by able persons who are familiar with the requirements and changes of foreign patent laws—agents who are reliable and permanently established.

Our schedule prices for obtaining foreign patents, in all cases, will always be as low, and in some instances lower, than those of any other responsible agency.

We *can and do* get foreign patents for inventors in the Pacific States from two to six months (according to the location of the country SOONER than any other agents.

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Situated so remote from the seat of government, delays are even more dangerous to the inventors of the Pacific Coast than to applicants in the Eastern States. Valuable patents may be lost by extra time consumed in transmitting specifications from Eastern agencies back to this coast for the signature of the inventor.

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We take great pains to preserve secrecy in all confidential matters, and applicants for patents can rest assured that their communications and business transactions will be held strictly confidential by us. Circulars free.

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Our long experience in obtaining patents for Inventors on this Coast has familiarized us with the character of most of the inventions already patented; hence we are frequently able to save our patrons the cost of a fruitless application by pointing them to the same thing already covered by a patent. We are always free to advise applicants of any knowledge we have of previous applicants which will interfere with their obtaining a patent.

We invite the acquaintance of all parties connected with inventions and patent right business, believing that the mutual conference of legitimate business and professional men is mutual gain. Parties in doubt in regard to their rights as assignees of patents, or purchasers of patented articles, can often receive advise of importance to them from a short call at our office.

Remittances of money, made by individual inventors to the Government, sometimes miscarry, and it has repeatedly happened that applicants have not only lost their money but their inventions also, from this cause and consequent delay. We hold ourselves responsible for all fees entrusted to our agency

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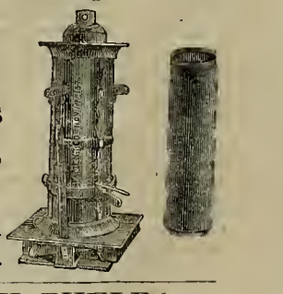

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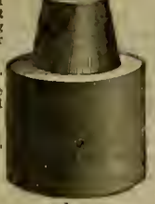

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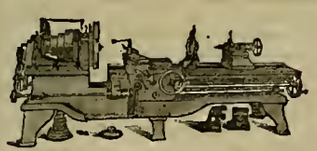

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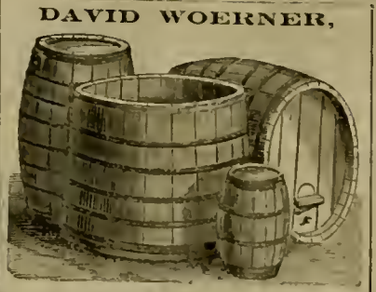

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Improved Chisel.

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We use TWO STEMS. From one-fourth inch to one-half inch, use one-fourth inch stem. For all Chisels from one-half to one inch, use one-half inch stem.

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Use from THREE TO FOUR SOCKETS (or upper portion) for a set of Chisels.

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VIRGINIA CITY SUFFERERS' RELIEF FUND.

NOTICE.—All persons who wish to contribute money to the assistance of the sufferers by the late fire in Virginia City, will please make out their checks in the name of GEO. S. DODGE, Treasurer, and leave the same at Rooms 12 or 17, Hayward's Building, California street. Those sending cash will please forward to the same name and destination.

Several solicitors have been appointed, who are provided with pass-books signed by the President, Treasurer and Secretary. The Secretary will be daily in attendance from 9 A. M. to 3 P. M.

HON. J. P. JONES, President.
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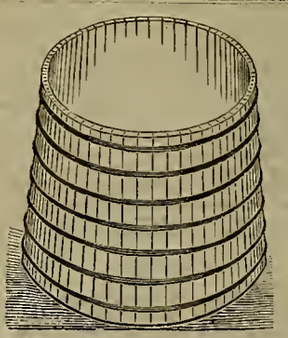

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A. J. SEVERANCE & CO.
Office, No. 315 California street, Rooms 1 and 2.
24v26-tf

(Continued from Page 357.)

bility of mors where it cams from.

THE PHILIPSBURG SILVER MILL.—From J. A. Viall, who returned from Philipsburg last Saturday, was gathered some interesting information conceroing the Philadelphia compsny'e works. Ths Cols Sannders mill has bsen torn down snd ths sngine is being nsed for hoisting pnrposes on the mine. A nsw building has been ersoted, and sxtensive machinery has been snbstituted, and, although the sams procese of rednction will bs continned, maoy valuabls improvements and changes have been determined upon, whils the capacity will be greatly increased. In abont three wesks the mill will he entirely completsd and running again. In the meantime, mnch valuabls ore is being taken out of the mins.

Oregon.

JAMES GORNON MINE.—*Bedrock Democrat*, Nov. 17: This mine is sitnated about 5 milss east of Baker City, and about 4 miles west of ths Virtue mins. Thers has been considerable work dons hy the partiss, residents of our city, who own ths qnsrtz lsdge; thsy have a shaft sunk to ths depth of 80 or 100 ft, well timbsred. A short time sincs they had 70 tone of average rock from this mins worked in ths Virtue mine mill, snd sent ths bnllion to San Francisco to be minted. On last Monday thsy received tbeir retnrns, and found that the 70 tons of rock croshed yielded them the nics little sum of $1,844, or at the rate of $26.34 to the ton. Ths owners ars well satisfied with their mine, and will continus to improve and work it. The lsdges, as a general tbing, in this county, as thsy are opened and devsloped, are proving themselves to bs richer than first appearances indicatsd.

ROBERT EMMET MINE.—Ths ownsrs of this mins, John Toy, Patrick Faulknsr aod Gsorge Crocker, had 10 tons of thsir rock crushed in the Virtue mine mill, and the bullion recsivsd as ths rssult is worth about $200. We havs seen it, and tbiuk it will go ovsr that figurs; this is a yield of $20 per ton of top rock. As thsy havs wsnt down on the lsdge the rock preseuts a hettsr appearancs. Ths mins is very near and abovs ths Virtue. Ths opening of nsw mines near our city is progressing, and svsry appearancs is that Baksr City is locatsd in ths center of one of ths richest mining districts oo the Pacific coast. The futurs prospects of our city ars bright and encouraging.

SUMMIT MINE.—Mr. Morgan Ksltnsr, supsrintsndsnt of ths Summit mins at Hogsm, about 35 miles from our city, called on ns ysstsrday. He informs ns that thsy now have a shaft down on ths vein of qnartz, that ths lsdgs is abont 3 ft wids, ths rock looks well, and that crushed in the mill yisld at the rate of from $12 to $15 per ton. Tnsy havs a 10-stamp mill in connection with this mine, which is run by stsam; it will bs put to work crnshing rock this winter, and we sxpect to hear good returns from this mins.

Utah.

BINGHAM.—Cor. Salt Laks *Tribune*, Nov. 23: Ths mine ownsrs ars wrathy, ths ors bins ovsrflowing, and ths tramway company nnable to get the ors away. Should this thing last much longer, soms of ths minss mnst shut down. Even now ths Spanish and Jordan ars discharging men, their closing down altogethsr bsing only a question of a few days. Ws ars now producing 200 tons daily, 150 tons of which conld be shippsd by rail; but ths railroad company having, as I am informed, only ssven mules on ths tramway, cannot possibly ship fifty tons daily. This is ths time for tsamstsrs to wads in, as tbsre ars about 1,000 tons of ors to work on, aod the tramway a comparatively dead lettsr for ths winter.

STAR DISTRICT.—The Shumar smeltsr startsd up on the 10th iust., and in ons shift run out 180 bars of bullion. All the machiusry is working finsly, notwithstanding soms of it was damagsd by tbe lats fire. Evsrything bids fair for a successful rnn. I understand that orss of a smelting character ars to hs shipped from Piochs to this furnace for rednction. I venture the saying that there is not a neatsr and more complete fnrnace of its size now in Utah tban this. All ths minss look well, especially ths Bnrning Moscow, owned by Taylor, O'Nsil and othsrs. This is a large mine, and the ores, I understand, are bscoming of a higher grads than they have been. Other prospects are being worked and ths orss sent to the smelter for reduction.

CAMP FLOYD.—For some time past the mill here has been run on tailings bslonging to ths Camp Floyd silver mining company (hmitsd) of London, under tbe supsrvision of Mr. H. E. Miller, formerly of Tintic. To-day the batteriss were turned loose on ore from the Elkhorn, a mine belonging to the Qusen of the West company, and managed by Thomas Bsnnett, who is also manager of all the work carrisd on by the Qusen of the West company. This company have this mill nnder lease from the Camp Floyd company, and I understand thsrs is a strong probability that the first named company will purchase the mill. Ths mill contains an sngine of 100-horss power, sight amalgamating pans with four sttlers, and is said to be the fiuest mill in the Territory, though tbis might bs disputsd by othsr mill owners.

AT Ophir, Placer county, thsrs is a locust tree in inll bloom, which is as much of a rarety this time of the year as gresn wheat in full head.

A COAL vsin three inches thiok is rsported as having bseu strnck in the Sutro tunnel.

The Emma Mine Again.

Ws havs rsceived from London a copy of the directors' report on ths famous Emma mins, in Utah, which presents a very gloomy prospect for ths sharoholders sver getting their money back, although snit has bsen commenced against ths vendors. In thsir report the directors say:

"Shareholders ars aware that ths mins was seized nnder attachment by Park at the time ths action against hm and others was tsken, and that it hss ever sincs remained vestsd in ths United States marshal (sheriff); conssqnently the directors ars unabls to report as to any explorations, and havs no reason to suppose that any discovery of ore would havs besn mads had such explorations besn nndertaken; on tbe contrary, very voluminons reports from independsnt sources induce them to believe that the mine itsslf is, and has long been, utterly sxhansted. The only available source of incoms that conld have accrusd to ths company, and that only to a very limitsd sxtent, would havs arisen from the conoentration of the "fillings" or low grads ors lsft from former workings. Advicss rscsntly to hand state that Mr. Park under his attachment had sold the personsl property of the company—*i. e.*, the whole of the machinsry, plant, timber on surface, ths ors sacks, office furniturs, etc. We havs sent out instructions to pay off the Salt Lake sstablishment, and measures are in progress for a furtber reduction of expensss at the London offics by ths retirement of ths sscretary, stc. Mr. Attwood, ths general mauager, has rstnrned from America; hs will be prssent at the meeting; his report accompsnies this. The cass agaiust ths vendors is being vigorously proceeded with, and svidencs has bsen collected in this country from ths officers of ths company, ths promotsrs, solicitors, trnstses, stock brokers, ors brokers, accountants, bankers, all the English origiual dirsctors, and the American ambassador; testimony has also been taksn at Salt Laks City by commission. Ths rssult of ths svidsncs has, in the opinion of the company's legal advisers, tended to strengthen ths claim of ths company against ths vendors, and the cansss are already sst down for trial in ths Unitsd States circuit court. Facts have also come throngh the lats commission in England to the knowlsdge of ths board which havs indnced us, nndsr tbe advics of our solicitor, to apply for ths restitntion of monsys received hy certain of the original directors. The solicitor has prepared a rsport npon the commission, which report, and the opinion of counssl therson, will bs in our hands to be dealt with as the forthcoming meeting may dstsrmine. The directors havs no desirs to remain in offics, and will resign thoir seats at ths mesting on Novsmber 10th."

Ths report of ths managsr, Mr. Gsorgs Attwood, is also discouraging, as were his prsvions rsports. Hs tells in detail how hs sxtended his drifts, stc., without finding aoy ors. Hs says: "The fillings and scrapings still remaining in ths mins ars not yst all worksd ont, but it is almost impossibls to form an accnrate opinion upon sithsr ths qnantity or qnality of the same. Taking a rough sstimate, I should think yon have abont 4,000 tons in the mins of poor wasts, stc., that should yield by concentration 350 tons of ors, assaying thirty-fivs psr cent lsad, and ssvsntssn ounces of silvsr to tbe ton of 2,000 ponnds. Estimatsd gross valne, $30,000. Second class dump: Thers is still remainiug on tbs "dump" abont 100 tons of ths "original dump," and about 150 tons that has bssn mined nndsr my managemsnt. Estimatsd gross valns, $3,200. Condition of mine: Ths pressnt condition of ths mine is a most deplorable ons. The watsr having rissn within fifty fset of lsvsl No. 1, and remaining thsrs a greater pare of the snmmsr, it has now receded to abont twenty feet abovs lsvsl No. 4. Ths resnlt is that tbs timbsrs have givsn way in all directions, and sven ths engins shaft cannot be considsred safe to work in. It will now bs a most difficult as well as a dangerous and expensivs piscs of work to mins what fillings, waste and scrapings still remain. The greater portion of the old workings above level No. 1 has "caved in," and made an immense hole on ths surfacs, extsnding for 300 fset in length, some thirty feet in width and forty feet in dspth, exposing the "slide" shown in ths "gsological diagram" which accompanied my last rsport, in a most remarkabls manner; as the slide comes up within a foot of the surfacs the whole distancs of 3,000 fest, aud stands psrfectly solid, and all the grounu on the lower or southwest side has fallsn away from it, and is rapidly filling np the old workings abovs lsvsl No. 1. The Salt Lake office has bssn abolished, aud ths servicss of all the employses connscted with the same have bsen disposnsed with. I have now only two men employed at the mine to watch ovsr your interests there."

In conclusion, Mr. Attwood says: "I may say in conclnsion that my first rsport on our mins was made in March, 1873, and was an nnfavorable one, that my second report was made in May, 1873, and was even more so, and that my third rsport, mads in April, 1874, was squally nnfavorable. Since the last was written, I havs had sixteen months' forthsr time to examine into the geology and stratigraphical featurss of Emma hill, in rsgard to the future prospects of yonr mine, and from my numerons carefnl observations on the snbject, I can only reiterate what I have statsd in my previous reports, that is, that yonr mine is virtually exhausted, and that yonr only hops for the future rests sntirely on solving a geological problem, which problem will take time, a large snm of money and skillful engineering to solve."

Rain Table.

By this kindness of Dr. T. M. Logan, ws are snabled to lay before our readsrs a rain table completed and brought down to the nearest possible dats available for our prssent issne.

RAIN TABLE FOR SACRAMENTO.—PREPARED BY DR. T. M. LOGAN.—FOR THE PRESS.

Arranged according to the seasons, showing the amount in inches of each month, during twenty-seven years, and for each rainy season, to November 20th 1875; also the quantity for every month, and the annual amount of rain.

MONTHS.	1849	1850	1851	1852	1853	1854	1855	1856	1857	1858	1859	1860	1861	1862	1863	1864	1865	1866	1867	1868	1869	1870	1871	1872	1873	1874	1875	1876
September	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.003	0.000	0.000	0.000	0.000	0.080	0.000	0.000	0.000	0.000	0.000	0.001	0.002	0.000	0.050	0.000	
October	1.600	0.000	0.180	0.000	0.000	0.000	0.000	0.120	0.195	0.665	3.010	0.000	0.314	0.000	0.000	0.000	0.120	0.450	0.001	0.000	2.120	0.020	0.210	0.220	0.310	2.257	0.040	
November	2.250	sprkle	2.140	1.000	0.003	0.000	0.006	1.010	0.000	0.765	0.651	2.406	0.181	2.170	0.005	1.450	0.715	2.427	2.429	3.896	0.774	0.850	0.584	1.220	1.030	0.210	3.801	6.180
December	12.600	sprkle	7.070	13.410	6.000	1.940	1.150	2.000	2.396	6.692	4.329	1.894	4.252	8.637	2.327	1.315	7.867	0.364	9.511	12.860	2.612	1.962	0.971	10.590	5.333	10.009	0.440	
January	4.500	0.250	0.650	3.000	3.250	2.670	4.919	1.376	2.444	0.964	2.310	2.668	15.096	2.751	1.733	1.077	4.776	7.639	3.440	6.036	4.790	1.371	2.076	4.040	1.230	6.200	8.705	
February	6.500	0.000	0.350	0.120	2.000	8.500	3.460	0.692	4.801	2.461	3.906	0.931	2.920	4.260	2.751	0.158	0.712	2.010	7.104	3.147	3.630	3.236	1.919	4.740	4.360	1.656	0.030	
March	10.000	1.880	6.400	0.190	3.500	4.200	2.670	4.919	1.376	2.444	0.964	2.310	2.668	15.096	1.733	1.077	4.776	7.639	3.440	6.036	4.790	1.371	2.076	4.040	1.230	6.200	8.705	
April	4.250	0.250	0.300	1.450	0.210	1.150	1.214	2.132	sprkle	0.981	0.000	0.017	0.135	0.011	0.831	1.633	1.805	2.252	0.003	2.396	1.240	0.642	0.270	0.766	0.280	0.000	0.370	0.040
May	1.140	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
June	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
July	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
August	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total	36.000	4.710	17.390	36.865	20.006	18.620	13.770	10.443	18.391	16.041	22.636	16.543	35.549	11.679	7.868	22.612	17.924	25.305	32.769	16.044	13.672	8.470	24.062	14.309	21.698	17.645		

Believing that any predictions or philosophizing on the snbject of ths weathsr would not bs appreciated by our readers, who certainly know quite as mnch about the mattsr as onrselves, we delivsr the above table into their hands, minus all snch embslishments. But we would suggest hsre that it enhancss the valne of this volume of the PRESS as a work of reference, and makes the present numbsr a good one to send to distant friends.

THE Virginia City *Enterprise* says: "The ersction of new buildings is in order not only throughont ths bnrnt district, but also in other and nnsinged portions of the city. Qnite a nnmber of new frame structures of crsditable size and style of fiuish are being put np on Sonth C strest and elsewhere in ths sonthern part of the town."

THE Original Gold Hill mining company havs bsgun the hoisting of ore for rednction. The company have secured the Woodville mill and expect to extract twenty-five tons of pay ore per day hsreafter. It is thought ths ore will pay ahont $50 per ton.

A Raymond & Ely investigation is talksd abont. It is assertsd that the management ordsrsd a $3 assessmsnt when thsre was somsthing like $300,000 in hand.

SEA bathing in November is one of ths lnxnriss of Santa Monica.

WOODWARD'S GARDENS embraces an Aquarium, Museum, Art Gallery, Conservatories, Tropical Houses, Menageris, Seal Ponds and Skating Rink.

General News Items.

THE Supreme Conrt of ths United States has sustained ths position of the Union Pacific railroad company by affirming ths decision of the Court of Claims, that the company has a right to retain ons-half of its esrnings on account of transportation for Government.

THE whole Pawnee nation, consisting of seven hundred Indians, sixteen wagons, twsnty-three horses, sevsn hundred ponies, many thousand dogs, stc., are moving dowo over the plains to their new reservation in the Indian territory.

THE lats storm on the northern coast was the most ssvsre experiencsd in ten ysars. Two mors wrscks are reported, only ons man being savsd from the *Florence*.

THE sals by Egypt to England of ths former's interest in the Snez canal, is the snbject of favorable commsnt by tbe Germsn press gsnerally. The Frsnch press is trying to be pleased.

THE chief signal officer reports a wind of ths velocity of 156 miles per hour, on Mount Washington on Monday, being ths highest velocity recordsd at that plsce.

THE Pacific mail stsamship company's new stsamsr, *City of San Francisco*, arrived here on Friday from Nsw York, which port shs left on ths 21st of last Septsmbsr.

AFTER January 1st, the postags betwesn ths United States and Japan will be reduced from fifteen cents to twslvs cents per half ounce.

THE county road along ths Kern Island canal, the highway to Los Angeles, is to bs plsnted in trees on both sides.

THE Malden (Msss.) rubber sbos factories wers burned on Sunday. Loss, $300,000. Eight hnndred employees out of work.

THEY are going after "gamss uf chancs," in Nsw York, and proposs stopping pool selling ou horss races, rsgattas, elections, sto.

THE Postmaster Gensral's report shows the receipts of ths department to havs besn $29,441,360, and ths sxpsnditures $33,611,309.

THERE will bs no salss of Treasnry gold ordered for December, ths currsncy balance being large enough.

SAMUEL Woon, of Nsw York city, proposes to establish a collegs of music and to sndow it with $5,000,000.

THE guillotins has commenced operations in the cnstom honss, and ssveral clerks have bssn sacrificsd.

WANE'S opsra honss, the nsw theatrs on Mission street, is to be opened on the 20th inst.

BURGLARIES and street robberiss are becoming alarmingly frequent in San Franoiscu.

CHAVEZ, ths lisntsnant of ths bandit Vasquez, is reported to have been killed.

FASSET, McCAULEY & Co., grain commission merchants in this city, failsd tbis week.

THE California Stats Prison is tsrribly over crowded and likely to become mors so.

THE San Francisco hoodlums are becoming mors outrageous than sver.

EUGENE SCHNEIDER, the Frsnch statesman and mechanical engineer, is dead.

THE Msxican bordsr will soon be a scene of stirriug events, if rumor be trns.

THE custom honss retrsnchmsnt order is ex pectsd to savs $50,000 a year hers.

THE rival pnblishsrs of ths San Francisco city directories have gone to law.

THE Govsrnmsnt printing and binding cost last year $1,560,425.

TEN ironclads have been towsd from Leagne island to Norfolk.

LOTS of rain all over California, and still it comes.

THE United Statss ironclads are all being put in order.

WE had a right lively earthquaks on Saturday night.

THE Carlists are bombarding San Ssbastian.

EARTHQUAKES in New Hampshire this wsek.

THE new air machinery in ths Bullion mine has greatly cooled the drifts, and is fast makiog ths lower lsvels of the mine just as comfortable for working pnrposss as the npper. So far the new plan is a complete snccsss.

THE rain has startsd tbe plow in every portion of the State excspt the low lands, where it is too wet to plow. Every indication as far as the wsather is concerned points to an abundant harvest next season.

SAYS the Downieville *Messenger*: At the bottom of a seventy-foot shaft in a qnartz mine near Forest City, last week, ths boys struck a bank of solid gold. That qnartz stock is not for sals.

A DIFFICULTY occnrred between two miners, partners, at Montezuma, Tuolumne connty, recently, in refersnce to the sale of a mining claim, when one knocked the other down and kicked him, cansing dsath.

AN itsm is going the rounds of the press to the effsct that artesian well-borsrs in Tnlare have discovered a vein of gold-bearing qnartz at a depth of 258 feet.

Physicians are wonderstruck at the cures of obstinate coughs, violant colds, difficulty of breathing, and incipient consumption,, daily accomplished by HALE'S HONEY OF HOREHOUND AND TAR.

Pike's Toothache Drops cure in one minute.

New Incorporations.

The following companies have filed certificates of incorporation in the County Clerk's Office at San Francisco:

THE CAPITAL QUICKSILVER MINING CO.—November 24. Location: California. Directors—Wm. A. Hutchinson, George H. Bell, Edmund Lane, Marcus E. Austin and David A. Brown. Capital stock, $5,000,000, in 50,000 shares of $100 each.

PACIFIC LAND AND IRRIGATION CO.—November 24. Capital stock, $500,000. Object, conducting water from the Upper San Joaquin and other streams in Fresno county, for irrigation. Directors—William Applegarth, D. G. Bartlow, Frank Drake, Laverne Barris and Clement C. Barris.

OAKLAND AND CONTRA COSTA RAILROAD CO.—November 20. Among the incorporators are General T. H. Williams, Hon. John P. Jones, J. Walker and Mr. Mackey. A saving of six miles will be effected by the building of the road, which will take the following course. From Alameo for a mile west, through a pass in a low range of hills to the head of Tice valley, one-half mile from Alemo. Thence about a mile to Judge Daniel Hunsaker's old place. Thence westerly to the "Calf ranch," three-fourths of a mile. Thence three-fourths of a mile, connecting with the old road at or near the place of David Carrick—following the course of that road a mile and a half to the old store in the Moraga valley. Thence westerly across an easy range to the old Redwood pass road, and so on to Oakland.

JERSEY M. CO.—November 28. Location: Humboldt county, Nev. Capital stock, $1,000,000. Directors—W. Hamilton, E. J. Swift, W. O. M. Berry, Archie Borland and J. A. Blossom.

SELBY HILL M. CO.—October 30. Location: Nevada county, Cal. Directors—H. H. Pearson, J. F. Sweeny, T. C. Lanyee, J. C. Bateman and Romualdo Pacheco. Capital stock, $1,000,000, divided into 40,000 shares of $25 each.

RED CROSS CONSOLIDATED G. & S. M. CO.—Oct. 30. Location: Virginia District, Nev. Capital stock, $10,000,000, divided into 100,000 shares. Directors—Henry S. Fitch, Silas Selleck, Henry F. Morris and William C. Quirey.

WHITE CROSS CONSOLIDATED G. & S. M. CO.—October 30. Location: Virginia District, Storey county, Nev. Capital stock, $10,000,000, divided into 100,000 shares. Directors—Henry S. Fitch, Silas Selleck, Henry F. Morris and William C. Quirey.

ROSECRANS G. M. CO.—Oct. 27. Location: El Dorado county, Cal. Capital stock, $640,000 in 64,000 shares. Directors—Anther S. Peterson, Edgar Blebop, Samuel J. Corbett, Henry W. Russell, Nathen D. Bnrlingham and D. W. Fox.

ALLISON RANCH FRANKLIN M. CO.—Nov. 1. Location: Allison Ranch, Nevada county, Cal. Directors—Edward Commins, John Harrold, Cornelius O'Connor, Patrick Rogers and Martin Ford. Capital stock, $1,800,000, divided into 25,200 shares of the par value of $40,000.

NEVADA SULPHUR M. CO. — Nov. 1. Location: In the Rebbit Hole Range, and especially in the McWorthy sulphur claims, in the county of Humboldt, Nev. Directors—C. Mitchell Orant, G. J. Giling, F. J. McWorthy, Henry W. Wymon and W. S. Campbell. Capital stock, $1,000,000.

STERLING M. CO.—Nov. 1. Location: Eureka district, Eureka county, Nev. Capital stock, $5,000,000, in 50,000 shares of $100 each. Directors—Adam Hall, Wm. Arrington, George F. Bragg, John Chamberlain and Stephen Roberts.

SUTTER CREEK, February 26th, 1875.

MESSRS. DEWEY & CO.—I have received my Letters Patent through your Agency. nd, for your prompt ness, accept my thanks. Yours, S. N. KNIGHT.

METALS.

[WHOLESALE.]

WEDNESDAY M., December 1, 1875.

American Pig Iron, ₱ ton		33 00	@ 36 00
Scotch Pig Iron, ₱ ton		35 00	@ 37 00
White Pig, ₱ ton		— —	@ 38 00
Oregon Pig, ₱ ton		— —	@ 40 00
Refined Bar, bad nssortment, ₱ ℔		— —	@ — 3½
Refined Bar, good assortment, ₱ ℔		— —	@ — 4
Boiler, No. 1 to 4		— —	@ — 5¼
Plate, No. 5 to 9		— —	@ — 5½
Sheet, No. 10 to 14		— —	@ — 5½
Sheet, No. 16 to 20		— —	@ — —
Sheet, No. 22 to 24		— —	@ — 6
Sheet, No. 26 to 28		— —	@ — 6½
Horse Shoes, per keg		7 50	@ 8 00
Nail Rod		— 10	@ — —
Norway Iron		— 9	@ — —
Rolled Iron		— 8	@ — —
Other Irons for Blacksmitbs, Miners, etc.		— —	@ — 4½
COPPER.—			
Braziers'		— 35	@ — —
Copper Tin'd		— 37½	@ — —
O'Nial's Pat		— 37½	@ — 40
Sheathing, ₱ ℔		— 24	@ — 40
Sheathing, Yellow		— —	@ — 25
Sheathing, Old Yellow		— —	@ — 12½
Composition Nails		— 24	@ — —
Composition Solid		— 24	@ — —
STEEL.—English Cast, ₱ ℔		— 20	@ — 25
Anderson & Woods' American Cast		— —	@ — 16½
Drill		— —	@ — 16½
Flat Bar		— 18	@ — 22
Plow Steel		— 9	@ — 10
TIN PLATES.—			
10x14 I C Charcoal		10 50	@ 11 00
10x14 I X Charcoal		12 50	@ 13 00
Roofing Plate I C Charcoal		10 00	@ 10 50
Bunos Tin		— 26	@ — —
Australian		— 18	@ — 20
ZINC....By the Cask		— —	@ — 11
Zinc, Sheet 1x3 ft, No 7 to 16 ₱ ℔		— —	@ — 11
do do 1x3 ft, No 11 to 14		— —	@ — 11½
do do 8x4 ft, No 8 to 10		— —	@ — 11½
do do 8x1 ft, No 11 tp 10		— —	@ — 12
NAILS Assorted sizes		3 60	@ 3 75
QUICKSILVER, per ₱		— 65	@ — 70

LEATHER.

[WHOLESALE.]

WEDNESDAY M., December 1, 1875.

City Tanned Lenther, ₱ ℔			22@29
Santa Cruz Lenther, ₱ ℔			22@28
Country Lesther, ₱ ℔			22@28
Stockton Leather, ₱ ℔			22@29
Jodot, 8 Kil., per doz		8 50	9 00 @ 84 00
Jodot, 11 to 13 Kil., per doz		63 00	@ 79 00
Jodot 14 to 19 Kil., per doz		82 00	@94 00
Jodot, second choice, 11 to 16 Kil. ₱ doz		57 00	@ 74 00
Cornellius, 12 to 18 Ko		57 00	@ 67 00
Cornellius Femules, 12 to 18		53 00	@ 67 00
Cornellius Females, 14 to 16 Kil		71 00	@ 76 50
Simon Ulmo Femules, 12 to 13, Kil		60 00	@ 63 00
Simon Ulmo Females, 14 to 15, Kil		70 00	@ 72 00
Simon Ulmo Femeles, 16 to 17, Kil		73 00	@75 00
Simon, 18 Kil. ₱ doz		61 00	@ 63 00
Simon, 20 Kil. ₱ doz		65 00	@ 67 00
Simon, 24 Kil. ₱ doz		72 00	@ 74 00
Robert Calf, 7 and 9 Kil		35 00	@ 40 00
French Kips, ₱ ℔		1 00	@ 1 35
California Kip, ₱ doz		40 00	@ 58 00
French Sheep, all colors, ₱ doz		8 00	@ 15 00
Eastern Calf for Backs, ₱ ℔		1 00	@ 1 20
Sheep Roans for Topping, all colors, ₱ doz		9 00	@ 13 00
Sheep Roans for Linings, ₱ doz		5 50	@ 10 50
California Russett Sheep Linings		1 75	@ 4 50
Best Jodot Calf Boot Legs, ₱ pair		5 00	@ 5 25
Good French Calf Boot Legs, ₱ pair		4 00	@ 4 75
French Calf Boot Legs, ₱ pair		4 00	@ —
Harness Leather, ₱ ℔		24	@ 32½
Fair Bridle Leather, ₱ doz		48 00	@ 72 —
Skirting Leather, ₱ ℔		33	@ 37½
Welt Leather, ₱ doz		30 00	@ 50 00
Buff Leather, ₱ foot			17@ ½
Wax Side Leather, ₱ foot			17@

GENERAL MERCHANDISE.

WHOLESALE.]

WEDNESDAY M., December 1, 1875.

BAGS.			
Rog. Stand Wbt	9¼	@	10
Naville & Co's			
Hand Sewed	9½	@	10
21x36	9½	@	10
24x36	11	@	11½
24x40	12	@	12½
achute do 21x40	12	@	12½
" " 22x40	11¾	@	11½
" " 22x40	11	@	11¼
" " 22x36	9¾	@	10
Flour Sacks ₱ ℔	9	@	11
" " ¼s	6	@	7
" " ⅛s	4½	@	5
Hessian 40-in	11¾	@	14½
do 45-in	8½	@	9
do 40-in	7½	@	8
Wool Sacks, 3¼ ℔s	45	@	50
do 4"	50	@	52½
Stand. Gunnies	—	@	18
Siogla seam do	—	@	—
Bean Bags	—	@	8¾
Barley Bags 24x38	11¾	@	12
do 22x40	11½	@	12
do 24x40	12	@	12½
Oat Bags, 24x40	12	@	12½
do 22x36	—	@	13½
Detrick's "E. W."	9¾	@	10
do "E	—	@	9½
CANNED GOODS.			
Assort'd Pie Fruits			
in 2¾ ℔ cans	2 75	@	3 00
do 3 ℔ tins	3 75	@	4 25
Jams & Jellies	4 25	@	—
Pickles ¼ gl	—	@	3 50
Sardines, qr box	65	@	1 90
do hf box	2 00	@	—
COAL—Jobbing.			
Australian, ₱ ton	8 50	@	8 75
Coos Bay	—	@	10 00
Bellingham Bay	—	@	8 50
Seattle	9 25	@	10 00
Cumberl'd	—	@	18
Mt. Diablo	6 25	@	25
Lehigh	—	@	25 00
Liverpool	10 00	@	11 00
West Hartley	11 00	@	12 00
Scotch	9 00	@	11 50
Scranton	13 00	@	14 00
Vancouver's Isl.	10 50	@	11 00
Charcoal, ₱ sk	75	@	—
Coke, ₱ bbl	—	@	60
COFFEE.			
Sandwich Island	@		21½
Costa Rica per ℔	22½	@	—
Guatemala	—	@	22½
Java	—	@	—
Manilla	—	@	21½
Ground in ce	25	@	—
Unicorv	27	@	—
FISH.			
Sao. Dry Cod, new	4	@	4½
onoes	6	@	6½
do boneless	8½	@	10
Eastern Cod	7½	@	8
Salmon in bbls	8 50	@	9 00
do ½ bbls	4 50	@	5 00
do 2lb cans	2 25	@	2 30
do 1lb cans	1 25	@	1 30
Do Col. R. ½s	5 00	@	5 50
Pick. Cod, bbls	22 00	@	—
do ½ bbls	12 00	@	—
Bos'. Sm'k'd Her'g	40	@	50
Mack'l, No. 1, ½bls	9 00	@	11 00
" Extra	—	@	12 00
" in kits	1 90	@	2 00
" Fix issed	1 40	@	1 50
" Ex mess. ½s	—	@	12 00
Pio'd Herr'g, bx	3 00	@	3 50
HARDWARE.			
Amoskeag handled Axes			
$16@17; do unhandled do $13 @14—less 50c in 5 case lots.			
Amoskeag Hatchets, Shingling, No 1, $7.25; No. 2, $8; No. 3, $8.25. Do do. Claw, No. 1, $7.75; No. 2, 8.50; No. 3, $9.25—less 10 per cent.			
Locks, Yole Lock M'f'g Co., discount 33⅓ per cent. from list.			
Plonce, Ohio Tool Co., discount 30 per cent. from list.			
Am. Tack Co's Cut Tacks 72½ per cent. discount and 5 per cent. extra. Finishing and Cloot Nails 77½ off list; 3d fine Nails $7.00 per keg. Ohio Butt Co's Loose Joint Butts 50 per cent. do Fast, 35 per cent off list.			
Machine Bolts, 20@35 off.			
Square Nuts, 2@3c off list.			
Hexagon Nuts 2@3c off list.			
Wrought Iron Washers, 2@3c off list.			
Leg Screws, 15 per cent off list.			
MISCELLANEOUS.			
Pulu	—	@	—
NAILS.			
Assorted size, ℔	3 60	@	3 75
OILS.			
Pacific Glue Co			
Neat F't No. 1	1 00	@	90
Pure	—	@	—
Castor Oil, No. 1	—	@	1 25
Baker's A A	—	@	1 10
Cocoanut	55	@	60
Olive Plaghini, 5	00	@	5 25
do Possel	4 75	@	5 00
Palm ℔	9	@	—
Linseed, new	80	@	—
do boiled	—	@	75
China nut in cs	70	@	75
Sperm, crude	—	@	1 40
do bleached	1 90	@	2 25
Coast Whales	47½	@	50
Polar, refined	—	@	—
Lard	—	@	—
Oleophine	—	@	28
Dayoe's Brit's	—	@	—
Long Island	—	@	25
Eureka	25	@	27
Devoe's Patro'm	25	@	27½
Barrel kerosene	23	@	25
Olive	—	@	3 50
Downer Kerosa'e	40	@	—
Gas Light Oil	23	@	25
PAINTS.			
Pure White Lead	9¾	@	10¼
Whiting	—	@	2
Putty	4	@	5¼
Chalk	—	@	2½
Paris White	1¾	@	—
Ochre	3	@	5
Venetian Red	3½	@	5
Red Lead	10	@	11
Litharge	10	@	11
King Vermilion	—	@2	25
Averill Chemical Paint, per gal.			
White & tints	2 00	@2	40
Green, Blue & Ch Yellow	3 00	@3	50
Light Red	3 40	@3	50
Metallic Roof	1 30	@1	60
RICE.			
Chine No. 1	—	@12½	@6 25
Japan	—	@	—
Siam Cleaned	—	@	—
Patna	—	@	—
Hawaiian, ₱ ℔	—	@	7¼
Carolina, ₱ ℔	10	@	—
SALT.			
Cal. Bay, per ton	10 00	@14	00
do Common	5 00	@7	00
Carmen Island	12 00	@15	00
Liverpool	22 50	@25	00
SOAP.			
Castile ₱ ℔	10	@	11½
Common brands	—	@	6
Fancy	7	@	10
SPICES.			
Cloves	45	@	47½
Cassia	23¾	@	26½
Citron	28	@	30
Nutmegs	90	@1	95
Whole Pepper	14½	@	17½
Pimento	—	@	15½
Gr'nd Allsp'ce	—	@1	12½
do Cassia	—	@1	50
do Cloves	—	@1	50
do Mustard	—	@1	20
do Ginger	—	@1	00
do Pepper	—	@1	00
do Mace	—	@2	00
SUGAR, ETC.			
Cnl. Cube per ℔	11¾	@	—
Partz' Pro. Cube	—	@	12
Circle A crusned	—	@	12
Powdered	—	@	12
Fine crusbed	—	@	12
Granulated	—	@	11
Golden C	—	@	10¾
Hawaiina	9	@	10¾
Cal. Syrup in kgs	—	@	70
Hownitan Molasses	25	@	27½
TEA.			
Uoiong, Canton, ₱	19	@	25
do Amoy	28	@	50
do Formosa	40	@	80
Imperial, Canton	25	@	40
do Pingsuey	45	@	80
do Moyune	60	@1	00
Gunpo'der, Cent.	30	@	42½
do Pingsney	50	@	90
do Moyune	65	@1	25
Y'ng Hy. Canton	28	@	40
do Pingsuey	40	@	70
do Moynne	65	@	85
Japan, ½ oheste, bulk	30	@	75
Japan, lacquered bxs, 4½ and 5 ℔s	45	@	67
Japan do ₱ bxs	45	@	90
do pl'n bxs, 4½ ℔s	35	@	65
do 5 ℔ papr	30	@	55
TOBACCO—Jobbing.			
Bright Navye	55	@	65
Ourk do	50	@	55
Pacee Tin Foil	65	@	75
Coil of Twist	65	@	75
Light Pressed	70	@	80
Hard do	50	@	60
Coun. Wrap'r	40	@	60
Fenn. Wrapper	20	@	45
Ohio	15	@	20
Virg'n Smok'g	45	@1	00
Fine ot che'g, gr	8 50	@9	—
Floe cut obewing, bnts ₱ ℔	75	@	—
Banner floe cut	—	@9	00
Cal Smoking	37	@1	00
TURPENTINE.			
Eastern	51½	@55	

Gold, Legal Tenders, Exchange, Etc.

[Corrected Weekly by CHARLES SUTRO & CO.]

SAN FRANCISCO, December 1, 3 P. M.

LEGAL TENDERS in S. F., 11 A. M., 87¼ to 88¾.

GOLD IN N. Y. 115.

GOLD BARS, 890. SILVER BARS, 7½ and 8 per cent. discount.

EXCHANGE ON N.Y., 60-100 per cent. premium for gold; on London bankers, 49; Commercial, 49¼; Paris, five francs per dollar; Mexican dollars, three to five per cent. discount.

LONDON — Consols, 93 to 93⅝; Bonds, 102¼

QUICKSILVER in S. F., by the flask, per ℔, 65c@70c.

Our Agents.

OUR FRIENDS can do much in aid of our paper and the cause of practical knowledge and science, by assisting Agents in their labors of canvassing, by lending their influence and encouraging favors. We intend to send none but worthy men.

J. L. THARP—San Francisco.

B. W. CROWELL—California.

A. C. CHAMPION—Tulare, Fresno and Inyo Counties.

JOHN ROSTRON—California.

A. C. KNOX, California.

G. W. MCGREW—Santa Clara county.

CHAS. T. BELL—California, Oregon and W. T.

D. J. JAMES—Australian Colonies.

CHAS. T. BELL—Montana, Utah, Idaho and Nevada.

SUBSCRIBERS are requested to examine the printed address on their papers. If mistokes occur *at any time* please report them to this office. The last figures (at the extreme right) represent the year that your subscription is paid to. Next to these the day and month is expressed. For instance, your subscription being paid to July 4th, 1876, it would be represented, viz: jl 4 76; or 4|7|6.

THOUGHTLESSNESS.—Persons sometimes return their paper, marked "stop this paper." Their name being pasted on the sheet they think thet is all we need to be able to cross their nomes off. Now that is thoughtlessness. Your P. O. address is needed as much as your name. We have thousands of names arranged only according to locality. Our mailing clerk does not know whore everybody lives.

GIVE YOUR FULL ADDRESS when you communicate on business to this office, especinlly in returning newspapers. The fact thet your nome is on our subscription list is of no assistance to us. Without sending your post office address we should have to look over thousands ofnames to find yours.

Mining and Scientific Press.

Started in 1860, is one of the oldest weekly journals now published in San Francisco. It has been conducted by its present proprietors for ten years, during which period it has been repeatedly enlarged and constantly improved. The active and steadfast efforts of its publishers have gained for its conduct an amount of practical experience greater than any other publishers have accumulated on this coast, of a weekly journal.

The sum paid by us for the best editorial talent obtainable for our special class journal; for engravings, for interesting news and correspondence, and for printing a large-sized, handsome sheet, is unequalled by that of any other American weekly west of the Mississippi.

As a PRACTICAL MINING JOURNAL it has no rival on this Continent.

It is the only MECHANICAL, and the only SCIENTIFIC journal of the Pacific States.

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Intelligent thinkers throughont the land, in high or humble situation, who would avoid literary trash for genuine information, should SUBSCRIBE AT ONCE,

DEWEY & CO.,

No. 224 Sansome street, S. F

MESSRS. DEWEY & Co., San Francisco:—Please find enclosed post-office order, for which please send MINING AND SCIENTIFIC PRESS. I have been a close reader of the PRESS for three years, and regard it as the foremost mining periodical in the Union. I am glad to notice the circulation of the PRESS is increasing here and is highly prized by our best mining men. H. P. Central City, Colorado.

At a Stated Term of the Circuit Court

of the United States of America of the Ninth Judicial Circuit in and for the District of California, held at the court room in the city and county of San Francisco, on Thursday, the 30th day of September, in the year of our Lord one thousand eight hundred and seventy-five. Present—The Honorable Lorenzo Sawyer, Judge.

Nicholas Seibert, complainant, vs. Wm. T. Garratt, defendant—In equity.

DECREE.

This cause came in to be heard at the February Term, A. D. 1875, of this Court and was argued by counsel and thereupon upon consideretion thereof, it was ordered, adjudged and decreed, as follows, viz: That defendant, William T. Garratt, was not the first or original inventor, or discoverer of the improvement or discovery claimed by him, in and by those certain relesued letters patent of the United States, number five thousand three hundred and twenty-eight (No. 5328), for an alleged new and useful improvement in lubricetors, issued to said defendant, William T. Garratt, on the 18th day of Merch, A. D. 1873, and is not entitled to a petent therefor, and that said relssued letters patent, number five thousond three hundred and twenty-eight (No. 5328) are declered void and the same are hereby vacated and set aside by reeson of their interference with these certain lettors patent of the United States, number one hundred and eleven thousand eight hundred and eighty-one (No. 111,881) for a new and useful improvement in lubricators, issued to complainant, Nicholas Seibert, on the fourteenth (14th) dey of February, A. D. 1871.

It was also further ordered, adjudged and decreed that complainant do have and recover of and from defendant his costs and expenses to be taxed herein.

(Signed) LORENZO SAWYER,
Circuit Judge.

The above decree bas reference to "Seibert's Eureka Lubricator" for oiling the valves and cylinders of steam engines.

It has a glass gauge and condensing pipe, or reservoir, with a regulating feed velve, and works as follows: As the water of condensation is admitted, under the oil, just so fast the oil passes out at the top through a pipe into the steam pipe to oil the valves and cylinder.

Parties who infringe or purchase the infringed lubricators, will be held strictly responsible.

N. SEIBERT, Patentee,
125 First Street, S. F.

Mining and Other Companies.

Cloverdale Mining Company—Location

of principal place of business, San Francisco. Location of works, Cinnabar district, Sonoma county, Cal.

NOTICE.—There are delinquent upon the following described stock, on account of assessment (No. 3) levied on the fifteenth day of October, A. D., 1875, the several emounts set opposite the names of the respective shareholders, as follows:

Names.	No. Certificate.	No. Shares.	Amount.
H J Cooper	5	5	$1000 00
H J Cooper	6	5	1000 00
Woods Crawford	7	1	200 00
Woods Crawford	8	1	200 00
Woods Crawford	9	1	200 00
Woods Crawford	10	1	200 00
Woods Crawford	11	1	200 00
Woods Crowford	17	2	400 00
Woods Crawford	18	3	600 00
J D Adams	20	2	400 00
J D Adams	21	2	400 00
J D Adams	22	2	400 00
J D Adams	23	2	400 00
Wright Mathews	24	3	600 00
Wright Mathews	25	1	200 00
Wright Mathews	26	1	200 00
Theodore Deming	40	5	1000 00
H C Boggs	42	15	3000 00
John K Fraser	43	1	200 00
Kimbal Favor	45	2	400 00
Kimbal Favor	46	1	200 00
Kimbel Favor	48	1	200 00
J C Crigler (not issued)	49	2½	500 00
Sarshel Bynum	52	1	200 00
Sarshel Bynum	53	1	200 00
Sarshel Bynum	54	1	200 00
Sarshel Bynum	55	1	200 00
Sarshel Bynum	56	1	200 00

And in accordance with law, and an order of the Board of Trustees made on the fifteenth day of October, A. D., 1875, so many shares of each parcel of such stock as may be necessary, will be sold at public auction, at the office of said company, No. 306 Clay street, San Francisco, on Thursday, the sixteenth day of December, A. D., 1875, at the hour of one o'clock P. M., of such day, to pey said delinquent assessment thereon, together with costs of advertising and expenses of the sale. ED. B. PARTRIDGE, Secretary.

Office, No. 306 Cley street, San Francisco, Cal.

Lake Mining Company — Location of

principal place of business, San Francisco, Cal. Location of works, Quicksilver Mining District, Napa county, Cal.

Notice is hereby given, thet at a meeting of the Board of Directors, held on the 3d day of November, 1875, an assessment (No. 4) of twanty dollers per share was levied upon the capital stock of the corporation, payable immediately, in United States gold coin, to the Secretary, at the office of the Company, Nos. 19 and 21 First street, San Francisco, Cal.

Any stock upon which this assessment shall remain unpaid on the sixth day of December, 1875, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Monday, the twenty-seventh day of December, 1875, to pay the delinquent assessment, together with costs of advertising and expenses of sale. H. F. KNOX, Secretary.

Office—Nos. 19 and 21 First street, San Francisco, Cal.

Mariposa Land and Mining Company of

California. Location of principal place of business, San Francisco, Cal. Location of works, Mariposa County, Cal.

Notice is hereby given, that at a meeting of the Board of Directors, held on the thirtieth day of November, 1875 an assessment, (No. 3) of one dollar per share was levied upon the capital stock of the corporation, payable immediately, in United States currency, to the Secretary, at the office of the company, room 33, Nevada Block, No. 309 Montgomery street, San Francisco, Cal., or to the Assistant Secretary, at the office, No. 9 Nassau street, New York City, N. Y.

Any stock upon which this assessment shall remain unpaid on the thirty-first day of December, 1875, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Tuesday, the first day of February, 1876, to pay the delinquent assessment, together with costs of advertising and expenses of sale. By order of the Board of Directors.

LEANDER LEAVITT, Secretary.

Office, Room 33, Nevada Block, No. 309 Montgomery Street, San Francisco, California.

Owyhee Water and Gravel Mining Company.

Location of principal place of business, San Francisco, California. Location of mines, Elko county, Nev.

Notice is hereby given, that at a meeting of the Trustees, held on the 1st of November, 1875, an assessment (No. 1) of thirty cents per share was levied upon the capital stock of the corporation, payable immediately, in United States gold coin, to the Secretary, at the office of the company, No. 405 California street, San Francisco, Cal.

Any stock upon which this assessment shall remain unpaid on the 15th day of December, 1875, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on the 15th day of January, 1876, to pay the delinquent assessment, together with costs of advertising and expenses of sale. By order of the Trustees. JOHN E. MCDONALD, Secretary.

Office, 405 California street, San Francisco, California.

Pauper Mining Company — Location of

principal place of business, San Francisco, Cal. Location of works, Owyhee County, Idaho Territory.

Notice is hereby given, that at a meeting of the Board of Directors, held on the 9th day of November, 1875, an assessment (No. 6) of twenty cents per share was levied upon the capital stock of the corporation, payable immediately, in United States gold coin, to the Secretary, at the office of the company, room 1, No. 402 Montgomery street, San Francisco, Cal.

Any stock upon which this assessment shall remain unpaid on the 15th day of December, 1875, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Thursday, the 6th day of January, 1876, to pay the delinquent assessment, together with costs of advertising and expenses of sale. By order of the Board of Directors.

W. F. BOGART, Secretary.

Office, Room 1, No. 402 Montgomery street, San Francisco, California.

Peytona Gold and Silver Mining Company.

Location of works, Virginia District, Storey county, Nevada.

NOTICE.—There are delinquent upon the following described stock, on account of assessment (No. ——) levied on the 23d day of October, 1875, the several amounts set opposite the names of the respective shareholders, as follows:

Names.	No. Certificate.	No. Shares.	Amount.
Jacob Meyer	42	25	125 00
Jacob Mayer	41	10	50 00
Levi Strauss	121	5	25 00
C. V. Hobart	154	5	25 00
Wm. Doolan	195	033	4,665 00
T J Owens	208	15	75 00

And in accordance with law, and an order of the Board of Trustees, made on the 23d day of October, 1875, so many shares of each parcel of said stock as may be necessary, will be sold at public auction, at the office of the Company, room No. 11, 215 Sansome street San Francisco, on the 18th day of December, 1875, at the hour of 12 o'clock, M., of said day, to pay said delinquent assessment thereon, together with costs of advertising and expenses of the sale.

T. J. OWENS, Secretary.

Office, Room No. 11, 215 Sansome street, San Francisco, Cal.

Pioneer Fluming Company—Location of

principal place of business, San Francisco, Cal. Location of works, Shirt-tail Canon, Placer County, Cal.

Notice is hereby given, that at a meeting of the Board of Directors, held on the thirtieth day of November, 1875, an assessment of five cents ($0.05) per share was levied upon the capital stock of the corporation, payable immediately, in United States gold and silver coin, to the Secretary, at 116 Leidesdorff street, San Francisco, Cal.

Any stock upon which this assessment shall remain unpaid on the third day of January, 1876, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Monday, the seventeenth day of January, 1876, to pay the delinquent assessment, together with costs of advertising and expenses of sale. W. AUG. KNAPP, Secretary.

Office, 116 Leidesdorff street, San Francisco, Cal.

UNITED STATES

Mineral Land Laws, Revised Statutes,

And Instructions and Forms Under the Same.

We have just issued a pamphlet containing the general mineral land laws of the United States, with instructions of the Commissioner of the Land Office The contents of this pamphlet comprise all of the Government laws with relation to mineral lands of interest to the mining community, as follows: Mining Statute of May 10th, 1872, with Instructions by the Commissioner of the Land Office; Mining Statute of July 26th, 1866; Mining Statute of July 9th, 1870 Forms required under Mining Act of May 10th, 1872, as follows: Notice of Location; Request for Survey; Application for Patent; Proof of Posting Notice and Diagram of the Claim; Proof that Plat and Notice remained Posted on Claim during Time of Publication; Registers' Certificate of Posting Notice for Sixty Days; Agreement of Publisher; Proof of Publication; Affidavit of $500 Improvements; Statement and Charge of Fees; Proof of Ownership and Possession in Case of Loss or absence of Mining Records; Affidavit of Citizenship; Certificate that no Suit is Pending; Power of Attorney; Protest and Adverse Claim; Non-Mineral Affidavit; Proof that no Known Veins Exist in a Placer Claim, etc. There is also given the U. S. Coal Land Law and Regulations thereunder. The work comprises thirty pages, and will be sold, post-free, for 50 cents. It should be in the hands of every one having any mining interests. DEWEY & CO.,

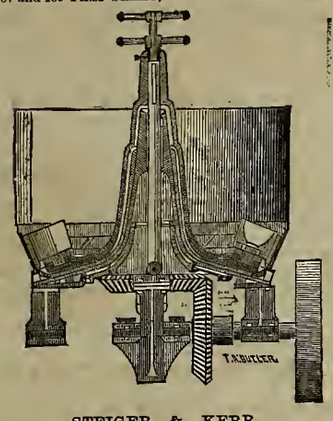
Publishers of MINING AND SCIENTIFIC PRESS, S. F.

THE MINING AND SCIENTIFIC PRESS is the leading journal of America. New processes and mechenical inventions are illustrated and discussed in its weekly issues. It is a 16-page sheet, handsomely printed, for $2 per year. Dewey & Co., publishers, San Francisco, —[Mt. Lincoln News, Alma, Colorado.

Iron and Machine Works.

Occidental Foundry,

137 and 139 First Street, - - San Francisco



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IRON FOUNDERS.

IRON CASTINGS of all descriptions at short notice. Sole manufacturers of the Hepburn Roller Pan and Callahan Grate Bars, suitable for Burning Screenings.

Notice.—Particular attention paid to making Superior Shoes and Dies. 20v26.3m

THE RISDON Iron and Locomotive Works,

INCORPORATED.....APRIL 30, 1868.
CAPITAL.....$1,000,000.

LOCATION OF WORKS:

Corner of Beale and Howard Streets,

SAN FRANCISCO.

Manufacturers of Steam Engines, Quartz and Flour Mill Machinery, Steam Boilers (Marine, Locomotive and Stationary), Marine Engines (High and Low Pressure). All kinds of light and heavy Castings at lowest prices. Cams and Tappets, with chilled faces, guaranteed 40 per cent. more durable than ordinary iron.

Directors:

Joseph Moore, Jesse Holladay, C. E. McLane,
Wm. Norris, Wm. H. Taylor, J. B. Haggin,
James D. Walker.

WM. H. TAYLOR.....President
JOSEPH MOORE...Vice-President and Superintendent
LEWIS R. MEAD.....Secretary

24v17-qy

FULTON Foundry and Iron Works.

HINCKLEY & CO.,

MANUFACTURERS OF

STEAM ENGINES,

Quartz, Flour and Saw Mills,

Hayes' Improved Steam Pump, Brodie's Improved Crusher, Mining Pumps, Amalgamators, and all kinds of Machinery.

N. E. corner of Tehama and Fremont streets, above Howe street, San Francisco. 3-qy

UNION IRON WORKS, Sacramento.

ROOT, NEILSON & CO.,

MANUFACTURERS OF

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CROSS' PATENT BOILER FEEDER AND SEDIMENT COLLECTOR

Dunbar's Patent Self-Adjusting Steam Piston

PACKING, for new and old Cylinders.

And all kinds of Mining Machinery.

Front Street, between N and O streets,

Sacramento City.

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Nos. 137, 139 and 141 Fremont Street, San Francisco,

RICHARD SAVAGE, Proprietor.

Heavy and light Castings of every description. House Fronts, Mining and General Machinery estimated and constructed at shortest notice. On hand the celebrated Occident and French Ranges, Burial Caskets, Grates and Fenders, Road-Scrapers, Hydrants, Tuyere Irons, Ploughwork, Sash Weights, Ventilators, Dumb Bells, Gipsies, Ship Castings, SOIL PIPE of all sizes, Fittings and Cauldron Kettles in stock at Eastern rates. SHOES and DIES a specialty. Ornamental Fences in large variety. 4v30-1yr.

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LIGHT AND HEAVY CASTINGS,

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IRON PIPE

FOR STEAM, GAS AND WATER.

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LAP-WELDED PUMP COLUMN

FOR SALE BY

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DEALERS IN

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Black Diamond Steel,

Etc., Etc.,

107, 109 and 111 FRONT STREET,

108, 110 and 112 PINE STREET, San Francisco.

GIANT POWDER.

Patented May 26, 1868.

THE ONLY SAFE BLASTING POWDER IN USE.

GIANT POWDER, NO. 1,

For hard and wet Rock, Iron, Copper, etc., and Submarine Blasting.

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For medium and seamy Rock, Lime, Marble, Sulphur, Coal, Pipe Clay and Gravel Bank Blasting, Wood, etc.

Its EXCLUSIVE use saves from 30 to 60 per cent. in expenses, besides doing the work in half the time required for black powder.

☞ The only Blasting Powder used in Europe and the Eastern States.

BANDMANN, NIELSEN & CO.,
General Agents, No. 210 Front Street.

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PACIFIC Rolling Mill Company,

SAN FRANCISCO, CAL.

Established for the Manufacture of

RAILROAD AND OTHER IRON

—AND—

Every Variety of Shafting,

Embracing ALL SIZES of

Steamboat Shafts, Cranks, Piston and Connecting Rods, Car and Locomotive Axles and Frames,

—ALSO—

HAMMERED IRON

Of every description and size.

☞ Orders addressed to PACIFIC ROLLING MILL COMPANY, P. O. box 2032, San Francisco, Cal., will receive prompt attention

☞ The highest price paid for Scrap Iron.

SHEET IRON PIPE.

THE

Risdon Iron and Locomotive Works

Corner Howard and Beale Streets,

Are prepared to make SHEET IRON AND ASPHALTUM PIPE, of any size and for any pressure, and contract to lay the same where wanted, guaranteeing a perfect working pipe with the least amount of material.

Standard sizes of railroad Car Wheels, with special patterns for Mining Cars. These small wheels are made of the best Car Wheel Iron, properly chilled, and can be fitted up with the improved axle and box—introduced by this company, and guaranteed to outlast any other wheels made in this State.

☞ All kinds of Machinery made and repaired.

24v22-3m JOSEPH MOORE, Superintendent.

Brass Foundry & Pump Factory.

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Sole Proprietor and Manufacturer of the

Celebrated Hudson Force Pumps, Atwood & Bodwell Windmill Brass Pumps, Smith's Copper-Lined Pumps, Plumbers' Force Pumps.

☞ Special attention paid to Brewers', Distillers', Beer and Hot Liquor Pumps, and Wine Pumps. Particular attention paid to AIR PUMPS, also to

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Artesian Well Pumps Made to Order.

☞ Brass Castings Made to Order.

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THOS. PENDERGAST. HENRY S. SMITH.

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THOMSON & PARKER,

(Formerly with David Stoddart,)

112 Beale Street, San Francisco,

ENGINEERS and MACHINISTS

MANUFACTURERS OF

STEAM PUMPS, STEAM ENGINES,

And all kinds of Machinery

REPAIRING PROMPTLY ATTENDED TO.

California Machine Works,

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Builders of QUARTZ, SAW AND FLOUR MILLS

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STEAM ENGINES AND BOILERS

Of all sizes—from 2 to 60-Horse power. Also, Quartz Mills, Mining Pumps, Hoisting Machinery, Shafting, Iron Tanks, etc. For sale at the lowest prices by

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HAWKINS & CANTRELL,

MACHINE WORKS,

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MANUFACTURERS OF

Steam Engines and all kinds of Mill and Mining Machinery.

Also manufacture and keep constantly on hand a supply of our

Improved Portable Hoisting Engines,

From Ten (10) to Forty (40) Horse Power.

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MACHINERY AND CASTINGS

OF EVERY DESCRIPTION.

Heavy Forging Boilers, Stationary and Marine.

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Sole Manufacturers and Agents of

PRALL'S PATENT STEAM PUMP.

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MANUFACTURERS

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Machine Bolts, Bridge Bolts and Ship or Band Bolts.

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CALIFORNIA BRASS FOUNDRY,

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All kinds of Brass, Composition, Zinc, and Babbitt Metal Castings, Brass Ship Work of all kinds, Spikes, Sheathing Nails, Rudder Braces, Hinges, Ship and Steamboat Bells and Gongs of superior tone. All kinds of Cocks and Valves, Hydraulic Pipes and Nozzles, and Hose Coupilngs and Connections of all sizes and patterns, furnished with dispatch.

☞ PRICES MODERATE. ☜

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Machinery and Castings of all kinds.

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Hydraulic Pipe,

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ARTESIAN WELL PIPE.

Having the Latest Improved Machinery, we can make it an object to

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WATER WORKS,

To Contract with us for

SHEET-IRON PIPE.

All Sizes Made and all Work Guaranteed

30 Beale Street,

BLACK DIAMOND FILE WORKS.

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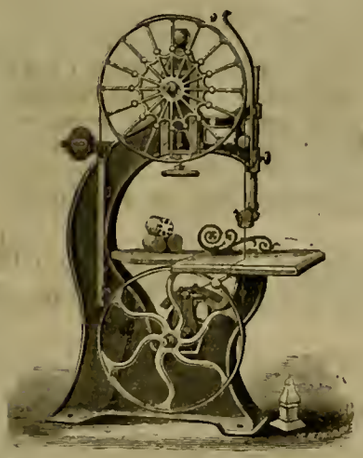
Manufacturers of Files of every Description

Nos. 39, 41 and 43 Richmond street,

Philadelphia, Pa.

Sold by all the principal hardware stores on th Pacific Coast. 18v25.1y

PACIFIC MACHINERY DEPOT,



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SOLE AGENT FOR THE PACIFIC COAST FOR

J. A. Fay & Co's Wood-working Machinery.

Blake's Patent Steam Pumps,

Tanite Co's Emery Wheels and Machinery,

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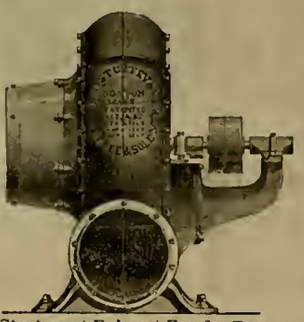

Sturtevant Exhaust Fan for Removing Shavings and Sawdust from Machines.

Sturtevant's Blowers and Exhaust Fans,

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Pure Oak Tanned Leather Belting,

Perin's French Band Saw Blades,

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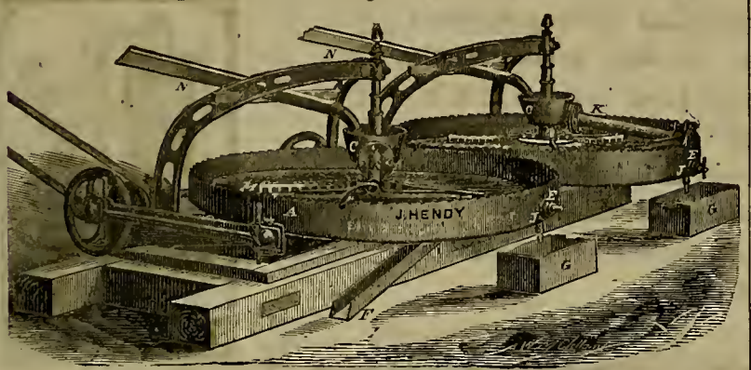
BLAKE'S PATENT STEAM PUMP

Over 7,500 in Successful Use in the United States.

OVER $3,500 PER MONTH SAVED

BY THE USE OF

Hendy's Improved Amalgamator and Concentrator



Can be seen at the Manufactory, No. 32 Fremont Street, San Francisco.

SAN FRANCISCO, April 27, 1872.

JOSHUA HENDY, Esq.—*Dear Sir:*—As a practical miner and millman, I take pleasure in recommending the use of your Concentrators in all mills where gold or silver ores are reduced. No mills should be without them, for the following reasons:

1st. They are good sizers (no perfect concentration in pulverized ores can be effected without first sizing).
2d. The best Concentrator I have ever known—(the concentrated stuff only containing 5 per cent. of sand).
3d. They are good amalgamators, light (feathery) particles of amalgam and particles of coated gold by attrition are brightened, and from their specific gravity and the action of the pan, fall to the bottom and adhere.
4th. They require but little power and attention to run them, and with ordinary care will last for years.

I have been familiar with the workings of your Concentrators for four years past; have run them myself in the North Star Mine, Grass Valley; am familiar with their practical workings on the Empire Mine, Grass Valley; St. Patrick, Placer Co.; St. Lawrence, El Dorado Co.; Oaks and Reese, Mariposa Co., and most cheerfully give you this testimonial. For further information you are at liberty to refer to,

Yours respectfully, JAS. H. CROSSMAN, M. E.

409 California street, or Cosmopolitan Hotel.

SAN FRANCISCO, February 10, 1874.

OFFICE SUPERINTENDENT OF KEYSTONE CON. M. CO., AMADOR, AMADOR COUNTY.

MR. J. HENDY—*Dear Sir:*—In answer to your inquiries as to your Concentrators furnished our company last July, I would say that I am more than pleased with them; and the saving to the company has been over $3,500 per month more than with the blankets and buddies formerly in use. O. C. HEWITT, Supt.

OFFICE SUMNER MINE, KERNVILLE, April 27, 1874.

J. HENDY, Esq.—*Dear Sir:* Having four of your Concentrators in use at our Mills for four or five months, which for saving Amalgam and for concentrating Sulphurets, are a success, beyond a doubt, I feel it a duty due you and those interested in Quartz Mills, to recommend them.

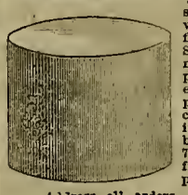
As further evidence of their worth, I now order TWELVE more of your Machines for our new Mill, now in course of erection. E. R. BURKE, Superintendent.

For description send for Circular.

JOSHUA HENDY, San Francisco.

Office and Works, 32 Fremont street. 9v28-1m-tf

Improved Cast and Forged Steel Shoes and Dies for Quartz Mills.



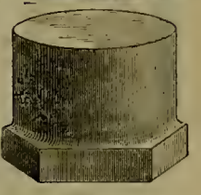
[PATENTED MAY 26TH, 1874.]

Price Reduced to 16 Cents Per Pound.

SAN FRANCISCO, November 10th, 1874.

To Supts. of Quartz Mills and Mining Men generally:

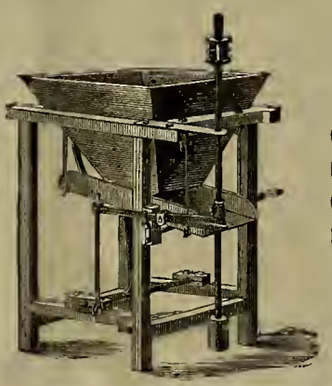
We take pleasure in stating that owing to the rapid increase in our orders, our Pittsburg Manufacturers have been compelled to add largely to their works—a new gas furnace and heavier trip hammer—and are thus enabled to reduce the cost of steel and at the same time produce SHOES AND DIES superior to any yet manufactured. We have consequently reduced the price to 16 cents per pound and solicit a trial order, guaranteeing that you will find them at least 10 per cent. cheaper than the best iron. There are no STEEL SHOES AND DIES made excepting under our patent and sold at this office, or by our authorized agents, though certain Eastern manufacturers advertise STEEL SHOES AND DIES which are only cast iron hardened by the addition of a composition. They will not out-wear two sets of common iron, though called steel. They are very brittle and are not capable of being tempered, flying from under the hammer like cast iron. Our STEEL SHOES AND DIES are in use in many of the largest mills on the Pacific Coast, and all who have tried them pronounce them cheaper and far superior to iron in every respect, even at the old price of 20 cents per pound. Their advantages over iron are cheapness on first cost, increased crushing capacity, time saved in changing and in setting tappets, increased value of amalgam by absence of iron dust and chippings, and a saving of 75 per cent. in freight. It takes 50 days to fill orders from the manufactory East. Price 16 cents per pound shipped at San Francisco. Terms liberal.



Address all orders, with dimensions, to W. R. Townsend, Secretary.

1v29-3m **CAST STEEL SHOE & DIE CO., Room 4, Academy Building, S. F**

Tulloch's Automatic Ore Feeder.



WILL FEED WET OR DRY ORE.

REFERS TO

Con. Virginia,	California,	Sumner,
Douglas,	Hite,	Columbus,
Gold Mountain,	Spring Gulch,	Riverside,
Northern Belle,	Leopard,	Panamint,

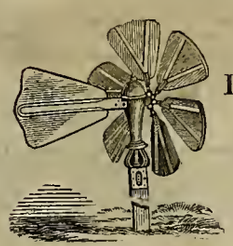
And many other Mills using them.

F. OGDEN, Sole Agent,

310 California Street, S. F

54 BUSHELS OF CORN AN HOUR.
HARRISON'S
LIGHT, VERTICAL BURR MILLS
BARBER & BACON, MILLERS AND LUMBER DEALERS, SOUTH VERNON, VT., write July 15th:
"We have been running two of your LIGHT VERTICAL CORN MILLS for the past 6 months with remarkable results, and have ground over 80,000 bushels of corn into No. 1 meal in that time, running the grist-mill nights only, as we run our saw-mill in the day time. We have often ground in the 20-inch Mill (which weighs about 500 lbs.), 1,000 lbs. of corn in twenty minutes, or 54 bushels in one hour. Our usual night's work is about 24,300 lbs., or 434 bushels. To do this we have to run at a speed of 1,300 turns per minute, and use about a 20-horse power. You may refer parties to us for further information, and when we have tested your HEAVY VERTICAL MILL, we shall take great pleasure in giving the results."
SEND FOR ILLUSTRATED CATALOGUE AND PRICE LIST.
EDWARD HARRISON, MANUFACTURER OF
FRENCH BURR STONE MILLS, BOLTERS, FLOURING MILLS &c.
135 HOWARD AVE. NEW HAVEN, CONN. U.S.A.

AUTOMATIC PUMP.



SOMETHING NEW.

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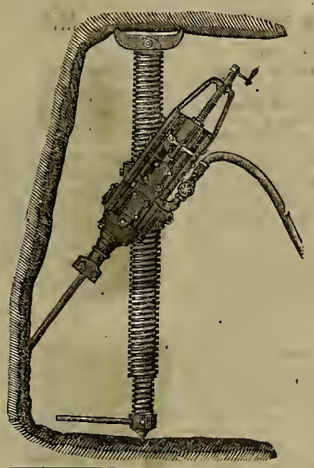

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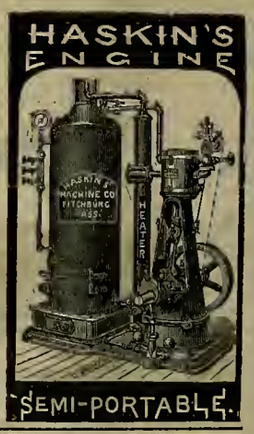

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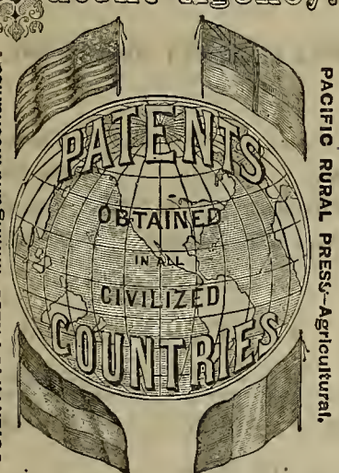

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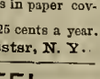

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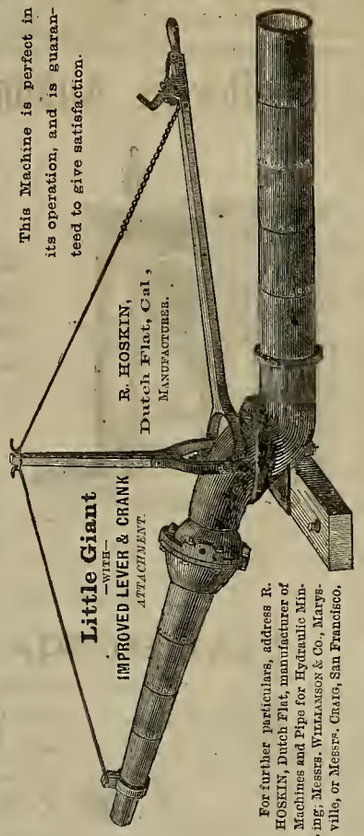

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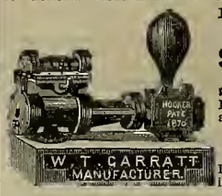

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MINING AND SCIENTIFIC PRESS.

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BY DEWEY & CO., Patent Solicitors.

SAN FRANCISCO, SATURDAY, DECEMBER 11, 1875.

VOLUME XXXI Number 24.

The Triple Cylinder Engine.

We present herewith an engraving of a triple-cylinder, compoand balanced-piston steam engiae, invented by Farrelly Aldea, of Pittsburg, Penn. In this engine two cylinders alternately receive steam at each revolution, and alternately exhanst into en- anxiliary cylinder, common to botn, while these pistons are balancod by the circulation of the exhanst steam. The throe cylinders are in line with one stem, or for certain purposes are arranged parallel with three stems of locomotives, pumping and marine engines, whether vertical or horizontal. It is intended to utilize all the exhaust at high or low pressnra, with or without the aid of a condenser. The *American Manufacturer* speaks of the engine as followe:

The engine ntilizee all the exhanst, avoids all hack pressure and secures regular motion. To do this the high pressure oylinders are singla aoting, taking steam at one end only, and their pistons make the rotnrn strokes without back preseore, aa the exhanst circulates on both sides of them, thereby avoiding all back pressnre.

The low preesnre or anxiliary cylinder is donblo acting, and receives all the exhanst expansively from each of the steam cylindere alternately, while their pistons are balanced by the free circalation of the exhanst around them; consequently this utilizes all the exhaust steam.

There is a full force of steam carried to the end of each stroke in the alternate receiving cylinder, and the exhaust from the other high pressure into the anxiliary at the same time gives all the force of the steam and exhaust at each stroke; this secures regular motion. With less than three cylinders the motion at each revolution would be so very irregular as to be impracticable, as is proven by experience. This triple combination is adapted to all kinds of steam engines, vertical or horizontal, whether the cylinders are in line with one stem or parellel with three stems; and for stationary, locomotive or marine.

The great value of this locomotive to the world cannot be readily calculated, but it is sufficient that it saves half the fuel and half the boilers, or virtually doubles the power of steem, when compered with the common single cylinder engine. The steam navies will be compelled to adopt it, or become demoralized with an enemy's small swifter steamers esch cerrying a single gnn of long range to sweep the oceans of their commerce; and the commercial steamers cannot afford to be stripped of their carrying trade by the swift steamers of their more pregressive neighbors. Wherever fuel ia scarce and dear the superior merits of the Alden engine will be qoickly appreciated. It will stimulate the development ot onr vast mineral resources in the territoriee by furnishing steem power at half the present cost for fuel, and pnt into bonanzas thousands of valuable minee that are in borrasca.

Multitudes of cernest enquirers are daily witnessing the snccessful running of one of these engines (the first ever built) at the Pittsburg Tradesmen's Industrial Institute. It is of 12¾ inch cylinder, and with 75 lbs. of steam exerts a force of 93 horse power actual, with 2 ft. stroke and 50 revolutions per minnte.

The K. K. Strike.—The report that the K. K. Consolidated mine at Enreka had strnck a bonanza is trne. We have been shown a private letter from the superintendent saying that they had strnck a superb body of ore, commencing at the 5th level, continuing to the 6th and dipping below the 6th. The shaft is run down about sixty feet toward the 7th level. The mine is turning out from two-third new ore and one-third reserve dry ore, from ten to eleven and a half tone of bullion per day. The percentage of lead is very high, abont four tone of ore to one of bullion.

Owino to the extreme stormy state of the weather, but elow progress has recently been made with the erection of the new works on the Utah mine,

Alden's Ore Pulverizer.

We give on this page an illustration of a now ore pnlverizer, invented by F. Alden, 25 Fifth Avenno, Pittsbnrg, Pa. The cnt gives a sectional view of the machine in operation. Its vital parts are two vertical corrugated jaws, that swing or vibrate to and fro, while held together at the bottom hy a sliding yoke, so as to produce a donble rubbing, grating or filing motion at both forward and back stroke. It is regulated for coarse work of blast furnaces, stone breaking, etc., or down to dnst for gold or other ores. All sizes are manufactured to snit each kind of work. It is claimed that this machine will prodnce donble as mnch fine work as eny machine of the same weight, and when set at 3-16 inches prodnces 45 per cent. dnst to No. 12 siftings.

The nniform fineness of the ornshing or pnlverizing is regulated by set screws or liners, to make either coarse or fine work. The receiving ospacity is 14x7 inches, and if the discharge is set at one-fonrth of an inch and running at 150 revolutions per minnte, a 14,000 pound machine rapidly brings Lake Superior hard iron ore to a fix at one operation, reducing more than 4,000 pounds per hour, and 34 per cent. of it goes through a No. 18 wire sifter.

It is radically different in principle and construction from all other ore reducers, and is said to do its work better and more economically than both the stone breaker and rolls together. It differs from moet in use by having two movable jaws instead of one, and in redacing the substance fed by a file-like or rubbing motion instead of a crushing one.

Eight horse power is sufficient. Dimeneions —8 feet long, 5 feet high, 2 feet wide; the jaws,

ALDEN'S ORE PULVERIZER.

3 feet loug by 14 inches wide; the chilled rubbing diee, 360 pounds—total 14,000 pounds—all made ot the best materials, well proportioned and carefnlly fitted, nnder the direction of the inveutor.

H. M. Yerinoton, general superintendent of the Virginia and Truckee railroed, has been elected a director of the road in the place of A. M. Edgington, deceased, and also vice-president of the company, to fill the vecancy oaused by the resignation of A. J. Raieton.

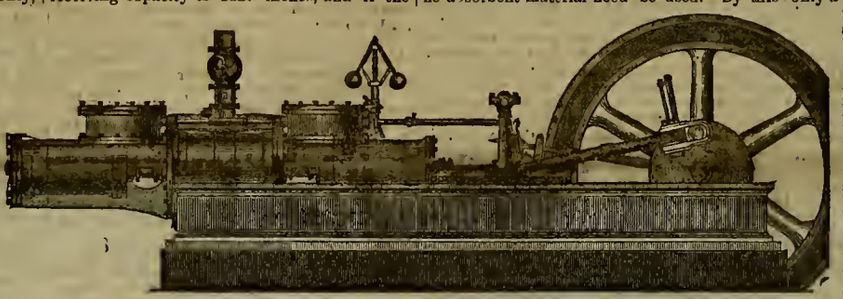
The Evening Star quartz mill, on Salmon river, in Siskiyou county, was deetroyed by fire on the morning of the 2d inst., at twenty minntes past one o'clock. No insnrance. The lose is between $8,000 and $10,000.

The bullion shipped from Austin in Novembor, according to the *Reese River Reveille*, on account of Manhattan silver mining company, was es follows: 116 bars, weighing 8,171 pounds, vslued at $108,415.31.

Notices of Recent Patents.

Among the patents recently obtained throngh Dewey & Co.'s Scientifio Press Amorioan and Foreign Patent Agency, the following are worthy of mention:

Ant Extbrminator.—Michsel Barthel, Milpitas, Santa Clera oonnty, California. The objeot of this invention ia to provide a box or oase, in which any oompound or snbstance for poisoning ants oan he kept in a properly moist condition to permit the ants to feed from it, and which is provided with suitable openiugs to admit the ants to the interior of the box, so that they csn feed npon the contsined substance or compound. Mr. Barthel makes a compound which he places in the bottom of the box. He then pleces a piece of sponge cotton or other absorbent materiel, which has been satnrsted with water, upon the mixtare inside of the box, and covers it over. The wet sponge will keep the mixture moistened and soft so that the ants can eat it. When the poisonous mixtnre is soft no absorbent material need be used. By this mesns any ordinary invasion of ants may be terminated in a short time.



TRIPLE OYLINDER COMPOUND BALANCE PISTON STEAM ENGINE.

Shinole Machines.—Wm. P. Valentine, San Francisco, California. This consists of improvements on a patent previously granted to the same inventor. The improvements are: first, an arrangement for adjneting the tilting frame or teble which shifts the angle of the bolts or hlooks after esch shingle is sawed; this sdjustment being for the pnrpose of regnlating the thickness snd taper of the shingles. Secondly, it relates to certain improvements in checking and stopping the receding movement of the carriages or sliding frames which carry the blocks from the tilting table to the eaw and bsck again. The invention slso includes improvements in operating the olamp or dog which alternately grasps and relesses the bolts or blocks when the machine is in operation. The machine can aleo be nsed for sawing out boarde for hoxes and eimilar purposes.

Harrow.—James B. Green, Elliott, San Joaquin county, Cal. This invention relates to that class of harrows in which tho harrow teeth are secured in two or more shafts, which extend transvereely across the herrow freme, so that the shaft or shafts cen be rotated in order to free the teeth from the accumulations of straw, woede or other obsteeles. This improvement consiste in the employment of certain devices by which these shafts are caused to rotate automatically and euccesively so as to free themselves of weeds and etraw. The teeth leave no nnharrowed spote in a field, neither will they rake the etraw or weede which they gather, into large pilee to be left on the field, but weods and etraw will bc left nearly in the aame position they occupy before the herrow passee over them, while the ground beneeth will be properly harrowed.

Bleaohino Soap.—Peter Burns, San Francieco. This invention is a new combination of ingredients for the manufacture of a soap for weshing and bleaching purposes. After adding the patented mixture to the soap, flavoring extracts are added in the nsual way. The soap is then allowed to stand aod harden, when it can be cut out or otherwise formed into bare. This snap possesses extreordinary cleansing qualitiee and the inventor says that when properly nsed febrics oan he cleaned with it without rubbing.

A. J. Doolittle.

The compilor of the "Map of Central California" (embracing the counties of Butte, Ynba, Nevada, Placer, El Dorado, end Amador), so well known to the readers of the Mining and Scientifio Press, was one of tho nnfortunate three hundred who went down with the steamor *Pacific*, on the 4th of November.

Not a trace even of his going aboard that steamer is on record; the only traces of tho three hnndred who with him left Victoria that Thursday are the pieces of the wreck, and a few bodies, which have drifted into the straits of Fuca, and are now strswn elong the heach at Beacon hill, Victoria, one hundred miles from the scene of the collision, which sunk both the oolliding vessels almost instantly.

Mr. Doolittle had despatched his bnsiness at Seattle with great energy, and deemed himself very fortunate in getting aboard the *Pacific*, only a few minutes before she sailed. His name was consequently not booked among the list of passengers. He visited Beacon hill three or fonr times while the steamer lay at Victoria on her homeward voyage, to call on a friend who had made his acqnaintance in the office of tho Press, whon the "Map of Central California" wes first brought to the attention of the pnblie.

Doolittle was a "character." He was honest, industrious, shiftless and full of ideas. His ideae were generally sound and full of merit. He traced the connections of the grevel deposits aud of the quartz belts of the counties named with much labor, and rudely indicated them on his map. The latter was drawn almost wholly by his own hand. The work, done hy one not a professional draftsman nor a geologist, reflects great credit upon him, having been for nino years past the principal standard of reference relating to localities and mines in the central mining region of California.

Mr. Doolittle had recently visited the coal mines at Nenaimo, Wellington and Seattle, to introdnce a new boring machine partly of his own invention. Up to the time of his nnfortunate trip to the North he was interested in and carrying on hydraulic mining operations at Liberty hill, Nevada county.

A great deal of the information on the Geological Snrvey "Map of the Vicinity of the Bay of San Francisco" was collected by Mr. Doolittle under a private contract with Professor Whitney. Mr. Doolittle also compiled and published a map of Homboldt county, Californiа, about 1863. He was a member of the Masonic Order, and highly respected for his manly honesty and intelligence by all who knew him.

A. B.

Mining Suit.—A complaint has been filed in the Fourth district court, in the case of Daly & Hawkins *vs.* J. M. English, John S. Magee and Arthur H. Hawkine. Plaintiffs aver that in December, 1874, Magee obtained a bond from the owners of the Gila mine, situated in the Reveille district, Nevada, for ite purchase price of $12,000, and plaintiffs were approached with the subject of becoming jointly interested with defendents in the enterprise, plsintiffs agreeing on taking one-quarter of the risk. Five thousand dollars was supposed to be the amount necessary to work the matter into proper shape, but before plaintiffs had been called upon for their *pro rata* of this amoont, a large body of ore was struck in the mine and defendents at once proceeded to incorporate the mine and dispose of shares without the co-operation of plaintiffs, who now claim $1,000,000 as their share of the profits of the transaction. They eliege that the markot value of their claim is $300,000. In addition to one-qnarter of the mine they sue for 25,000 shares of the capital stock, which they desire placed in the hands of a receiver, to be appointed by the coort.

R. M. Daggett, who for many years has been connected with the Virginia *Enterprise*, has retired from that peper.

A new fonndry has been started in Winnemnoca.

The Mineral Resources of Mexico.

In the Gold Hill *News* we find the following communication upon the mineral wealth of Mexico, which at the present time will be read with interest:

Having spent several years in the various mines of Mexico, at least in the northern part of it, comprising the States of Nuevo Leon, Chihuahua, San Luis Potosi, Zacatecas, Durango and Sinaloa, I will endeavor to give you some idea of the formation of the veins and the different classes of ores extracted from them, the mode of operating mines and the manner of milling employed in the haciendas or reduction works.

The veins can generally be traced on the surface, not by large rough croppings, but by a clearly visible formation of carbonate of lime, oxide of iron and iron ochre, often intermixed with green carbonate of copper, and distinguishable all the more as they are generally found in bedrock of blue or dark brown slate. Most of these veins are, from the surface down, possessed of such a wonderfully true underlay, that a tunnel to them can be calculated within a few feet to a certainty.

Nature of the Ores.

On the Eastern slope of the Sierra Madre, and through to the gulf, all silver bearing veins carry down to a certain depth a variety of ores, some of which are found in no other part of the world.

The most prominent are iodite and bromargyrite, or lode and brome silver. Both species are called "plata verde," or green silver, and are found in scales or small crystals of carbonate of lime of the aforemade description of croppings. This matter extends, in the district of Catorce, for example, down to a depth of 400 meters in Zacatecas, only fifty miles in Tresnillo, Mineral de Plateros 150 meters, showing pockets of the iodite and bromargyrite, as also of kerargyr, or horn-silver, the assays of which are often no less than from $400 to $500 to the carga of 300 pounds.

At the indicated depths the transition commences, being no less than fifty metres deep of vein matter of the description of the Comstock clay, iron pyrites being strongly prevalent. This transition very rarely carries metal, but if it does, nothing less than native silver. Now follows a vein matter which can be said to be almost like that of the Comstock, only that the appearing ores are silver ores pure, or a much finer grade than those found here. In the mine San Augustin, Catorce, there are no less that 500 tons of pronstite or ruby silver ore brought to the surface every week. The mine La Suz, in Zacatecas, produces that much and more of pyrargynite or antimonial silver ore, and pockets of fine silver are not unfrequently found giving from two to ten million dollars. But the

Imperfect Mode of Working

Leaves most of these treasures yet hidden in the mountains. Coyoting is the best name for it, working down with a crowbar until a little pocket is struck, eating out all the ore, then driving for another one—that is the general plan. Regular shafts are seldom thought of, because of the lack of hoisting machinery, the most complicated being four-horse power windlasses. Peones carry the ore on their backs to the surface or to the bottom of some shaft, and it is astonishing how these people take a weight of 200 to 300 pounds over ladders made of one log, through drifts which they have to pass on their knees, and up and down slippery steps where a fall would mean certain death. Their compensation is four bits a day, which suffices to keep them on beans and chile and furnish them Sundays with a quantum of mescal or aloe brandy, sufficient to make them unfit for work on Monday. The regular miners of Carretero receive $1 per day, but prefer to work on shares. This system of working on shares is an enormous loss to the mine, but cannot be dispensed with where you have miners who require a foreman each to keep them to work. The plan alluded to is simply to give the miner one-third, one-fourth or one-fifth of all ores brought to the surface in his name, each batch being dumped separately and divided, according to grade, into three, four or five parts, and the miner selecting his share. This mode has almost become a privilege, and the writer of this narrowly escaped lynching in trying to substitute day labor for this expensive system of dividing.

Drifting is done by contract altogether, one miner in the bedrock costing from $30 to $50, while on the vein it costs from $10 to $30 per metre.

The ores brought to the surface are, according to their assays, ranged into seven classes: "Especial," "Bonito," "Amarillo, 1 deg.," "Amarillo, 2 deg.," "Amarillo 3 deg.," "Millon, 1 deg.," and "Millon, 2 deg.," and in this order shipped to the

Haciendas or Reduction Works.

The transportation is done on mule or donkey back, large herds of these arriving every morning at the gates of the mine and leaving packed with 200 or 300 pounds each for the haciendas. This institution covers generally not less than ten to fifteen acres of ground, being surrounded by buildings and high walls, carefully guarded against intrusion. The ore is first broken to a small size, about as large as hazel nuts, by the "mortero," acted upon by a dozen or so hammers, which, by a very simple piece of mechanism, are raised and drop by themselves, four horses furnishing the motive power. From there it is taken to the arastras, of which some haciendas have as many as 100 going. Being well pulverized in these the pulp of all the oxides, bromargyrites and kerargyrs or horn silver is taken to the pans, where by pure mercury, together with stirring or gentle heat, the amalgamation is effected in eight hours. Low grade ores of the same class are taken to the patio. Here 100 to 200 tons are spread out in a large cake, with mercury; salt and sulphates of copper are added in proper time, and the whole of it worked through by mules and shuffles every few days for the time of about one month, at the end of which the amalgamation has taken place. All other ores, and principally sulphurets, are first roasted with salt, that is chloridized, and then undergo the same treatment as the former. The roasting furnaces are merely an open iron plate below which the fire plays, and the stirring is done by hand. All this will demonstrate what a large field there is in Mexico for enterprising mining and milling men. The country abounds in mineral wealth, but has as yet hardly passed the first stage of development.

The Golden Enterprise.

This, says a correspondent of the Plumas *National*, is the name of a new mining enterprise, inaugurated some time since by Mr. Richard Jacks. The claim is located on Spanish creek, a short distance from Spanish ranch. We had intended to pay this part of the country a visit for some time, and take a look at the mines, but have not been able to find time. An obliging correspondent gives us the following description of the new operation, and we gladly give it room. He says:

Among the many new mining claims about being opened, the Golden Enterprise deserves more than a passing notice. Situated on Spanish creek, about five miles west of Quincy, in a district that has been famous for its rich diggings since "early days," it will open up a vast country hitherto unprospected. The bedrock on what is known as Grub flat, is very deep, and all the mining which has been done in the vicinity has amounted to but little, as there was a layer of cement five or six feet from the surface, through which they were unable to sink on account of the water. One shaft was sunk through, and beneath the cement was found blue gravel which prospected very rich, but the water could not be kept out without machinery, which the parties prospecting were unable to purchase, and as there were good mines in the county which could be more easily opened, the shaft was abandoned.

Mr. Richard Jacks conceived the very sensible idea of going about a mile down Spanish creek, and bringing up a flume large enough to carry all or nearly all of the waters of the creek, at any time of the year, thereby draining the whole of this immense deposit of gravel, and opening a claim at once rich and inexhaustible. Accordingly, last fall he commenced operations by putting in a flume twelve feet wide, divided into two compartments of six feet each. He now has in 400 feet, firmly fastened to the bedrock by ties and other supports, to relieve the force of the water when unusually high. The flume has a grade of one and a half inches, and during the late storm it worked beautifully, thereby demonstrating the fact that with a reasonable amount of water he could run off a large quantity of gravel and dirt that would pay splendid wages for moving, it prospecting much better than even the owner anticipated. He is now preparing to put up a derrick, which, when finished, will greatly facilitate the removal of heavy boulders, of which there are a large number in the next hundred yards; after that the ground becomes less rocky, and he can work to much greater advantage.

Judging from the prospects now obtained, further outlay will be unnecessary, a sit will not only pay for itself as they go ahead, but also pay good dividends. If, however, it pays expenses for building until the heavier banks of gravel are reached, it will, without doubt, be one of the best paying claims in the county, especially as Mr. Jacks has a splendid water privilege—independent of the waters of Spanish creek—which covers the surrounding country.

The owner deserves to have bright prospects, for he has shown indomitable perseverance in overcoming obstacles which dismayed others.

Gaoom Distaict.—From G. J. Gardner, who keeps store at the mines, we learn that the sawmill is nearly completed, and also the hoisting works for the mine. Owing to the scarcity of lumber the completion of these has been prevented for a short time. As soon as it arrives things will be finished up, and a big force of men will be placed to work on the mines and sawmill. M. P. Gossett, a son of one of the English owners of the Groom district property, has recently been on a visit there and expresses himself as pleased with the prospects of the company.—*Pioche Record.*

Sheriff's Sale.—The Huhn & Hunt mine, comprising or embracing the following lodes or leads: Pacific tunnel mining company, 800 feet of Pacific ledge No. 2, 800 feet Pacific tunnel No. 3, 800 feet Pacific tunnel No. 4; 550 feet of the Desdemona east extension; also the easterly 200 feet of the Desdemona mine were sold to satisfy judgments obtained against the Huhu & Hunt mine by M. Cavanaugh and others. The above property was bought by P. Felsenthal, as trustee for the judgment creditors, for the amounts of the judgments, costs and accruing costs.—*Pioche Record.*

The O'Hara Furnace.

At Pearine district, Nevada, great difficulty has been found in working the ore. The Pos Consolidated company have made experiments in several directions with their ore, but have not been successful. They recently struck a fine, well defined ledge in the lower level of the mine, assaying very high. The managers of the Consolidated Pos accepted on the 23d ult. the new O'Hara furnace, being satisfied that it would work their ores successfully to within ninety per cent. of assay value. The *Nevada State Journal* (Reno) gives the following description of how this furnace works the ore of the Consolidated Poe mine, also several important items about this new mode of treating Pearine ore:

The ore of the Consolidated Poe mine is crushed through a ten-stamp dry battery, from whence it is elevated continuously as it discharges from the battery to a large hopper, from which it feeds into the O'Hara Champion chloridizing furnace. The ore is moved by mechanical arrangements through the flames, for the space of two hundred feet, and passes out on the cooling hearth, from which is discharged regularly in the car ready for the amalgamating pans. The furnace is a double furnace of two hearths, and is one hundred and ten feet long, four and a half feet wide, and fourteen feet high. The arches over the roasting hearths are eight inches from the hearths, confining the heat directly to the ore. There is one fire chamber for the upper hearth and two for the lower hearth. The ore is moved by an endless chain with two iron frames, on which are fastened a series of plows, so arranged that one is a little behind the other, so that each following plow turns the ore over into the furrow that the first one has made. The ore is turned to the right and then to the left every two minutes, and every time the plows pass through the ore, it moves a few inches ahead. The ore moves in contact with the flames and is heated up evenly and gradually until it reaches the first fire, when it falls to the lower hearth, where the heat increases, and is then moved back to the end of the furnace through the flames of the two fires, and after passing the last fire it is still moved and turned over a space of fifteen feet on a cooling hearth and is discharged into the car cool and ready for the amalgamating process.

There are no chemicals used in the ore but chlorids of sodium (salt). When the ore gets under a low heat the sulphur commences to burn the lead, antimony, zinc, iron, copper and other base metals, changed to a sulphate, caused by the superheated steam playing through the flames and oxygen from the atmosphere. When the ore falls to the lower hearth the most of the base metals are oxidized, while the silver remains as a sulphate. Now from five to eight per cent. of salt is fed into the ore from a hopper that discharges about a pound every time the plows pass along. The ore being under an increased heat with the oxygen from the atmosphere mixing with the flames, caused by the draft and also superheated steam, causes chemical changes to take place, and thereby changes the silver and gold to a chlorids. The sulphates decompose the sulphur liberated, unite with oxygen and hydrogen, creating sulphuric acid, which attacks the salt, decomposes it and liberates the chlorine gas from the soda silver, having a strong chemical affinity for chlorine, takes up a portion and is converted into a chloride of silver, which is easily amalgamated when brought in contact with mercury in an iron pan. The ore of the Con. Poe, and in fact all the ores in the district, are of a very rebellious nature and have been found very difficult to work, but it is found of late that the O'Hara furnace will work the ore up to 90 per cent. These ores are the most complicated chemical compounds to be found in Nature's laboratory. The ore is from 30 to 90 per cent. metal, with hardly any gangues such as quartz or spar, but in fact is made up of antimony, lead, tin, zinc, cobalt, nickel, iron and copper, with silver and a very little gold and a large per cent. of sulphur and arsenic. The chemical analysis proves it to be argentiferous silver-fahl ore, argentiferous gray copper ore, miargyrite, stromeyerite, zinc blende, iron pyrites, sulphide of antimony, and galena with sulphurets of silver, and silver held in all the other compounds. The ore pays from $20 up to $300 per ton. Argentiferous-fahl ore is a compound of copper, antimony, arsenic, sulphur, lead, iron, zinc and silver, and sometimes gold and quicksilver. Miargyrite is sulphuret of silver and antimony; stromeyerite is a sulphuret of silver and copper; zinc blende is a sulphuret of zinc and silver.

Pump Accommodation.—The New York mining company, Lower Gold Hill, have very kindly loaned the Ophir company their powerful new pump bob, just completed, in order that the Ophir pump may be started at the earliest possible opportunity. The ponderous timber and iron work constituting the bob aforesaid was hauled up to Virginia by heavy teams yesterday afternoon, and will be put into working position at once. The Ophir folks propose having their mine pumped dry inside of two weeks from now. This was a very good and appreciable accommodation on the part of the New York company. Meanwhile, however, their own mine will not suffer by it, as the water is easily kept reduced by the well arranged and capacious bailing tanks. By the time a pump bob is needed the Ophir company will provide one for them or they will do so themselves.—*Gold Hill News.*

The Signal Service.

The report of the Signal Service officer of the army shows that the display of cautionary day and night signals, upon the lakes and at the great ports of the United States, has been made systematically on occasions of supposed especial danger at forty-three different stations. Of the total number of cautionary signals thus displayed, seventy-six per cent. have been afterward reported as justified. In the cases reported as failures the winds did not attain at the place of display a violence held to justify it, while in isolated instances the signals have not been displayed when they ought to have been. The accounts show that no great storm has swept over any considerable number of the posts of the United States without preannouncement. In instances of disaster to vessels occurring during the year, the facts have proved that the watch kept by the service, and the prompt transmission in times of danger of a few messages, have saved property amounting to more than the cost of the lines.

The scanty force of this Signal Service will not permit it to occupy lines greater in extent than those contemplated in existing legislation. Legislation for a more complete organization of the Signal Service is urged as necessary now, both for the interests of the United States and as simple justice to the officers and men who have served so long and so faithfully upon it, with duties now as extensive, as important, and reaching directly more interests of the people of the United States than those of any other bureau of the War Department. It exists without laws providing for the permanent employment and grade of its officers or the promotion of its enlisted men. The service depends for its success upon a rapidity of action, which may save minutes of time. It cannot be too safely guarded against possible hamperings. The Chief Signal officer finds as his reviews the results of the year causes for encouragement.

Copper Mines in Utah.

A correspondent of the Salt Lake *Tribune* writes as follows of the copper mines in the Little Cottonwood canon: All around the head of Grizzly flat are numerous mines of argentiferous copper, mostly in the state of oxides and carbonate ores. Among the most prominent mines may be mentioned the Utah, which shows a vein from four to ten feet wide, carrying from ten to thirty per cent. copper, with from seven to one hundred ounces of silver to the ton. The Lincoln has an immense vein of ore, carrying from fifteen to forty per cent. of copper, with a good quantity of silver. This is one of the largest mines of copper in the district.

The Nellie, owned by McAvoy & Haight, shows a fine lode of copper and silver, carrying some forty per cent. of copper, and from sixty to one hundred ounces of silver to the ton. Above the Nellie comes the Dion mine, showing a vein said to be over forty feet wide, which will average twelve per cent. copper and twenty-two ounces of silver to the ton.

Besides these mines there are many others, among which may be noticed the Darlington, Olive, Morrill, Green Monster, Vanderbilt, Regulator, Mollie G. Corsair, and Box Elder.

The necessity of some mode of reduction at home, is one that will always be felt until it is supplied. With the list of mines I have above enumerated to draw upon, (many of them at present shipping ore), there is certainly no lack of material to work upon, and the number might be largely increased from the prospects already opened. There is no better field for enterprise than here in working of copper ores. With the new wet processes, there is an immense fortune for the inventor.

The Ridge Lead.—It appears to be definitely proven now that an ancient river channel runs along the Town Talk ridge, and extends as far down as Randolph hill, below Grass Valley. The Randolph Hill, the Hope and the Alta companies are supposed to be on the same lead. Recently, Mr. Wellington, Mr. Beatty, Mr. Maltman and others, have struck it out near McKeon's ranch. The contractors who are running the railroad tunnel at the Town Talk hill have also struck the top of the channel, which is forty or fifty feet in width, and Mr. Lord has been working on the same lead near the railroad tunnel for some time. It is thought that the Murchie gravel mines are a part of the same channel, and that the gold found in the gravel on Gold flat came from the channel, by its being cut in two, and washed from the ridge down over the flat. Of course a great deal of the talk is mere conjecture, and may not prove to be correct, but the evidences now are pretty good in substantiation of the theory. So far as known, it is thought the channel is not a wide one, and the gravel, as far as prospected, is not very rich, but the bottom has not been reached, nor any extensive work been done. Enough, however, has been developed to show that a new field awaits the enterprise of prospectors, which may, when fully opened, prove to be very valuable.—*Nevada Transcript.*

Fast Horseback Riding.—At a fair at Waco, Texas, lately, a horseman rode for a wager sixty miles in two hours and fifty-five minutes, using relays of ordinary Texas horses to the number of forty-two. His last mile was made in two minutes and seven seconds, and his time for the sixty miles was five minutes better than the best time ever recorded in this method of racing.

SCIENTIFIC PROGRESS.

Artificial Production of Organic Bodies.

The *Popular Science Monthly* publishes from the pen of Professor Ira Remsen, of Williams college, an interesting article on "The Artificial Preparation of Organic Bodies," from which we collate as follows:

Up to within a few years the belief has been almost universal that the production of organic bodies could be realized only through mysterious influence of life in living organisms—that the skill of the chemist could go no farther than the production of the so called inorganic bodies. This belief grew gradually to be a religious and philosophical dogma which elicited much discussion. But while these discussions were taking place, the chemist quietly continued experimenting with the elements, and discovery followed discovery until the fact could no longer be doubted that the dogma must fall, and fall it did. Its fall, moreover, has given place to a hypothetical statement founded upon a long array of facts, that every chemical body, no matter how complicated or what its nature may be, will in good time be artificially prepared in the chemist's laboratory.

Toward the realization of this statement, a large number of compounds, formerly supposed to be dependent upon the action of the so-called vital force, have already been produced exclusively by the chemist's skill. Prof. Remsen reviews, at considerable length, the steps of progress in this direction, to which we can only briefly refer.

In the year 1828, Wohler made the first success in the production of well developed chrystals of *urea*—a substance well known, but previously found only among the products formed in animal bodies. In 1841, Fownes succeeded in preparing cyanogen directly from its elements. A number of other discoveries followed these—all of which were somewhat simple in character.

But in 1856, Berthelot published a series of brilliant experiments in which the compounds formed were quite numerous, of a more complicated character and of a higher order. From this time on, new methods of investigation were introduced, the growth of the new science became very rapid, and finally the last of the old landmarks between inorganic and organic bodies was swept away and vital force, so far as it was considered essential to the formation of organic bodies, lost its prestige.

Scientists now look upon all substances not in mere mechanical union, as purely chemical, and as bound together by chemical laws, simply and alone; that no difference exists between like bodies, whether formed inside a living organism or in the chemist's laboratory.

Chemists have now at their command many means of building up from their simple elements the most complicated organic bodies. Without reference to their historic order, a few of the later achievements which have delighted and astonished the world may here be briefly noted:

Among the vegetable products are oxalic acid; valeric acid; malic acid, one of the most widely distributed acids of the vegetable kingdom; cinnic acid; wintergreen oil; the oil of garlic; the oil of mustard and the beautiful colors, alizirine and indigo, etc.

Among the animal products that have yielded up the secrets of their structure to the chemist are the simple fats and lactic acids. Leucine is now more readily obtained by artificial means than by extraction from the tissues in which it exists ready formed. Creatine, a constant ingredient of the juice of flesh, and sarcosine, a product of the decomposition of creatine, can now be readily obtained chemically; also, taurine, which occurs in the bile, and in some of the tissues.

These examples suffice to indicate the character of the results already achieved, and furnish justification for the hope now entertained by chemists, that in good time it will be possible to produce all chemical substances in the laboratory. When the active agent in the formation of the so-called organic bodies first became known, the conditions for its working became subjects of earnest inquiry, and an almost endless series of possibilities presented itself. Years ages may elapse before our researches in this direction can be exhaustive. We are ascending a mountain of light. Our views are becoming more and more extended as we reach higher and higher portions. Should we ever be able to reach the summit, there would be found a pleasant harmony in the broad panorama, and our eyes would rest in delight upon it.

The angular velocity of clouds is determined by M. Hursan de Villeneuve in the following way: He takes a ball of silver glass, on which he draws with ink on equator and equidistant meridians. He places the sphere so that, the axis being horizontal, the cloud may be seen, by reflection, displaced along the equator traced, and then the time which it takes to go from one meridian to the next gives the angular velocity.

Cavendish showed that nitrogen and oxygen in air formed a mixture only, but that the passage of electric sparks produced their chemical combination—nitric acid being the result.

A Physiological Problem.

A rather curious problem for physiologists is engendered by experiments recently tried by M. Ponchet upon a puppy. It is the general opinion that the brain of an infant, when the eyes are first used, or that of a person born blind and afterward restored to sight, is unable to translate correctly the impressions conveyed from the retina by the optic nerve. The individual has no idea, it is asserted, of relative distances, nor of the relative physical characteristics of bodies, but only learns the same through practice, and therefore it is to be expected that the sudden restoration of sight will result in a kind of optical confusion, which is only reduced to order after lapse of time. M. Ponchet's experiment, however, seems to negative all this, so far as the use of one eye is concerned; that is to say, if a person, blind in one eye, regains sight therein, and at the same time loses vision in the former perfect organ, the newly acquired sight is exactly as good as that lost, and the new eye requires no education whatever. The eyelids of one eye of a puppy, immediately after birth, were surgically treated so as to cause them to grow together, completely of course shutting off vision from the organ. The animal as it grew used but the single eye until it was four months old, when the good eye was similarly closed and the eyelids of the other opened. Although the left eye had never been used, and although it served as the sole means of sight, not the slightest difference could be detected in the actions of the animal. It recognized objects or avoided obstacles with perfect facility, and, in brief, the most careful examination failed to prove that the dog experienced any different sensations from those to which it had become accustomed.

The subject is interesting in view of the theory which already exists of there being corresponding points in both retinas, from which vibrations are transmitted to the brain.—*Scientific American.*

Power of Gunpowder.—M. De Saint Robert, in an article from his pen in *La Revue Scientifique*, gives the following calculation of the efficiency of a rifled cannon, the diameter of the bore of which is three inches, the shell of which weighs about 8.4 lbs., and the firing charge of which is 1¼ lbs. It may thus be estimated: Experiment has shown that velocity of the shell when it leaves the mouth of the cannon is about 1,300 feet per second. The hight from which the projectile would have to fall to acquire this velocity is 26,800 feet. Consequently the work actually done by the power is equal to 219,000 foot pounds. On the other hand, Bonson and Schischkoff have found by direct experiment that the heat evolved by the combustion of 2.2 lbs. of gunpowder is equal to 618.5 calorics. Hence the heat evolved by the above charge of 1¼ lbs. of powder is equal to 340.7 calorics. The mechanical work corresponding to this amount of heat is 1,050,000 foot pounds. Comparing this, which is the possible mechanical work, with the actual work done on the projectile as given above, the ratio is 0.208 for the effectiveness of the cannon, that is to say, about 21 per cent.

The Andes Gradually Sinking.—A list of altitudes of some of the most important points of the Andes determined at distinct intervals of time, seems to furnish evidence that the mountains are gradually sinking throughout, at least, a large portion of their extent. Quito was found by La Condamine, in 1745, to be 9,596 feet above the sea; Humboldt, in 1803, could only make 9,550 feet of it; Boussingault, in 1831, was startled to find it only 9,567 feet; Orton, in 1867, found it reduced to 9,250 feet, and Reiss and Stubel (doubtless to their honor) found, in 1870, that it had shrunk to the ridiculously small size of only 9,350 feet above the level of the sea. Quito, it seems, has sunk 243 feet in 125 years, and Pichincha 218 feet in the same period. Its crater has sunk 425 feet during the last 26 years, and Antisana 165 feet in 64 years. It is, however, a doubtful point whether this continued depression of the Andes is attributed to the sinking of the mountains or the rising of the world.

Fermentation from Inorganic Substances.—M. Mairet communicates to the French Academy of Sciences a curious experiment which, from the extraordinary result, leads to the belief that either the author has failed to take into account some circumstances not noticed, or else that a discovery of importance, worthy of further and careful investigation, has been made. He says that he mixed acetate of potash, nitrate of potash, and phosphate of soda together, all being in aqueous solution. At the end of a few days, the acetic acid appeared to be destroyed, nitrogen was disengaged, and the liquid contained only carbonate of potash and phosphate of soda. The notion may be compared to a sort of fermentation in the acetate, and more especially since it was accompanied by the development in the liquid of a glassy substance, similar to that which sometimes accompanies the fermentation of sugar.

Action of Heat on Coal.—A *resume* of the experiments of M. Reickert on this subject shows that coal pulverized and heated to between 180° and 200° increases in weight up, to a twenty-hours' exposure to this heat, when it begins to diminish. The specific gravity is also affected by this method of treatment, coals of the specific gravities of 1,328, 1,319 and 1,299 having, after heating, specific gravities of 1,496, 1,495 and 1,471 respectively.

Storms Crossing the Atlantic.—The report for 1873 of the Director of the Meteorological Observatory in Central Park—which has just made its appearance—besides containing monthly tables of the condition of the barometer and thermometer, the depth of rainfall and the velocity of the wind, considers this interesting question: Do any American storms cross the Atlantic to Europe? Director Draper compares observations and records of storms occurring on this side of the ocean with the logs of western bound steamships, answers the question in the affirmative, and says that "the places where ships may meet them [the storms] at sea and the time of their [the storms'] arrival in Europe, may be predicted within certain limits." How warning can be conveyed to the ships raises another and more difficult question.—*New York Evening Post.*

MECHANICAL PROGRESS.

Injurious Effects of Snow on Steel Rails.

Some interesting observations under this head are communicated from an Austrian line of railway, the Kaiser Ferdinand northern line. A portion of this line, about eight English miles in length, is very open, and often blocked with snow in winter. The obstacle is generally surmounted by strewing sand over the rails in front of the driving wheels. This portion of the line in question has a double line of rails, partly of Bessemer steel rails and partly of light Martin steel rails. Now, the skidding of the wheels frequently caused heating of the tires and rails, which are suddenly cooled again by the low temperature of the air on the falling snow. This, in itself, must be injurious to the molecular construction of the metal. But, beside, the increased friction causes a certain amount of abrasion of the upper surface of the rails at the spots where the stoppages have occurred. Examinations proved that these abraded portions varied in length from two to nine English inches in length, one-twelfth to one-fourth inch in depth, and extended over the whole breadth of the rail. A train in passing over the depressions so caused necessarily experiences a certain shock, and it is reasonable to suppose that the concussion thereby communicated to the rail will be most felt when the ground beneath is frozen hard, so that natural elasticity of the rails has no room to play. In three instances rails so worn snapped asunder suddenly at the abraded portion, although no flaw or defect in the metal could be detected. This led to the removal of all abraded rails from this section of the line, amounting to twenty-eight lengths of Martin steel rails, and ten lengths of Bessemer rails. No similar case of fracture is known to have occurred in the iron or puddled steel rails previously in use, although the amount of abrasion they underwent must have been at least as great. The inference is that the improved rails of Bessemer and other steels, their superior strength notwithstanding, are less capable of withstanding concussion than the older (iron) rails, and consequently whenever they are used increased vigilance is requisite to prevent accidents in the winter time.—*Zeitschrift.*

The Brayton Oil Engine.

The Brayton gas engine, a motor driven by the combustion of ordinary street gas mingled with air, and now quite well known to engineers, has been made the basis of another invention of somewhat similar nature, in which the motive power is furnished by burning a mixture of crude petroleum vapor and air. The oil engine, as far as we have been able to learn, and judging from our own brief inspection of its workings, bids fair to be a successful machine, and one of considerable utility to those who require light power, but who wish to avoid the inconvenience of steam. The engine which we saw in operation was alleged to be of five-horse power, and served to run a variety of metal-working machine tools.

The expense of its working, we were told, was only the cost of five gallons of crude petroleum per day, averaging some forty cents. A small pump lifts the petroleum directly from the barrel to the cylinder. An air pump compresses air into a reservoir at the lower part of the machine. The air current passes to the cylinder, and in suitable proportion mingles with the oil, which is introduced in the form of spray. The mixture, by a small flame which is constantly maintained, becomes ignited, expands, and so acts upon the pisten.

We clip the above from the *Scientific American*, which journal appears to attach considerable importance to the invention, and promises, at a future day, to give a more minute description of the apparatus.

Curious Electrical Phenomena.—A piece of wood cut from a tree is a good conductor; let it be heated and dried, it becomes an insulator; let it be baked to charcoal, it becomes a good conductor again; burn it to ashes, and it becomes an insulator once more. The coarse long hair from the neck of an old ohamois, if drawn between the fingers and thumb from the root to the point, becomes positively electrified, but if drawn in the reverse direction it becomes negatively electrified.

The strain on belts is always in the direction of their length; and therefore holes cut for the reception of lacings should be oval, the long diameter being in line with the belt.

Belting vs. Frictional Gearing.

In the early part of 1872, says the *Scientific American*, we published a series of carefully prepared papers on frictional gearing, giving results of experiments therewith, made to determine the percentage of adhesive force or traction of these wheels as compared with belted pulleys. From these tests it appears that the traction of the friction wheels was greater than that of the belted pulleys, and considerably more than is usually supposed to be obtained from belts upon pulleys of either wood or iron; and that, while there is a marked falling off in the adhesion of the belt as the work increases, that of the friction gear increases as the labor becomes greater.

We have lately received a letter from Messrs. Brownlee & Co., of Havelock, Marlborough, New Zealand, which details results considerably at variance with those above noted. Our correspondents say: "We had prepared plans for a saw mill, to be driven by friction instead of by belting; but before ordering machinery, we came to the conclusion we had better make a trial on the same principles as set forth in the *Scientific American*," (alluding to the records of the tests given in the series of articles above referred to,) "and obtained the following results, which rather staggered us: Instead of a 6 inch belt, we used a 3¼ inch on 17 inch pulleys. The belt without slip showed that 136 pounds raised 70 pounds; 320 pounds raised 153 pounds. Friction gearing without slip, 136 pounds raised 57 pounds; 190 pounds raised 54 pounds; and 320 pounds raised 84 pounds."

These last results, though not wholly in accordance with those given by the writer who communicated the articles, are reasonably near; but those given by the belting certainly are wholly out of proportion. Messrs. Brownlee & Co. say that they tried the friction gearing with one-half the face, namely 1¾ inches, and obtained the same result, that is, the same weight was raised.

This is an interesting question of practice, and probably some of our practical readers can throw some light on the wide discrepancy noted. We should very much like to hear, from mechanics who have tested the relative efficiency of belt pulley and friction gear, their views on the subject.

The T rail exhibits a disposition to change its form. It is now being rolled with a wider flange or base and a thicker head, without increasing the standard weight of sixty-seven pounds to a yard. The material of the upright part is reduced to make up for the increased size of the base and head. The head is made more nearly square at the sides, and the edges of the base are thinner. The object of this is to increase the resistance to wearing by the flanges of the wheels, and to prevent the rail from cutting into the sleepers. In place of the notches cut in the rail to hold the spikes that have been found so destructive to the life of the rail, holes are now drilled through the base, and through these the rail is fastened to the road bed.—*Scribner.*

Patterns for Scroll Work.—A ready way of making patterns for scroll saw work is given as follows: "Take the bracket or other piece of work which you desire to copy, and spread it over a sheet of paper, securing it from slipping. Rub gently over it a piece of saddler's black leather. All the outlines will be marked accurately, and it takes but a minute to copy any piece. The saving in money for patterns, which cost from ten to twenty cents in the stores, is therefore considerable, and it is often impossible to get a pattern of some particular thing which strikes your fancy."

The Bastie Glass.—A large building for the manufacture of malleable glass by the Bastie process has been commenced in France, at a cost of $625,000. The building is 163 yards by 160 yards in depth. It has been assured that utensils, such as fry pans, etc., can be used on a hot range, and will resist the fire just as well as iron or any other metal. Also, glass chimneys for lamps and gas burners are made, and will not break. In fact, there is no limit to the variety of articles which can be made of malleable glass.

Steel Ships.—The British admiralty having decided upon the construction of two dispatch vessels to be made entirely of steel, the order for the plates and bars for the same has been given to the Landore Siemens steel company, of Swansea, who undertake to supply a very mild steel of high quality.

Truing Oilstones.—For truing an ordinary oilstone for sharpening planes, take a sheet of glass paper No. 2, and place it on the bench. Rub the stone over it. In this way the stone can be trued in one-quarter the time required by the ordinary process.

The truest threads in holes are cut from taps having no clearance in the threads. Such taps also cut threads more uniform in size than those having clearance in the thread.

The corners of the square head of a tap should be well rounded or chamfered off, so that the wrench will readily adjust itself to the square of the top.

Brass wire should be softened before being used for rivets. To soften, heat and allow to cool or dip in water.

Sales at S. F. Stock Exchange.

FRIDAY, A. M., DEC. 3.

50	Alpha	19@18½	
800	Best & Belcher	59@58½	
100	...do	b 58	59
540	Belcher	28@30	
1270	Buckeye	1¼	
30	Bullion	4	
200	Challer	85@84	
305	Con Virginia	365@370	
1645	California	6@6¾	
575	C Point	31@31½	
525	Confidence	19@19½	
240	Caledonia	20@21	
20	Exchequer	15½	
120	Empire M	5½@6¾	
485	Gould & Curry	20½@20¾	
100	...do	b 10	21
100	...do	b 5	21
400	Hale & Norcross	31½	
300	Imperial	43@43½	
2225	Justice	45@42½	
1860	Julia	16½@16	
50	Kentuck	15	
1060	Lady Bryan	2¾@2¾	
920	Mexican	21@20¾	
1645	Ophir	54@52½	
50	...do	b 5	53
100	...do	b 30	51
265	Overman	38@39	
1115	Savage	17@16½	
1385	S Nevada	17¾@17¼	
100	Succor	1	
545	Union	10@9¾	
395	Yellow Jacket	80@84½	

AFTERNOON SESSION.

70	Alpe	62½
260	Advance	4½
45	Am Flat	2
420	Andes	3½@3¾
800	Alta	2¾@3
200	Atlantic	1
450	Amazon	2¾@2¾
330	Belmont	1½@1
155	Baltimore Con	2¾@2¾
750	Coso Con	1½@1½
225	Challenge	5
500	Cosmopolitan	50c
1030	Dayton	4½@4¾
85	Eureka Con	17@17¼
500	Eclipse S	1¼
120	Europa	1
90	Florida	3@3¼
810	Gila	3¾@3¾
50	Golden Chariot	2½
200	Glasgow	1¾@1¾
250	Hussey	50c
120	Jackson	1¾@2
100	Jefferson	4@4¼
100	K K Con	2
50	Knicker	2
2050	Kossuth	3½@3¼
650	Leopard	3½@3¾
200	Lo	2
460	Lady Wash	2¾@2¾
550	Leviathan	2¼@2½
120	Meadow Valley	3¾@3¾
330	Mint	50c
175	Mides	6½
1000	...do	b 30	6½
50	No Belle	2
715	New York	2¾@2¾
600	...do	b 30	2¾
1160	N Carson	35c
160	Occidental	3¾
120	Orig G Hill	2¾@2¾
100	Pioche	1
80	Prussian	1¼
1625	Prospect	6@5½
150	Ray & Ely	18½@18¾
450	Rock Island	3¾
895	Silver Hill	3¾@3½
20	S Justice	4
370	Utah	13½@14
690	Woodville	3¾@3¾
1100	Wells	3¾@3¾
600	Wells Fargo	25@28c

SATURDAY, A. M., DEC. 4.

70	Alpha	18½@18
1024	Alta	3¾@3¾
1925	Belcher	33@34½
45	Bullion	4
1170	Best & Bel	59½@60
50	...do	b 30	61½
1780	Buckeye	1¾@1¾
290	Challar	86@87
1090	C Point	32@32½
315	Con Virginia	38½@39
1900	California	6@6¾
400	...do	b 5	6¾
235	Caledonia	23½@24
60	Confidence	20@20½
885	Dayton	4½
150	Empire Mill	5½
25	Exchequer	13½
565	Gould & Curry	20½@20¾
175	Hale & Nor	40½@40
350	Imperial	43@43¼
100	...do	b 5	8½
2190	Justice	42@43½
50	...do	b 30	41½
1135	Julia	15@15½
300	...do	b 30	15½
100	...do	b 5	16¾
255	Kentuck	15@14¾
2980	Lady Bryan	2¾@2¾
365	Mexican	21@20¾
50	Meadow Valley	3¾
375	New York	2¾@2¾
985	Ophir	54½@54¾
900	Overman	62½@61
20	Occidental	3¾
100	Rock Island	3¾
10	Ray & Ely	18½
1175	Savage	17¾@18
60	...do	b 30	18
680	Sierra Nevada	17½@17¾
80	Seg Belcher	8½@8¾
350	Succor	1
10	S Hill	8½
320	Union Con	10@9¾
150	Utah	14
1985	Woodville	3¾@3¾
340	Yellow Jacket	87

MONDAY, A. M., DEC. 6.

40	Alpha	18
20	Bullion	4½
940	Best & Bel	59½@60½
220	...do	b 5	60
2415	Belcher	33½@36
100	...do	b 30	38
2760	Buckeye	1¾@1¾
2085	Crown Point	31½@35¾
145	...do	b 5	35
115	Con Vir	38@37½
1010	California	7@6¾
30	Confidence	21@20¾
70	Challar	88@87½
715	Caledonia	25@26½
110	Empire Mill	5½@5¾
65	Exchequer	14¾
675	Gould & C	21¼@22
150	...do	b 5	22@21½
140	Hale & Nor	41@40
885	Imperial	43½@43¾
3340	Justice	35@37½
20	...do	b 30	38
70	...do	b 5	37¼@37½
920	Julia	15½@16
320	Kentuck	16½@16¾
2420	Lady Bryan	2½@2¾
490	Mexican	20¾@21¼
525	Overman	62½@61
680	Ophir	56@53¾
515	Sierra Nevada	18@17¾
1685	Savage	17½@18
100	...do	b 5	18
30	Seg Belcher	9
250	Succor	1
655	Union Con	9½@9¾
270	Y Jacket	91@88¾

AFTERNOON SESSION.

330	Alpa	62½
15	Am Flat	1¾
400	Advance	4½
530	Andes	3½@3¾
1850	Alta	3½@4
685	Amazon	2¾@1½
1119	Belmont	1¾@1
230	Bal Con	3¾@4
500	Coso Con	1½
115	Challenge	5¼@5
50	Cosmopolitan	55c
585	Dayton	4¾
460	Eureka Con	16¾@17¼
525	Eldorado S	1@1¼
1100	Europa	1¼
3385	Gila	3¾@3
100	Golden Chariot	75c
200	Glasgow	2
200	Hussey	50c
100	Ida Ellmore	10c
230	Jefferson	4@4¼
50	K K Con	3
830	Kossuth	3¾@3¾
100	...do	b 30	3¾
1040	Leopard	3½@3
500	Glasgow	b 30	4½
425	Lady Wash	3@3¼
2210	Leviathan	2½@2¾
375	Meadow Valley	3
1150	Mansfield	1¼@1.50
350	...do	b 5	1.10
1000	Monumental	60@70c
1050	Mides	9½@8
200	...do	b 30	9
200	N Carson	60c
573	New York	2¾@2¾
70	...do	b 5	2¾
600	Niagara	53c
50	Occidental	3½
950	O G Hill	3½@3¾
765	Prospect	6@5½
100	...do	b 30	6¼
265	Pantheon	60c
573	New York	2¾@2¾
70	...do	b 5	2¾
600	Niagara	53c
50	Occidental	3½
150	Exchequer	14¾@15
550	Empire Mill	5¾@5¾
950	O G Hill	3½@3¾
765	Prospect	6@5½
100	...do	b 30	6¼
265	Pantheon	60c
100	...do	b 5	3¾
50	Rey & Ely	22@21½
125	S Hill	8½@8¾
820	S California	2¾@2¾
360	Utah	14@13½
1948	Woodville	4@3¾

TUESDAY, A. M., DEC. 7.

30	Alpha	10
3125	Best & Belcher	35@36
100	...do	b 30	36
1790	Buckeye	1¾@2
70	Bullion	4¾
925	Buckeye	1¾@2
60	Challar	80@82
1150	Crown Point	33@32½
70	Confidence	20@20
240	Con Virginia	37@36¾
1245	California	6¾@6¾
50	Exchequer	13¾
170	Empire	5¾@5¾
1275	Gould & Curry	19¾@19½
100	...do	b 30	20¼
150	Hale & Nor	37@35
855	Imperial	43½@43¼
100	...do	b 5	8½
1790	Justice	32¾@34
1065	Julia	15@14½
300	Kentuck	16@16¾
2560	Lady Bryan	2¾@2¾
735	Mexican	20½@20
40	...do	b 30	20¼
2090	Ophir	55@52
90	Dayton	4¾
120	Eureka Con	17½@16
2	Europa	1¼
140	Florida	3¼
500	Glasgow	1¾@1¾
160	Gila	3¾@3¾
100	Hussey	50c
150	Jefferson	4¼
50	Knickerbocker	2¾
30	Kossuth	3¾
800	Leopard	10@9¾
160	Lady Wash	2½@2¾
600	Leviathan	2¾
100	Lo	1¾
900	Mides	6½@6¾
145	Meadow Valley	3½@3
30	No Belle	2
240	New York	2¾@2¾
100	N Carson	30c
60	Occidental	3¾@4
300	O G Hill	3
5	Ploche	50c
50	Prussian	1¼
770	Prospect	6@6¾
200	Raymond & Ely	18½@19
760	R Island	3½@3¾
380	S Bill	3@3¾
50	S Justice	3½
480	S California	2½
70	Utah	13¾@14
1480	Woodville	3¾@4
800	Wells-Fargo	30c

SALES OF LAST WEEK AND THIS COMPARED.

THURSDAY A. M., DEC. 2.

165	Alpha	10@19½
1150	Best & Belcher	62@61½
170	...do	b 5	62½
50	...do	b 5	62½
1605	Belcher	29½@30
100	Bullion	5@5¾
150	Buckeye	1¾@1¾
310	Chollar	86½@89
1690	California	7¼@7½
210	Caledonia	24@24
265	Confidence	20@19
530	Crown Point	32@31¼
100	...do	b 5	32
150	Exchequer	14@13¾
550	Empire Mill	5¾@5¾
2015	O & Curry	22½@22
85	...do	b 5	22½
355	Hale & Nor	44@44½
520	Imperial	43½@43
100	...do	b 5	9¼
2315	Justice	51@49
50	...do	b 30	51
3040	Julia	16@15½
500	...do	b 30	16¾
415	Kentuck	16@15½
1860	Lady Bryan	2¾@3
100	...do	b 5	3
540	Mexican	21½@21¾
1875	Ophir	58@56¾
94	...do	b 5	57¼@57
1000	Overman	58¾@60
825	Savage	18@17¾
270	Succor	b 30	19¾
1365	Sierra Nevada	19@18¾
320	...do	b 30	19¾
10	Seg Belcher	8¾
625	Union Con	10@10½
210	Yellow Jacket	88½@87

AFTERNOON SESSION.

250	Alps	59¢
50	Am Flat	2
770	Andes	3¾@3½
600	Alta	2¾
580	Amazon	3¾@2¾
110	Advance	4¾
1790	Belcher	2¾@2¾
150	Baltimore Con	2¾
1280	Coso	1½@1¾
35	Cosmopolitan	50c
1160	California	7¼@7¾
90	Dayton	4¾
120	Eureka Con	17½@16
2	Europa	1¼
140	Florida	3¼
500	Glasgow	1¾@1¾
160	Gila	3¾@3¾
100	Hussey	50c
150	Jefferson	4¼
50	Knickerbocker	2¾
30	Kossuth	3¾
800	Leopard	10@9¾
160	Lady Wash	2½@2¾
600	Leviathan	2¾
100	Lo	1¾
900	Mides	6½@6¾
145	Meadow Valley	3½@3
30	No Belle	2
240	New York	2¾@2¾
100	N Carson	30c
60	Occidental	3¾@4
300	O G Hill	3
5	Ploche	50c
50	Prussian	1¼
770	Prospect	6@6¾
200	Raymond & Ely	18½@19
760	R Island	3½@3¾
380	S Bill	3@3¾
50	S Justice	3½
480	S California	2½
70	Utah	13¾@14
1480	Woodville	3¾@4
800	Wells-Fargo	30c

THURSDAY A. M., DEC. 9.

20	Alpha	18
80	Bullion	4½@4¾
1450	Buckeye	1¾@1¾
1065	Best & Bel	54@54½
1380	Belcher	32½@34
20	Confidence	19½
3470	California	6¾@6¾
198	Con Virginia	36@36½
20	...do	b 3	36½
960	Crown Point	31¾@32
320	Chollar	84	83
50	Caledonia	21@22
135	Exchequer	11¾@12½
445	Gould & Curry	19½@19¾
50	Empire Mill	5¾@5¾
475	Lady Bryan	3¾
275	Mexican	19½@20
1720	Ophir	49½@50
70	...do	b 5	50@49¾
30	...do	b 30	50@51
210	Overman	53½@54
495	Succor	15½@16
60	Seg Belcher	8¾@8¾
920	Sierra Nevada	18@18¾
495	Succor	15½@16
60	Seg Belcher	8¾@8¾
345	Savage	18@18¾
65	Yellow Jacket	88

AFTERNOON SESSION.

150	Alps	62½c
500	Adams Hill	75c
230	Advance	4¾
200	Am Flat	75c
400	Alta	2½@2¾
180	Andes	3¼@3¾
150	Belmont	1¾
150	Baltimore Con	2½
160	Coso Con	1¾
200	Dayton	4¾
120	Eureka Con	15@15¾
50	Eclipse	1¾
100	Europa	1¼
550	Gila	2¾@3
50	Globe	50c
50	Golden Char	50c
200	Hussey	50c
400	Jackson	2
70	Jefferson	3¾
20	Knickerbocker	2
400	Leopard	10
150	Lady Wash	2¾
225	Meadow Valley	3
1200	Mexsfield	1¾@2
50	Mint	3
1746	New York	2¾@2¾
100	Occidental	3¾
150	O O Hill	3
25	Ploche	1
120	Prussian	1¼@1¾
340	Panther	1@1¼
100	Poorman	50c
200	Phil Sheridan	50c
135	Raymond & Ely	20
1250	Rock Island	3¼@3½
180	Sil Hill	3@3½
20	Utah	13½
665	Woodville	3@3¾
270	Pioche	1@75c
100	Poorman	50c
100	Phil Sher	50c
50	Pacific	15c
910	Rock Island	3¾@3½
375	Ray & Ely	22@20
100	S Chariot	75c
100	Sil Hill	3¾
325	S California	2¾@2¾
90	Utah	13½@13
965	Woodville	3¾@3½

The Mining Share Market.

Stocks have been "off" during the past week, prices having shaded down considerably since our last report. The hopes entsrtained of a hig rise was fallacions, for after the recent spurt a falling off has manifssted itself. Some of the dealsrs now think the rise will come after the holidays, aud others pnt it off to "sprinq." Thsre have besn no spscial features in any of ths Bosrds recently worthy of record; the market having been particularly dnll. Ophir, instead of heing at $70, as many hopsd, hss struck ahont $50, whioh is an indication of how ths markst stands.

The Comstock still oomes nohly to the front. Consolidsted Virginia announces its nsual monthly dividend of $1,080,000, notwithstanding ths total dsstrnotion of the hoisting works ol' the miue and the very limited facilities for ore extraction through the Gould & Curry shaft since then. This shows a good mine, good manqement snd finamical ahility, hacked hy a very healthy trsasury. At this mins about 100 tons of ore psr day is heing hoisted through the Gonld & Curry shaft, aud crnshed as fast as taken ont, which will muoh more than pay the running sxpeuses of the mins. Hoisting from the new works has already hegun.

The new works of the Ophir have also bssn startsd up. Thsse works were completsd in the nnprecedently short tims of thirty days. This reflecls grsat credit upon Snpsxintsndeut Cnr-tis and his assistsnts. The Belcher has done well this month too, and ths stock raised a little in consequencs. This old dividsnd paysr may come hack to the ranks soon if it kesps on. The Bslcher and Crown Point companies have sntsred into an agreemsnt whereby the new air shaft is to he sunk jointly hy the two mines and it is to he made a drain as well as an air shaft. Plans and specifications have heen adopted for a large compound condensing engiue and pumping machinery, which is to he procured aud erected in the shortest possible time.

At the California mine the amalgamation mill started up last week on tailinge and pulp saved from the Consolidated Virginia mill hefore it wae hurned. The huilding over the works of the new hsttery mill are finiehed, and the erection of the hatteries and machinery is progressing at a very favorahle rate. Some delays are being experienced in obtaining the right kinds of timber, and in getting the mortars for tbe hatteries from the fonndries. These mattsrs, however, will soon he overcome and everything again in readiness to commence oruehing ore.

MINING STOCKHOLDERS' DIRECTORY.

Compiled every Thureday from Advertieemente in the Mining and Scientific Preae and other S. F. Journale.]

ASSESSMENTS.—STOCKS ON THE LIST OF THE BOARDS.

Company.	Location.	No.	Amt.	Levied.	Deling'nt.	Sale.	Secretary.	Place of Business.
Caledonia S M Co	Washoe	15	3 00	Nov 1	Dec 4	Dec 23	R Wegener	414 California st
Cedarberg O M Co	Cal	5	50	Nov 9	Dec 9	Dec 30	R Brown	215 Sansome st
Cherry Creek M & M Co	Cherry Creek	5	25	Oct 21	Nov 29	Dec 27	D F Verdenal	409 California st
Crown Point Ravine M Co	Washoe	3	25	Dec 7	Jan 12	Jan 31	J M Buffington	311 California st
Empire M Co	Idaho	11	50	Oct 23	Nov 29	Dec 20	W Willie	419 California st
Florida S M Co	Nev	3	50	Nov 5	Dec 11	Jan 3	L Hermann	330 Pine st
Globe Cons M Co	Washoe		50	Dec 3	Jan 7	Jan 28	J Maguire	419 California st
Gould & Curry S M Co	Washoe	24	1 00	Oct 26	Nov 27	Dec 18	A K Durbrow	309 Montgomery st
Hale & Norcross S M Co	Washoe	48	5 00	Nov 9	Dec 11	Dec 31	J F Lichtner	Nevada Block
Imperial S M Co	Washoe	25	1 00	Nov 9	Dec 14	Jan 4	W R Dean	419 California st
Justice M Co (New Stock)	Washoe	17	1 00	Nov 26	Dec 20	Jan 18	J S Kennedy	Merchants' Ex
Lady Bryan M Co	Washoe	10	1 00	Nov 30	Jan 4	Jan 25	F Swift	419 California st
Lady Washington M Co	Washoe	6	50	Nov 4	Dec 9	Dec 28	H C Kibbe	419 California st
New York Cons M Co	Washoe	16	1 25	Oct 27	Dec 1	Dec 20	H C Kibbe	419 California st
New York M Co	Washoe	7	75	Oct 27	Dec 1	Dec 20	H C Kibbe	419 California st
North Bloomfield Gravel M Co	Cal	40	1 00	Oct 21	Dec 3	Dec 20	T Derby	320 California st
Pauper M Co	Idaho	6	20	Nov 9	Dec 15	Jan 6	W F Bogart	402 Montgomery st
Pioche S M Co	Ely Dist	10	50	Dec 1	Jan 11	Feb 8	G E Elliott	419 California st
Pictou M Co	Washoe	9	25	Nov 26	Dec 27	Jan 14	S Phillip	408 California st
Poorman G & S M Co	Idaho	4	50	Nov 24	Dec 29	Jan 18	W Willis	Nevada Block
Raymond & Ely M Co	Pioche Dist	5	3 00	Nov 5	Dec 14	Jan 10	T W Colhurn	418 California st
Savage M Co	Washoe	20	5 00	Oct 8	Nov 10	Nov 29	E B Holmes	419 California st
Sheba S M Co	Nevada		10	Oct 27	Nov 29	Dec 22	A Halsey	200 Montgomery st
Tiger M Co	Cornucopia	2	10	Oct 29	Dec 8	Dec 28	Frank Swift	419 California st
Truy Cons M Co	Washoe		20	Oct 22	Nov 26	Dec 17	S C Herbert	535 Clay st
Woodville O & S M Co	Washoe	12	1 00	Nov 4	Dec 8	Dec 27	W M Helman	309 California st
Woodville Con M Co	Washoe	4	1 00	Nov 4	Dec 8	Dec 27	W M Helman	309 California st

OTHER COMPANIES—NOT ON THE LISTS OF THE BOARDS.

American Nevada M Co	Washoe	1	10	Dec 4	Jan 10	Feb 2	L Hermann	330 Pine st
Black Hawk G al M Co	Cal		5	Oct 25	Dec 24	Jan 15	H A Powell	520 Montgomery st
Cariboo Hydraulic M Co	Plumas Co	Cal	1	20	Nov 1	Dec 6	C W Reed	Sacramento City
Cloverdale M Co		Cal	3	2 00	Oct 15	Nov 18	Dec 15	308 Clay st
Cons Pe e M Co	Peavine District		9	25	Oct 13	Nov 13	Dec 13	J H Borland	Reno, Nevada
Constitution M Co	Cornucopia	Dist	2	10	Oct 29	Dec 4	Dec 24	Frank Swift	419 California st
Edith Quicksilver M Co		Cal	6	15	Nov 24	Jan 3	Jan 20	W Stnart	113 Leidesdorff st
El Dorado Water & D G M Co		Cal	12	20 00	Nov 15	Dec 16	Dec 31	H Elias	427 Montgomery st
Electric M Co	Butte Co	Cal	7	5	Nov 26	Jan 3	Jan 22	A S Paul	318 California st
Equitable Tunnel & M Co		Utah	11	20	Nov 12	Dec 18	Jan 7	C S Healy	Merchants' Ex
Geyser Q M Co		Cal	2	10	Nov 20	Dec 27	Jan 24	F H Rogers	Academy Bldg
Great Eastern Cone Q M Co		Cal	1	25	Oct 30	Nov 30	Dec 18	J G Riley	331 Montgomery st
Howard Hill M Co	Grase Valley	Cal	5	50	Nov 26	Jan 5	Jan 27	F J Hermann	418 Kearny st
Kearsarge Con Q M Co		Cal	3	15	Nov 4	Dec 10	Dec 30	J McGuffie	105 California st
Kennedy M Co		Cal	11	1 00	Nov 1	Dec 6	Dec 27	A Wissel	210 California st
Lake Mining Co	Napa Co	Cal	4	20 00	Nov 3	Dec 6	Dec 27	R F Knox	19 & 21 First st
London Quicksilver M Co	Napa Co	Cal	3	60	Sept 30	Nov 10	Dec 10	A Halsey	200 Sansome st
Los Prietos M Co		Cal	4	30	Nov 12	Dec 31	Jan 25	S H Smith	6 Montgomery Av
Mariposa Land & M Co		Cal	3	1 00	Nov 30	Dec 31	Feb 1	L Leavitt	309 California st
North Fork M Co	Plumas Co	Cal	9	25	Nov 2	Dec 6	Dec 23	A Martin	520 Washington st
New Coso M Co	Inyo Co	Cal	1	50	Oct 28	Nov 30	Dec 23	D F Verdenal	409 California st
Oceanic Quicksilver M Co		Cal	2	50	Oct 22	Nov 23	Dec 13	C G Funk	438 California st
Ocean View Q M Co		Cal	1	50	Nov 4	Dec 5	Dec 28	D Buck	309 Montgomery st
Omega Tnle Mt M Co		Cal	8	5	Dec 2	Jan 3	Jan 24	D Wilder	Merchants' Ex
Orleans M Co		Cal	8	2 00	Oct 27	Nov 30	Dec 18	Geo P Tbnrston	315 California st
Owyhee Water & Oravel Co		Nev	1	30	Nov 1	Dec 15	Jan 15	J E McDonald	405 California st
Panther M Co	Cornucopia		2	25	Oct 23	Dec 1	Dec 20	Frank Swift	419 California st
Peytona G & S M Co	Nevada			5 00	Oct 23	Nov 30	Dec 18	W Sansome st	218 Sansome st
Pioneer Gunning Co	Cal			5	Nov 30	Dec 17	Jan 12	W Aug Knapp	116 Leidesdorff st
Stanislaus River M Co		Cal	6	20	Oct 29	Nov 30	Dec 17	W Stuart	113 Leidesdorff st
South Comstock G & S M Co	Washoe		3	25	Nov 11	Dec 16	Jan 4	J M Buffington	309 California st
Table Mt Alpha M Co		Cal	9	10	Oct 29	Nov 30	Dec 20	L Leavitt	401 California st
Union Gravel M Co		Cal	12	1 00	Oct 21	Dec 3	Dec 20	T Derby	320 California st
Ward Ellis S M Co	Nevada		4	10	Oct 22	Nov 29	Dec 18	J M Buffington	311 California st
Webfoot M Co	Nevada		2	20	Nov 11	Dec 13	Jan 4	D A Jennings	401 California st
West Point G & S M Co	Cal		2	10	Nov 10	Dec 31	Dec 13	L Kaplan	Merchants' Ex
Woodside M & M Co	Cal		3	25	Nov 24	Jan 4	Jan 24	J Oliensworth	335 Montgomery st
Young America M Co	Nevada		1	25	Oct 27	Nov 29	Dec 18	R H Brown	40 Montgomery st

MEETINGS TO BE HELD.

Name of Co.	Location.	Secretary.	Office in S. F.	Meeting.	Date.
Andes S M Co	Washoe	M Landers	Nevada Block	Annual	Dec 18
Boston Cinnabar M Co	Cal	C Allenberg	438 California st	Special	Dec 20
Coe G M Co	Cal	A Treadwell	426 California st	Annual	Dec 15
Empire Mill & M Co	Washoe	C S Curtis	419 California st	Annual	Dec 15
Garrison Cons M Co		J M Buffington	311 California st	Annual	Dec 15
Georgia S M Co	Washoe	R Wegener	414 California st	Annual	Dec 21
Golden Crown M Co	Nevada	Daniel Beck	Nevada Block	Annual	Dec 27
Golden San G M Co		Joseph Pentecost	702 Market st	Annual	Dec 13
Gould & Curry S M Co	Washoe	A K Durbrow	Nevada Block	Annual	Dec 18
Gray Planet G M Co	Nevada	J W Tripp	409 California st	Annual	Dec 14
Hogdon M & M Co		J M Moore	Montgomery Block	Annnel	Dec 24
Indepe dence Cons M Co	Grass Valley	F J Hermann	418 Kearny st	Annual	Dec 13
Lord's Lone G & S M Co	Washoe	S H Carlisle	13 Fremont st	Annual	Dec 13
Ophir M Co	Washoe	Jos Marka	419 California st	Annnal	Dec 15
Theresa M & M Co		J W Tripp	408 California st	Annual	Dec 17
Troy Cons G M Co		S C Herbert	535 Clay at	Annual	Dec 13

LATEST DIVIDENDS (within three months)—MINING INCORPORATIONS.

Name of Co.	Location.	Secretary.	Office in S. F.	Amount.	Payable.
Black Bear Quartz	Cal	W L Oliver		25	Sept 13
Cons Virginia M Co	Washoe	Chas H Fish	401 California st	10 00	Dec 11
Empire M Co	Nevada Co	Cal D A Jennings	401 California st	50	Sept 15
Indian Queen M & M Co		A K Durbrow		50	Oct 11
Northern Belle M & M Co		W Willis	419 California st	1 00	Oct 15
West Comstock G & S M Co	Washoe	Oliver G Wood	534 California st	50	Dec 21

MINING SUMMARY.

THE following is mostly condensed from Journale published in the interior, in proximity to the mines mentioned.

California.

AMADOR.

RICH ROCK.—Amador *Ledger*, Dec. 4: We are informsd that at Pine's mine, at West Point bridge, thsre are some 160 tons of rock on the dump, whioh will avsrage $40 to the ton. The work of crushing is heiug pushed forward. Some six or sight men are employed on the claim.

GRIZZLY HILL GRAVEL MINE.—James Hsll & Co., ths owners of thie claim, which is situatsd at Volcano, have just completed the laying of 3,000 ft of pipe, and are now engaged in oleauing out the ditoh, preparatory to the commencemsnt of miniug operations. The mine will he in full hlast in a few days.

ALPINE.

EXCHEQUER.—Alpine *Chronicle*, Nov. 27:—A large number of the men of this miue have heen at work on the company's road this week.

ADVANCE.—Most of thie week has heen spent in huilding an engine house.

BUTTE.

MINING. — Oroville *Mercury*, Dec. 3: It is only occasionally that we see a miner in town now-a-days, and then only for a minute at a time, as he runs from store to etore. The raine that have fallen, very moderately so far, have sosked the gronnd now so that it is full of weter. The ditches are all full and the contiuuous raine keep them so. On every mining claim the men, enveloped in rnbher hats, coats, pante and hoots, can he seen fnnrrying here and there, turning the different stresms so as to make the best possible nse of them. More than nsual preparations have heen made in all the claims for carrying on the hnsiness thie winter, and we shall he greatly surprised if a greater golden harvest is not gathered than duriug any previons year. Every prospect points that way now.

ELEOTRIO MINE.—We hear thst a body of excellent ore has hsen struck in the Electric mine. As the rains have hesn sufficisut to furnish all the water needed to crush the rock, we shall expeot to hsar a good acconnt of it soon.

AT WORK.—The Bidwell hsr clsim, owued by A. J. Severance, is hsing put iu a condition for working. In s few days the chiefs will get into positiou to storm the auriferous hanks. C. M. Ury superintends the work, and as he is an experisuced miner the prospect is flattering for a good harvsst.

INYO.

MILL FOR LEE DISTRICT.—Inyo *Independent*, Dec. 4: This district, ahout which hut little is generslly known, lies some fifteen miles north of Darwin, toward Csrro Gordo. It is said a mine there of great promise has heen so far developed as to justify the erection of a mill, and that Mr. Lynch, one of the owusrs, has the machinery now on the wsy to put one np.

IMPORTANT IF TRUE.—It is reported, and we are disposed to helisve the report true, that a settlemsut of ths Ssn Fslipe Union mining suit has heen effected, and that iu consequence prospsrons timss will again smile on Cs

the Kearsarge company, arrived here this week. He comes with the view of inaugurating active work on the mine at once, or immediately after the arrival from San Francisco of another member of the company, expected daily. The plan is to keep a small force at work taking out ore during the winter, and to start the mill and put on a full crew as soon as practicable in the spring. Since Mr. Gray's last visit here he has devoted time and money to systematic tests of the Kearsarge ores, to determine what process holds out the best inducements. We are not able to state the final conclusion on the point further than to say that it is found that the ordinary process, such as has been adopted in the Kearsarge mill heretofore, will give no more than 35 per cent. from the rich ores taken from the deeper workings, say below 200 ft.

Coso District.—Coso *Mining News*, Dec. 4: The developments in our mines during the past week have been of most satisfactory character and our superintendents all wear smiling countenances, for every stroke of the pick reveals new treasures and gives additional cause for congratulation. Our review is principally confined to those mines that are being prospected extensively, the results from which are being watched with deep interest by all. The principal mines are open for inspection to all desiring accurate knowledge of their condition and are daily visited by residents and strangers who come away with enthusiastic praises over their magnificent appearances. The Defiance furnace is at last completed, and after a few preliminary tests will be kept constantly running.

KERN.

The Somner Mine.—Kern County *Courier*, Dec. 4: Senator Jones is expected at Kernville next week, on a flying visit to his mine before his departure for Washington. Although not making as much noise as other places, the Sumner mine is probably the best piece of property the Senator has. Under the efficient management of Burke, although it is very low grade ore on the average, it is one of the best paying mines in the State—$75,000 to $100,000 per month, we are informed, being its net profit to the owners. All the conditions of this mine seem to be of the most fortunate. The lead is very wide, the rock of uniform richness, all the rock extracted paying. The mill is run by water, of which there is an abundant and never failing supply, and the new eighty stamp mill is furnished with all the latest and most approved appliances for economizing time and labor and saving the precious metal. The management is now engaged in sinking to a still greater depth, and at the point reached last week the workmen had struck a body of rock that gives seventy-five dollars in gold to the ton. This is very much higher than the usual grade of ores, and as they still descend they have every reason to expect to strike a veritable bonanza.

NAPA.

Magnificent Specimens.—St. Helena *Star*, Dec. 2: We are in receipt of some beautiful specimens of cinnabar and black oxide of mercury from the Phœnix mine, Pope valley. They are handed us by a gentleman just over from that mine, and he says things look well, and are in good shape. The new furnace, with its double fire-place, does splendid work, with half the amount of fuel formerly used by the old one. We would suggest to the superintendent that if he has many such specimens left he should send some of the finest to the Centennial exhibition. We should give Napa county as high a place as possible in the forthcoming exhibition, as the other portions of the State are striving to be represented in all ways and shapes as regards both agricultural and mining resources.

NEVADA.

Our Mines.—*Foothill Tidings*, Dec. 4: Our quartz mines continue to send out bullion at about the same rate as before the rains set in. Idaho, Empire, Omaha, New York Hill and others of our producing mines keep right on as if no rainy season was here.

The fire-proof building to cover the new hoisting works at the Idaho mine, was on the verge of completion when the heavy rains set in. Not much show to work at it since, but a few days of fair weather will see it through.

PLACER.

The Krueger.—Placer *Argus*, Dec. 4: The Kidder claim at Iowa hill has been running for some time with encouraging prospects.

The Bay State and North Star claims at Gold Run are in full blast, washing out the gravel.

There is a pile of hydraulic pipe at the station. It belongs on the Michigan Bluff divide.

Griffith's granite works at Penryn are turning out some splendid monuments.

More hydraulic claims will be worked in Placer county this season than ever before.

The jury in the Iowa Hill canal case returned a verdict for the company.

The Auburn gravel mine is running again.

The St. Patrick mine is looking better than ever.

Two little giants have been received at the depot; one for T. Harper, at Todd's valley, and the other for Ryan & Middleton, Michigan Bluff.

Iowa Hill is looking up. Its future prospects are bright with promise, and before long it will be the best mining town in the county. The Iowa Hill canal did it.

Dutch Flat Mines.—Placer *Herald*, Dec. 4: The Yankee claim is, we believe, the largest in the district. It employs 25 men on the day shift and about half that number on the night shift. This company is now running a tunnel from Bear river to tap the bottom of their immense gravel deposit. The tunnel is now in 1100 ft, about one-third of its proposed length. They have been washing for some time, but owing to a break in one of their pipes, a detention of a day or so was caused. Another walk of about one mile across a section of country, the surface of which had been washed off, and we arrived at the North Star claim. This claim commenced washing a few days ago, but after a short run, cleaned up, and were putting in new riffles in their sluices through their tunnel. The usual run in all the mines before cleaning up is from 25 to 30 days. We then visited other mines in the immediate vicinity, on which work was apparently being pushed ahead rapidly. The Jehosaphat, Central and Pacific have all commenced washing since the rain, and are running day and night shifts. The Badger shaft, Boston, Franklin, Dutch Flat and Buckeye tunnels are all being driven with vigor. Some few claims in this district have not commenced washing yet, owing to not being in readiness for such an early rain. Altogether the mining interests of this section are being permanently developed, and the prospects for its future prosperity are indeed flattering.

PLUMAS.

Crescent.—Plumas *National*, Dec. 4: The company now owning and working the Crescent mine are getting fairly at it, and under the management of the superintendent, Mr. Pardy, everything goes along smoothly, and the investment promises to be a good one. When work started up, some time ago, the mine and mill had to be thoroughly reconstructed and set to rights. About $7,000 has been the outlay, and the mine has already yielded over $4,000, and is improving steadily. The rock crushed, so far, averages $7.75 per ton, and it would be easy to pick rock that would pay big figures A shaft is now being sunk from the 2d to the 3d level of the mine. We congratulate the managers on the good results obtained, and hope the old Crescent will continue to "ante."

SAN BENITO.

The Quicksilver Mines.—Hollister *Enterprise*, Dec. 4: The late heavy rains have retarded work to some extent in the quicksilver mines of the Coast range, yet several hands have been at work all along in the Consolidated Wonder claims. Two tunnels are being driven; one is in 100 ft, and the other 50 ft. Mr. Shackelford, who returned from the mines Wednesday, thinks they will strike a heavy body of metal in both tunnels, in the next 100 ft. A new ledge of the richest ore yet (much of it assaying 25 per cent.) has been opened in the last few days, in the vicinity of the Consolidated Wonder mill site. It is said to look very promising; in fact, developments go to prove that these mines will turn out even better than was first anticipated. A large and very rich body of ore has also been recently struck in one of the Stayton mines, near the furnace. Bob is running a tunnel on the new discovery, night and day, and expects to open up, within a few days, an ocean of cinnabar. There is now no question about the wealth of these mines.

SAN DIEGO.

Julian District.—San Diego *Union*, Dec. 2: The Helvetia mining company have bought the Willow Glen company's ten stamp mill. The negotiation for this purchase has been pending for several days, and the sale was completed yesterday. The Helvetia company have taken possession and have started the teams to hauling ore to their new mill, which will be kept running continuously. We may expect to hear from them quite often in the future.

Clean-Up.—San Diego *World*, Nov. 27: From Mr. Hamilton we learn that the Chaparal mine of Julian cleaned up thirty tons of rock a few days since that netted a little over $2,000. The Ella is at work and taking out some good rock. He also reports the country between here and Julian as beginning to put on its holiday attire of green.

STANISLAUS.

Quicksilver.—Stanislaus *News*, Dec. 3: Covert & Co., on the Waterford claim, have repaired their retort and are again smelting out quicksilver. The Orestimba company is also getting out a pretty fair grade of ore. Other companies are likewise at work. Grayson, the headquarters of the quicksilver miners of the county, still talks bonanza language.

SONOMA.

Local Mining Items.—*Russian River Flag*, Nov. 27: Hedge Reynolds, now residing with his family at Pine Flat, was in town the fore part of the week. From him we obtain the following news items: Being appointed special constable by Justice Williams, he has just sold all the attachable property of the Anna Belcher mine. The Blue Jacket has shut down, but will resume in about three months. The American is running with a force of 20 to 30 men. The Wall Street is working a force of 70 or 80 men. The Oakland force is about 40 men. Their carpenters having come down to the Flat it is supposed that the new furnace is completed, and that they will soon be extracting mercury from the immense body of ore they have accumulated on the dump. The Denver company have proposed to the Hope that if they will consolidate and issue with them entirely new stock they will return to them one-third of all expenses they have been to in working the mine thus far. It is supposed that the Chicago will also be incorporated in the proposed new company.

TRINITY.

Damage by the Storm.—Trinity *Journal*, Dec. 4: The warm and heavy rain of Sunday, Monday and Tuesday necessarily raised all the streams in this section, the freshet being greater than since the flood of 1861-62. The big flume in Weaver creek stood the raise remarkably well, and has now been thoroughly tested. About twenty-five boxes at the head were entirely covered and filled with tailings, brush, logs, slabs, and other debris from the dams in the creek above, but the lower end of the flume and the race below worked admirably well. The covering of the upper end of the flume, we are told, has not damaged it to any extent, and under the judicious management of Superintendent Davidson, it will be in running order the whole length, in three or four days.

The Weaverville ditch and hydraulic mining company suffers somewhat by a slide on the line of ditch above the tunnel on West Weaver. The break is now being repaired, fifteen boxes of flume being put in across the gap. The principal loss to the company will be the loss of water during the time necessary to make the repairs, but the superintendent promises that the work shall not be kept back a moment longer than is absolutely required to put the ditch in running order again.

Owing to some accident, the nature of which we did not learn, Mr. Woodbury had the blocks torn from about forty boxes of his Garden Gulch flume. Ten days will be required to repair the damage and put everything in running order once more.

TUOLUMNE.

Cuispas.—*Union Democrat*, Dec. 4: A number of parties residing in Sonora have in the course of their wanderings around town found small chispas and gold bearing quartz varying in value from $2.50 to $20, the late rains having washed the miniature nuggets from their hiding places.

Mill Running.—The mill on the New Albany mine commenced running last week. The indications in the mine itself are good.

Nevada.

WASHOE DISTRICT.

Crown Point.—Gold Hill *News*, Dec. 2: Daily yield, 425 tons of ore. The ore stopes are looking well and continue to afford a supply of ore sufficient to keep the mills steadily running up to their full working capacity. A winze is being sunk below the 1500-ft level, which is now down 55 ft, the bottom in ore of a fair quality. A drift south on the 1600-ft level is being run to reach a point under this winze where an upraise will be started to meet it for ventilation purposes.

Lady Washington.—The bottom of the shaft is in somewhat better sinking ground. No increase of water, and what does come in is handled by the pump with perfect ease. The monster engine, duplicate of the one at the C. & C. shaft, Virginia, operates with the regularity of clockwork, smoothly and almost without noise. No finer piece of machinery is in existence.

Julia.—The bob-pit and pump station at the 1600-ft level is finished, and sinking the shaft resumed. The main southwest drift, on the 1400-ft level, is steadily advancing, the face in quartz and porphyry, with a considerable seepage of water coming in.

Yellow Jacket.—The south drift from the north winze on the 1940-ft level is in a distance of 111 ft, the face of both drifts being dry, good running ground, very favorable for making rapid progress. This leaves about 200 ft for the two drifts yet to run to connect with each other. No material change to report of the cross-cuts on the 1740-ft level.

Sullivan.—Tunnel is 230 feet to-day, and only about 36 feet further to go in order to connect with the shaft. The last 180 feet has been entirely in the very promising vein matter heretofore mentioned, and the shaft, having developed 32 feet of the same, shows it to be about 200 feet in width between the walls, both of which are well defined. This is no doubt a true fissure, and when a proper depth is attained good pay ore and plenty of it will be found. Some streaks and bunches of ore have been met with the past week, assaying as high as $40 to the ton. Grading at the surface for the hoisting works goes ahead energetically.

Lady Bryan.—The shaft is down 550 feet, at which point the sinking has been stopped for a few days, pending the putting in of a pump and box at the 500-ft station. As soon as the pump is finished, sinking the shaft will be resumed. Driving the cross-cut from the main south drift on the 170-ft level is making good headway. It is now in 25 feet. The winze below the 250-ft level is being driven downward at the rate of three feet per day.

New York Consolidated.—The cross-cut at the 800-ft level is progressing finely, and the fine vein of ore, mentioned a day or two since in this paper, as having been found at that point, is opening out very encouragingly, showing promise of a valuable development. Water gives no trouble, there not being much, and what there is the machinery handles without difficulty.

Sierra Nevada.—The main west drift on the 1000-ft level is rapidly advancing, the face in more favorably looking ledge material.

Leo.—Prospecting goes on vigorously, as usual. Face of main drift, from bottom of winze, still in very promising ledge material. Cross-cut from main drift shows more quartz and better indications now than at any time heretofore since it was commenced.

Chollar-Potosi.—Daily yield, 60 tons of ore, the assay value of which is $28 per ton. No change in the appearance of the ore breasts.

Amazon and Glasgow.—Both the north and the south drifts on the 350-ft level show an improvement, and particularly the north drift, the ledge widening and improving in appearance daily.

Buckeye.—The damage to the pump-rod is repaired, and the sinking is going forward as usual. It is now down 60 ft below the 350-ft station.

Florida. — Some very rich streaks and bunches of ore have been passed through during the week, and the prospects of running into a very desirable bonanza are very flattering.

Justice.—The ore at the 600-ft level shows still further improvements in both quality and quantity, and at the 800-ft level the main ore body is evidently reached by the south drift, assays of from $150 to $200 being obtained. The present prospects of the mine are very flattering

Original Gold Hill. — Extraction of ore from the south ore body continues at the rate of about 25 tons per day, which is accumulating in the dump, and hauling it to the mill will commence shortly, a contract being let for that purpose. A new blower, to supply the north drift, starts into operation to-day, and good ore developments are looked for in that direction very shortly.

Nevada.—A drift north is being run from the cross-cut, in the center of the main ledge. This drift is in fine looking vein matter with streaks and bunches of low grade ore.

Leviathan.—Face of main north drift at the 450-ft level in ore of rather poorer quality than heretofore, yet the vein is strong and promising, and the ore already developed at this level is of considerable value, even if no more is discovered without striking deeper.

Globe Consolidated.—The northeast drift on the 350-ft level is steadily advancing, following the west wall of the ledge, the face in quartz of a fine character, carrying spots and bunches of excellent ore.

Bullion.—Sinking the main incline is making excellent progress. The face of the main north drift on the 1700-ft level is still in quartz and ore of a very encouraging character. The new combination drift on the 2000-ft level is also going ahead finely.

Europa.—The main west drift on the 320-ft level is in a distance of 240 feet, the face in very favorable working ledge material.

Woonville Consolidated —The control of this mine has passed into the hands of the owners of the Justice mine. All work has been suspended for the present, the workmen discharged and the mine virtually shut down for the present.

Hale & Norcross.—Over 100 ft of the main shaft have been retimbered and enlarged. Every effort is being used to complete the repairs at as early a moment as possible, as no work can be done in the mine until that is finished.

Imperial-Empire —Daily yield, 40 tons of ore. The ore breasts are looking well, and show an improvement going southward on the 1900-ft level.

Baltimore and American Flat.—Sinking the main incline is making better progress than for some time past, the rock in the bottom blasting out well, there being no water whatever to interfere.

Dayton.—The new pump at the 500-ft station is nearly in, ready to resume sinking.

Gould & Curry,—Everything is in good working condition, and the water is being extracted from the 1700-ft level, preparatory to resuming work in that portion of the mine.

Silver Hill.—The chutes for dumping ore and waste rock at the head of the main incline are nearly finished. Timbering the main incline is making good progress.

Best and Belcher.—Nothing doing below the 1500-ft level, owing to delays of the Gould & Curry pumping machinery in keeping down the flow of water.

North Carson.—Prospecting and ore development at both the upper and lower levels progressing at a lively rate.

The Richmond.—The Eureka *Sentinel* is informed that the Richmond mine has never presented so favorable an appearance as at present. At the 600-ft level fine bodies of ore have been struck, all of which are making downward, and everything indicates that they are on the croppings of a bonanza, which extends indefinitely in the direction of the center of gravitation. As that depth in the Richmond is at least one hundred feet lower than the deepest workings of any other mine on Ruby hill, the recent discoveries are encouraging evidence of the permanency of the deposits in that vicinity.

The machinery of the Meadow Valley mine, instead of being shipped on December 1st from this city, will not be sent to the mine until spring. The mine will be worked as usual, as it is paying its own expenses.

The Belcher and Crown Point mining companies have agreed to join forces in the further sinking of the big air shaft. It will be used both as an air and pumping shaft.

The St. Patrick mine, (Placer county,) shipped on the 5th inst., $13,216 as the product of nineteen days run. The next clean-up will be on January 2d.

Nicholas Coates, a miner employed at the Williams mine, on Prospect mountain, was killed on Wednesday morning by a cave in that mine.

The Petaluma *Argus* says there is some talk of forming a Stock Board in that city to supply a much needed want.

Improvements in Central Nevada.

From a letter of a correspondent of the *Bulletin* on "the Mining Interests of Central Nevada," we make the following extracts:

In jonrneying through the varions mineral districts of Western and Central Nevada, one at all acqueinted with their previous history gets the impression that great advsnces have here been made of late in the business of mining for the precious metals. Nor bave these advances been confined to any single department of this industry. They are general, and go to every province and aspect of it. The very *morale* nf the business has been elevated. A better oode of ethics begins to obtain in these mining communities. The distinction between the fellows who forcibly seize the treasure of the express company and those engaged in vending hogns properties or in promoting frandulent mining schemes is not now so broad as it once was, and the growth of this sentiment calls for gratulation no less than the material progress that has heen made. It should be remarked thet these improvements so universal and noteble have not resulted from the introduction of any new process or invention tending to greatly relieve the husiness from the burdens that most oppress it, uor the occurrence of sny other single event working to that end, bnt simply express the aggregate miner gains achieved during the period mentioned. It is true, many important mineral discoveries have meantime heen made and the mines are generally looking well, while of inventions, some of them really valuable, there has been no lack, yet the advances alluded to have been mainly dne to causes loss controlling and more generally diffused.

Fifteen years have now elapsed since the discovery of silver-bearing deposits on this side the Sierra Nevada drew hither a considerable population from California. The majority of this popnlstion, which was largely made up of men accustomed to deprivation and toil, once nver the monntains have since remained here engaged in searching after, locating snd working the metalliferous lodges that here so abound. Ignorant of the very alphabet of the bnsiness they had everything to learn, snd they had to learn it in one of the roughest schools in which any set of tyros ever received their trsining. But they hsve learned it well—so well that can do their work better, under the circumstances, than could any other cless of men hnwever learned or practically skilled in their vocation as elsewhere pursued. It must be admitted thet these off-hand miners made meny mistskes at first. But not more perhaps than would have been made by any other set of men, the most of them being unavoidable. Latterly these mistakes have not, in the field of practical mining, been serious or many—scarcely more thsn are incident to most other active pursuits.

New Mining Appliances.

Prsoticing his calling under so msny difficulties, the miner here has become observant, inventive and self-reliant. Marvelous are the mske-shifts wherewith he contrives to get on in the absence of those ready made utensils and helps always at hand in older communities. With the imperfect implements he improvises from the soanty material within reach a tolera ble substitute for these unless, to be sure, he mansges to dispense with them altogether. His resources are exhaustless; no man is so rich in expedients or so dextrous in their application as your mountain schooled miner. He extricates himself from a tight place with a facility astounding to the novice. The devices suggested by his ingenuity or bred of his necessities are strange, manifold and almost always simple and efficient. The fruitfulness and versatility of his genius are shown in all his works—in the shop, the mine, the mill and the furnace—everywhere may be detected some original labor or money esving contrivsnce, with endless economies effected in the mechanism, manipulations a nd metallurgy of the gold and silver gathering art. Wood and stone are made to perform the duties of iron, and when steam is beyond bis resch recourse is had to man or mule power. Where he cannot get English fire brick to line his furnaces, he prowls about and somewhere in the neighborhood finds a stone or clay that answers as well, or perhaps better; snd so, while supplying a present, provides agsinst a costly and constsntly recurring want. If mineral coal is not to be hsd he uses charcoal, and when wood fails him altogether, sage brush is made to answer for fuel. He is a subject for wonderment, this Nevada miner, with the disciples of Freiberg and Swansea, who are not more amazed at hie audacity than soandalized through hie shameful departure from the rules of science. But there is no controverting the fact that he opene the mines, gets out the ore and very often extracts the metels as cheaply and well as those men who have enjoyed the benefits of professional instruction and the opportunities of the schoole. It must not be inferred from what hae been said that the miners here neglect to read and study the various worke treating upon subjects connected with their calling. The most of them are well supplied with these and are tolerable conversant with their contents; yet, ae a oless, they seem lese disposed to be governed by the formulas laid down in the hooks, than by a knowledge acquired in practice.

Superior Work—More Bullion and More Profits.

As a general thing the work now being done is much more systematic and thorough than formerly, while the mills and other structures pnt up are so superior to those erected only a few years ago that the latter beside them seem mean and poor. Nor does this snperiority consist in mere adornment and show (of which there was sometimes too much in the esrly dsys), but in the greater excellence of the machinery and the outfitting generally. Everything is now provided with an eye to utility snd service rather than outwsrd display. Already these all prevading improvements are beginning to tell on the gross product of the Nevada mines, though it will yet be some little time before their full effect will be felt on the resultant net profits, inasmuch as heavy expenditnres have sometimes been incurred in the construction of new machinery, the elaboration of improved processes and the promotion of various much needed reforms. Vast sums have been disbursed in the exploration of the mines and in other preliminary labors yielding no immediate return, but from which ample benefits will in due time inure. Latterly but few investments have been made here resulting in loss or that can be considered oommeroisily perilous. Some, at one time regarded as hopeless, promise now to prove remunerative and may even bring large gain to the investors. Viewed as a whole, the mining outlook for Nevada is certainly much better than ever before. The bullion prodnct of the State, which last year amounted to thirty-five and a half millions, will this year exceed forty, with a generally increased percentage of net earnings. * * * * * * *

Railroad Building.

The final completion of the narow-gauge railroad from Palissde to Eureka will grestly advantage both the mining interest and the town itself. The heneficial effects of oheapened and qnickened transportation are already being felt, not only in the vicinage of that place, but even as far south as here; and the extension of this road to Tyho cannot long be delayed, ths necessity therefor being now nesrly as stringent as that which existed for ite construction to Eureka at the time it was commenced. The distance between its present southern terminus and this csmp is only ninety miles. The intervening, and, indeed, the whole country clean on to the Colorado river, cousisting of a smooth, open plain, offering much fewer obstacles to railroad construction than would be encountered along any of the great interior valleys of California. Having once surmounted a low divide in the immediate neighborhood of Eureka, there would be no more elevation to overcome, nor would any embanking, deep cutting or bridging of consequence be required along the entire route, covering a distance of nearly 300 miles. The mountains on either side of this great plain are full of mineral wealth, the mining districts of Spring valley, Secret canon, Morey, Hot creek, Tyho and Reveille having already heen organized in the several ranges that skirt it on the west, with Grant, Troy, Tem-Piute and Groom in those lying to the east. But with all their wealth population is sparse and improvemont is backward here, but little having been done except in Tybe, Reville and one or two other districts, fortunate enough to have obtained aid from abroed.

Should the English company here carry out the comprehensive plans now entertsined by them, their businesa alone would almost justify the bringing on of the road to this point. Having lately purchased a eet of mines lying near and really more valuable than those first owned by them, they purpose now the erection of additional furnaces, and such an extension of their entire operations as must insure the production of immense quantities of crnde bullion, and call for the importation of heavy supplies. Their patrouage alone would go far toward giving a fair support to a road built and run as cheaply as this might he. Bnt theirs would not constitute a tithe of the transportation required to be done were the road laid down this far.

The region covering several parallel rangee of mountains, lying on either side of the great central plain mentioned, and the whole country south to Arizona, would become tributary to this road, and there are few districts of like extent richer in mineral resources than this. Once built to this point there would, in fact, soon arise a necessity for continuing the road further south. As it progresses in that direction numerous brsnches would be built for the sccommodation of the mines that everywhere exist throughout these lateral ranges, and thus the entire country, now so isolated and difficult of access, would in the course of a few years he supplied with a system of cheap but serviceable railroads, of which this pioneer would become the grend trunk, connecting the whole with San Francisco, through the Central Pacific on the north, and through such other roads as may hereafter be built along more southerly routes.

This portion of the State has a great and prosperous future before it, and may well challenge the attention of capitalists and those already engaged or about to embark in railroad building. Land can here be had for nothing; surveys and the preparation of the road-bed need cost but little; the materials required from abroad can be brought in cheaply over the track already laid down. In a climate so dry and equable the superetructure will last a long time and can be kept in repair at small cost, while heavy grades, sharp curves and deep cuts would be a thing almost unknown The field is a broad and inviting one, and it will be strange if the opportunities it presents in thie line of investment are not availed of hefore long.

Cement in Cemeteries.

Now thst Guibord is finally buried, it is suddenly found out that no one takes any further interest in his bones. Those who were most determined that he should be safely buried assert that in all probability his grave will be robbed at an early day, but they evidently care very little whether it is robbed or not. On the other hand, the most enthusiastic of the Roman Catholics show no signs of intention to trouble themselves any further about the matter. The grave is to be thoroughly cursed; and inasmuch as Guibord's heretical boues are firmly imbedded in cement, they cannot permeate the rest of the cemetery with the pernicious doctrines that infected them during life. Besides, it would be a very difficult task to open a grave packed full of cement, and the French Canadian has no fondness for undertaking unnecessary work.

It would be odd if the desire to thwart the purpose of a religious mob should have resulted in solving the problem how to bury the dead with ssfety to the living. Guibord's coffin was surrnnded with cement merely as a precention against any attempt at disturbing it; it has already occurred to many minds that if coffins were to be uniformly imbedded in cement there would be no opportunity for the escape of pernicious gsses, and no possibility of the contsmination of springs of water in the neighborhood of graveyards. The evils connected with the ordinary methods of burial are constantly on the inorease, and senitary science is challenged to find some method nf opposing them. The expedient of burning the dead has evils of its own, in addition to the fact that popular prejudice is against it, and thst in many localities it would be simply impracticahle. There can, however, be no objection, on the score of sentiment, to filling the grave with cement, which will harden and enclose the coffin so olosely that the processes of decay will he to a great extent arrested, while at the same time all possibility of injury to the health of the community will be avoided.

The subject certainly deserves the attention of the sanitary authorities of our oities and large towns. If by so cheap and inexpensive an expedient as the uso of cement graveysrd csn be made no longer a source of danger to the public, the example set at the hnrial of Guibord should be adopted. There may be objections to it which are not ohvious to ordinary people. Still it certsinly seems as if the use of cement in cemeterics would fully meet the necessity of changing the present system of burial—a necessity which, year by year, is becoming more ohvious and imperative.—*New York Times.*

The Raymond & Ely Mine.

A correspondent of the *Chronicle* writes as follows concerning the Raymond & Ely mine: "That the famous Raymond & Ely mine of Nevada possesses great merit is evidenced by the data hereafter given and obtained from the books of the company. That its management is not being conducted in a commendable manner, hut somewhat after the Woodville style, is confirmed by the same data. This mine, since the 9th of June, 1875, has taken out and shipped to its officers in this city the sum of $452,482.50, as follows: In June, $98,447.53; July, $86,262.59; Augnst, $62,555.64; Septemher, $69,267.43; October, $74,086.12; November, $7,713.36; November 13th, $8,115.23; November 16th, $8,183.14; November 21st, $8,000; November 24th, $11,852; November 29th and 30th, $19,970. General Robert F. Morrow has now, and for a long time prior hereto, had the supposed control and management of this property. I do not for a moment question his integrity of purpose; still a lurking desire to lesrn the necessity of an assessment upon the stock of that company impels me to ask him for this information through the press rather than through the courts. I am a stockholder and willing to pay my assessment when required for the development of the mine, believing it to be of great velue; bnt I do not intend to replenish the private purse of any individual by way of assessment when the working of the property in which I have sn interest does not demand it. General Morrow, it is said, hes the control and mansgement of the Raymond & Ely mine. To work this mine when in full working order does not exceed the sum of $40,000 per month. An expenditure of $40,000 per month will employ 250 men at $4 per day, and give $10,000 per month, or more than $300 per day, for other expenses. Giving to the officers of thie company $40,000 per month for the working of the mine, there should remain in the treasury from the receipts of this mine the snm of $212,482. This mine may be in debt; if so, I desire to know the fact. It is reported that the Bank of California advanced to it the sum of $65,000. Concede it; still there remains the sum of $147,482, and no necessity for the present $3 assessment, particularly while the shipments therefrom continue, to wit: from $70,000 to $100,000 per month.

Hydrogen a Metal.—Scientists are gathering more and more proofs every day that hydrogen, or hydrogenium as it ie proposed to call it, ie a metal. Graham, who discovered its power of combination with iron, palladium and platinum, first considered it to be a metal, and now MM. Troost and Hautefeuille find that it combines with potassinm, sodium, nickel, manganese, lithium and thallium.

The Roberts' Island Reclamation.

The early and heavy rains of the present season bave materially interfered with the reclamation work now going on at Roberts' Island. This is hy far the most impnrtant, substantial and extensive work of the kind evor attempted in the State. The work has been laid out and carried on thus far under the general direotion of Mr. J. P. Whitney, well known throughout the Pacific coast as one of onr most energetio and enterprising men. Mr. L. C. McAfee acts ss his assistant and immediate snperintendent.

The entire work involves the constrnction of seventy-five miles of levee, divided into two sections, embracing what are known as the npper and lower sections of the island. The work on the upper section, embraoing about thirty miles of levee, was nearly completed when the unusnally high stage of water resched on Friday, the 19th inst., put a temporary stop to the same. The labor accomplished np to that time was most remarkable, considering the time which had been employed and the heavy and superior character of the work. We have seen and examined nearly all the reclamation works along the Sacramento and Sau Joaquin, hut hsve never seen anything equal to that which has been done under the direction of Mr. Whitney. If the rains had held off a few days longer, or if they had only come with the nsual amonnt of fall, the reclamation would hsve been complete and the water effectually shut out from the upper portion of the island; so thet almost or quite its entire area might have been put under cnltivation the coming summer. When we visited the locality on the Mouday after the water began to run over the hanks which were still unprotected, hopes were still entertained that the water might fall suffioiently to allow of the finishing of the work in sesson to save all the higher portions of the island from overflow. To this end all was being done that conld be, and work upon the contemplated improvements in the way of dwellings and barns was still progressing. As we have heard nothing from that quarter since, we are still in hopos the gap mey be closed and this important work of reclsmation be largely utilized the coming season; especially as we understand parties were ready to take leases to the extent of some 8,000 acres for a percentage of the crops, and enter upon the work of clearing np and plowing the land as soon as the levee was completed. These are considered among the most valuable tule lands in the State, and sre mnch more easily cultivated after the water is shnt out than lands further down the river.

While at the island we had the pleasure of seeing one of the "monster dredgers" at work building levee. These are the largest and most powerful of the kind in the world; only four of their size, we helieve, have been built, the two at Stockton and two others, one of which was sent to Japan. They work with a scoop which will lift from three and a half to four cubio yards of dirt at a lift, taking it from any depth from five tn thirty feet, and depositing it at any distance from directly alongside of the dredger to sixty feet beyond its center. One of these machines was put in position for work just before the rain commenced, and had thrown up a few hundred feet of levee before the wster rose, digging its own chsnnel as it progressed. While we were on board it was taken a short distance and put in position to close an opening which had been cut away by the high water in the natural bank of the river, and through which a perfect torrent was rushing toward the interior portion of the island. This break, which would have required the united efforts of many score of Chinamen for an entire day (even if they could have closed it at all) was effectually closed by this moneter dredger in less than fifteen minutes—thus demonstrating its vsst utility for such work in cases of emergency. It is proposed to largely utilize these machines in the work of levee building in the lower portion of the island, where operations will soon be commenced.

Japanese Perspective.—Thoughtless people, scrutinizing a bit of Japanese ware, sre diverted with what they are pleased to call "the comical lack of perspective" in the ornsment. The Jspanese artist does not undertake to produce aerial effects or linear perspective on plates, bowls, and vases. We must look to European art for such absurdities as landscapes and architectural drawings on spherical surfaces. In a Japanese workshop, the decorator *feels* jnst where a bright mass of color or a flowing line is wanted. He knows exactly where a single spot of gold or crimson will be most effective. He seems to have an intuitive eppreciation of the relation which color and line have to the general mass before him. Therefore he makes no mistakee. The bunch of brilliant azaleas, the flight of storks, or the floating butterfliee, are each placed where they belong on the object; with nnerring accuracy, eaoh ornament finds its true position in decorative art. The spece left undecorated is only an intellectual balance to the weight of color or mass on the other side. Precisely what geometrical rules determiue the value of these lines, or govern the disposition of masses, we mey not be ahle to say. But we may he sure that such agreeable, harmonious, and complete designs ae those furnished by Japanese artists, are the result of eerious etudy of certain fixed principles.—*Scribner.*

Useful Information.

Zinc as a Preventive of Boiler Incrustation.

Among the various means used of late for preventing scale in boilers is zinc introduced into the water space in ingots from one to two inches in diameter and about fourteen inches in length. We have made frequent use of it, and in many instances it has worked well, though we think its effects are different in different waters. An ingot of zinc of the size indicated above will disappear in from three to four months. We have made trial in nearly all the New England States and in some of the Western States, and we believe that in most cases it has shown good results. From what we have seen we are inclined to the belief that the iron of the boiler and the zinc form a voltaic couple, and that the water is sufficiently acid to excite galvanic action. The zinc is consumed, leaving an oxide well known to those who are familiar with the sulphate of copper battery, while the iron acts the part of an electrical conductor. The scale is rendered soft, porous and friable, and is easily removed from the boiler. We would not be understood as saying that this is true in all cases. We are of the opinion that the quality of water has much to do with the success of this method. Mr. J. F. Donoghue, of Springfield, Massachusetts, has devised and patented an anti-incrustator made by casting an ingot of zinc around a coil of copper wire. The ingot is flat on one side, and the coil is, consequently, only about two-thirds imbedded, leaving one-third to be acted upon by the water. Whether the introduction of a third metal, viz, copper, is an advantage, we are unable to say. But so far as we know, Mr. Donoghue's invention has worked well in most instances. We shall watch this method of treating scale, and report from time to time what our experience is.—*The Locomotive.*

Cork—The New Substitute for Leather.

The Paris correspondent of the London *Times* writes to that journal: A stall has lately been added to the Maritime Exhibition by the Cork leather company, for the purpose of showing a fabric which is very like leather, but with qualities not possessed by any animal's hide. It is well known that cork is the most brittle of barks, and yet, at the same time, the lightest of materials. The cork leather, which now makes its appearance for the first time, is simply sheets of cork covered on both sides with thin linen, but so prepared that when bent double it neither breaks nor cracks. What the solution is which produces this effect I cannot pretend to guess. If used as leather, it is certainly one-fourth the weight of hide, and looks as well, at half the cost. If in the guise of macintosh, it is as supple, and yet not sticky like ordinary water proof. Boots and shoes are exhibited of this material, but the most efficient use to which it can be put seems to be for military accoutrements and tent cloths. The French War Office has ordered a soldier's complete outfit to be made of the cork leather, and I understand that the Duke of Cambridge has directed similar samples to be sent to the Horse Guards. With regard to tents, the material is, without doubt, impervious to water, for this is practically shown at the Exhibition, while it is said on good authority to be superior to ordinary canvas in resisting heat. If it be used in the army the tedious burden of kit, belt and cartouche box will be very materially decreased. The inventor is a M. De Berski.

Boiling Felloes in Oil.

A correspondent of the *Hub*, a monthly publication devoted to the business, writes as follows: Having had some experience in the business, I will briefly state my views. Take a hard, close-grained piece of second growth hickory; the pores are small and filled with air, and, however dry, with a little water also. Put this in hot oil. The heat converts the water into steam, and expands the air so that is forced out of the timber, but I think very little oil goes in until the stick is taken out; then, as the remaining air cools and condenses in the wood, the air on the outside presses in what oil remains on the stick. The agitation or boiling that takes place while the wood is in the oil, is produced by the gas escaping, and not, as some imagine, by the oil penetrating the wood. I know that very little oil goes in, as I have boiled wheel after wheel in the same dish, and could see but little difference in the quantity of oil remaining. I think I could put on about as much with a paint brush. To put the thing to a practical test, I once took a set of wheels, boiled the felloes of two wheels in oil, and the remaining two left unboiled. I then painted them, and put them on a business wagon. When the tires needed setting, I tried to find the two boiled wheels, but failed to discern a particle of difference. The oil also loosens the spokes in felloes. I think just as good wheels can be made *without boiling* as with. We sometimes make use of the above process, however, to straighten felloes at the joints when they are bent too much.

Iron Bound.—The boundary line in the far Northwest is being marked by cast-iron pillars, eight feet high, set in the ground four feet, at distances of a mile from each other. The English and American governments set the posts alternately.

Sand Paper.—One of the old industries, the nature and extent of which are comparatively little known, is the manufacture of sand paper, the amount of which article annually produced in the United States is estimated at not less than 200,000 reams, including the various grades and qualities. Formerly it was made of ordinary brown paper, glue and sand. At present, for the most part, this paper is made of old rope, the best quality of glue is used, and, instead of sand, pulverized quartz or flint. By this means a superior fabric is produced, of a constantly uniform grade, and at so low a price that the use of it has become greatly extended, large quantities being exported to Europe, South America, the Pacific islands and elsewhere. For emery paper and emery cloth a large demand has been created by the finished iron works in steam engine shops, the sewing machine factories and other similar industries which require them for polishing purposes.

Anti-Friction Metal.—J. E. Gullatt, of Atlanta, Ga., has invented a car brass of anti-friction metal, which is said to be a superior article. One of these brasses has been in use on the Georgia road since July last, and run 13,000 miles with only one oiling. The pores of the metal absorb the oil and the friction draws out enough to lubricate it.

Utilizing the Heat of Burning Lime.—An enterprising and ingenious Irishman has patented a process by which the heat wasted in burning lime may be economized in the production of fruit and flowers under glass. At the top of the kiln is placed a boiler with hot water pipes connecting with the inside of a green-house.

The First Carriage.—Tains says that the first carriage caused much astonishment in England. Some said it was "a great sea shell brought from China;" others "that it was a temple in which cannibals worshipped the devil."

Dissolving Cotton and Silk.—The ammoniacal solution of oxide of copper will dissolve ordinary cotton fabrics and paper made of cotton. Silk is dissolved by the ammoniacal solution of oxide of nickel.

To Remove the Smell of Paint.—Hay sprinkled with a little chloride of lime and left for an hour in a closed room will remove the smell of new paint.

Good Health.

The Dangers of Anger.

An article by Dr. Richardson on "Induced Diseases from the Influence of the Passions," in the *Popular Science Monthly* for November, is interesting and instructive. He classes anger as the passion which stands first as being detrimental to life. He says:

He is a man very rich indeed in physical power who can afford to be angry. The richest cannot afford it many times without insuring the penalty—a penalty that is always severe. What is still worse of this passion is that the very disease it engenders feels it, so that, if the impulse go many times unchecked, it becomes the master of the man.

The effect of anger upon the brain is to produce first a paralysis, and afterward, during reaction, a congestion of the vessels of that organ; for, if life continues, reactive congestion follows paralysis as certain as day follows night. Thus, in men who give way to violent rage, there comes on during the acute period what to them is merely a faintness, which, after a time of apparent recovery, is followed by a slight confusion, a giddiness, a weight in the head, a sense of oppression and a return to equilibrium. They are happy, who, continuing their course, suffer no more severely.

Many die in one or another of the two stages I have named. They die in the moment of white rage, when the cerebral vessels and heart are paralyzed. Then we say they die of faintness after excitement. Or they die more slowly when the rage has passed and the congestion of reaction has led to engorgement of the vessels of the brain. Then the engorgement has caused stoppage of the circulation there, or a vessel has given way, or serious fluid has exuded, producing pressure, and we report that the death was from apoplexy, following upon some temporary excitement.

Swallowing a Cent.—Dr. Gibbs, one of the editors of *Hall's Journal of Health*, who is himself an educated physician and surgeon, while on a railroad train, the other day, was consulted by one of the employees on the cars in relation to his little boy, who had that morning swallowed a cent. "What have you done for him?" asked the doctor. "We gave him a dose of castor oil," was the reply. "Good practice, so far; as soon as you reach home give him the whites of three raw eggs daily, let his diet be bread and milk, and *nothing sour.*" The directions were followed faithfully, the whites of the eggs repeated every day, and the dose of castor oil at night and on the fourth day the cent was discharged. It was one of the new copper coins, and considerably corroded by the action of the gastric juices. Since fatal results often follow the swallowing of copper coin, the judicious treatment advised in this instance should be remembered by all who have the care of children. The essential points to be borne in mind are simply these: albumen, or the whites of eggs, a bland diet free from acids, and castor oil.

Give the Children Candy.

Dr. L. P. Meredith, of Cincinnati, a skillful and successful dentist, has lately published an excellent little pamphlet on "Our Teeth and Their Preservation." Boys and girls who love candy—and which one does not—will rise up and call the doctor blessed on learning that he declares sugar to be "not only not injurious to the teeth, but that it is really beneficial to the health of the child." In support of this statement he cites a number of eminent witnesses. Henry, Duke of Beaufort, for forty years ate nearly a pound of sugar candy daily, and yet died at the age of eighty, with a full set of perfect teeth in his head. Cleland, in his "Institutes of Health," mentions a Mr. Mallory, who was extremely fond of sugar and addicted to its use, and who reached the ripe age of one hundred years, having good teeth until he was fourscore, and then actually cut a new set!

In the "Code of Health and Longevity," by Sir John Sinclair, it is affirmed by Dr. Slare, that his father lived to be a centenarian, and was in good health and strength until the day of his death, while his teeth were sound and strong up to the age of eighty. This healthful condition of body and teeth was ascribed by Dr. Slare to the liberal consumption of sugar, which his grandfather ate not only on his bread and butter, but in his ale and beer, and in all the sauces used with his meat. In addition to this testimony, the entire race of negroes dwelling in sugar countries may be brought forward. They eat sugar without stint, the little ones almost living upon it during the sugar season, and yet their teeth are remarkably white and sound. Teeth have stood this test of being immersed for a year in a bath of syrup without being in the least affected. "So," says the doctor, "don't deny sugar and candy to the youngsters, and recollect that while they are ramming their sugar coated fists down their throats and yelling for more, and are plastering the legs of your piano and sticking the pages of your photograph albums together, they are on the high road to the conservation of health, and let them alone. But don't let them injure their teeth by biting very hard candy; and clean their teeth for them, for, after acetous fermentation has taken place, sugar is just as injurious as other articles of food, but no more so."

Dangers of Port Wine.—Port wine is more used than any other kind of wine by the sick; and as it is also a wine more adulterated than any other, people should be extremely cautious as to what they are using. A new adulteration of this wine has recently been introduced, which is in some cases dangerous, especially when partaken of by feeble or delicate persons. It is an artificial coloring, consisting of a mixture of azalin and magenta red. The aniline colors, objectionable in themselves, are the more dangerous because they not unfrequently contain arsenic. The adulteration is detected by shaking the suspected wine (and all cheap wines are to be suspected) with an equal volume of amylic alcohol (fusel oil). If the wine is genuine port, the amylic alcohol remains colorless; but if adulterated, it dissolves out the coloring matter, and itself appears of a purple red color.

A Man Pulls His Own Tooth and Nearly Bleeds to Death.—Recently, Mr. Harbold, of Amity township, Berks county, Penn., found one of his teeth troubling him very much, and not having either the time or the inclination to send for a dentist or physician, concluded to remove the molar himself. He armed himself with such instruments as were at hand, and finally managed to get the tooth out, but with it came a large piece of bone. This was bad enough, but he soon found that during the operation he had severed an artery, and was in a fair way of bleeding to death. Dr. R. B. Rhodes was sent for, and after some trouble finally succeeded in stopping the great flow of blood, and again setting Mr. Harbold to rights.

How to Float.—Men are drowned by raising their arms above water, the unbuoyed weight of which depresses the head. Other animals have neither notion nor ability to act in a similar manner, and therefore swim naturally. When a man falls into deep water he will rise to the surface and will continue there if he does not elevate his hands. If he moves his hands under water, in any way he pleases, his head will rise so as give him free liberty to breathe; and if he will use his legs, as in the act of walking (or rather walking up stairs), his shoulders will rise above the water, so that he may use the less exertion with his hands, or apply them to other purposes. These plain directions are recommended to the recollection of those who have not learned to swim in their youth, as they may be found highly advantageous in many cases.—*The Sanitarian.*

A Singular Accident.—A singular misfortune has overtaken a young man at Halifax, N. S., which may result in the loss of his life. It seems that while he was picking his teeth with a straw a piece of it lodged between two teeth in such a manner that he could not get it out. It annoyed him for several days but finally the pain ceased, and he found that the straw had worked under his tongue, where it soon began to cause pain, and at last resulted in the tongue becoming swollen and inflamed, while symptoms similar to those of diptheria appeared in his throat. He at once sought medical advice, but his case is now considered very critical.

Domestic Economy.

Nutritive Value of Cocoa.

The nutritive constituents of cocoa correspond very closely with those of beef, and largely exceed those of milk and wheaten flour; hence the importance of this substance as an article of food. In this respect it differs widely from tea and coffee, which are, perhaps, rather condiments and stimulants than foods, or flesh-formers. The following table, drawn up by Mr. John Hollm, of the Edinburgh chemical society, shows the position of cocoa as compared with three other well known articles of food:

Articles.	Cocoa	Milk.	Meat. (Beef)	Wheaten Flour.
Fat	50.0	3.5	2.87	1.2
Azotized substances	20.0	4.0	20.75	14.6
Starch	7.0	.....	.....	59.7
Gum	6.3	.....	.....	.....
Sugar	.....	4.3	.....	7.2
Water	5.0	87.5	67.80	13.2
Salts	4.0	.7	5.60	1.6
Woody fibre	4.0	.....	.....	.....
Cellulose	.....	.....	.....	1.7
Coloring matter	2.0	.....	.....	.....
Ash	.....	.....	1.60	0.8
Extractive matters	.....	.....	1.30	.....
Theobromine	2.0	.....	.....	.....
Parts	100.0	100.0	100.00	100.0

Thus, although one-half the weight of cocoa consists of cocoa-butter, it still presents 20 per cent. of albuminoid material, as against 4 per cent. in milk, 20.75 in beef, and 14.6 in wheat. In addition it contains starch, which is present neither in milk nor beef, but in smaller proportion than in wheat. The value of cocoa as a food is thus apparent, and fully justifies the high eulogiums which have been passed upon it.—*Pop. Science Monthly.*

Onions.—It is admitted that the majority of people like onions as food, and, only for the perfume, many would eat them who now do not. The unpleasant breath which eating this vegetable produces is perhaps the greatest objection to its use, but still it is a very wholesome and desirable article of food for many, and hence should be brought on the table in the most attractive form. White onions, and those grown in the South, are less odorous and pungent. Take off the outside skin, cut off both ends close, and let them stand in cold water an hour, then drop them into a saucepan with two quarts of boiling water. Cover, and boil fifteen minutes. Have a kettle of boiling water on the fire ready for use, pour off the water from the onions, and add as much more—be sure the water is boiling—and boil half an hour longer. Scald a cupful of rich milk and a little graham flour to thicken it. Salt and otherwise season to taste. Boil up a few minutes and serve the onions whole; or they may be cut in halves before cooking. That they are antiscorbutic as well as antiseptic is also admitted, and this is the way they should be prepared for such use: A few moments before eating they should be sliced quite thin and sprinkled with sugar, and you have a palatable relish which will not rise on the stomach or produce heart-burn.

Fruit Juices.—The juice of the apple and pear, says Mr. Knight, may be used to great advantage in preparing a beverage. He has frequently, he says, reduced it by boiling to the consistence of a weak jelly, in which state it has remained several years without the slightest apparent change, though intentionally exposed to variation of temperature. A large quantity of the inspissated juice would take up but little space, and the addition of a few spoonfuls to a quart of water would at any time form a delicious, wholesome, refreshing drink, free from all intoxicating properties. Its cheapness would be greatly in its favor. On sea voyages it would be a great luxury. We suggest experiments with it in the field of domestic economy.

Boiled Rice.—Wash and drain off one pint of good new rice; put into a covered saucepan with one quart of boiling water. Boil briskly for five or ten minutes, or until the water is mostly absorbed; then set on one side of the stove, and let it steam steadily fifteen or twenty minutes. Keep closely covered all the time, and do not stir it at all after it begins to boil. The Southern people, who know both how to cook and to eat rice, never allow the lid to be removed while the steaming is going on; perhaps just lifting one side of the cover to peep in, and see that it does not burn. When done just right, every grain will be swelled to its utmost, and bursted open. To be eaten as a vegetable, or with cream or maple syrup.

A Delicious Cracker.—Take equal parts "middlings" and graham flour. Wet with new or sweet milk, and knead rather stiff. Work it a good deal on the board; then roll out to one-quarter of an inch in thickness, and cut out in diamonds or squares; prick them, and bake in a quick oven. Bake best right on the grates.

Codfish.—The best way to cook codfish is to strip it of its skin and cut in pieces about the size of one hand; place it in water and allow it to simmer on the stove until it becomes tender. It should never be allowed to boil, as boiling hardens and darkens the fish and deprives it of its flavor.

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THE ORIGINAL ARTICLES in this paper are mostly set in solid type, giving in our columns one-third more reading than is contained in ordinary leaded matter.

San Francisco:
Saturday Morning, Dec. 11, 1875.

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BAD LUCK.—We nnderstand that the Oak Ranch mining company, near Enreka, Sierra county, after expending $14,000 on their diggings, waehed recently fonr hnndred cart loads of gravel, realiziug the handeome (?) snm of $3.75 in coarse gold, which has been carefully eealed up in a bottle, and the boys say it will be eent to the Centennial as a most vivid illnstration of miners' bad lnck. In most other parts of the county the miners are doing well, and thie is an exceptional case.

THE NIAGARA.—A meeting of the investigating etockholders of the Niagara mine was held laet Saturday night. A report was presented from the investigating committee, who said that the mine had been cloeed for ninety days, and that if the stockholders desired a change in the management, they must unite in giving their proxies to one person to have a meeting of the stockholdera called. It appears that only 26,000 shares have yet been subscribed in favor of a change in the management. The list ia to be kept open for two weeks longer.

THE Regents of the State University by a formal vote have accepted the donation of Mr. Liok of $750,000 for a telescope, and a committee haa been appointed to wait on Mr. Lick and return thanks for the Board.

THE heavy storma have washed ont the tailings in all the creeks and ravines so that the miners have plenty of fall, and enables owners to rush things as fast as they choose.

The Geological Survey.

Among the matters which shonld come prominently before the Legielatnre during the present session is the consideration of reeuming our partly finished geological survey. The matter is of no little importance and cannot be discnssed too soon. At this time, when the air ie rife with plans and echemes to be enbmitted for the action of the Legislatnre, some steps shonld be taken to bring before them the snbject of the resnmption of the survey. The progress of the survey np to the time of its discontinuance called forth mnch commendation from the scientific world, and added largely to the reputation of California as a field for scientific research. Bnt the people became dissatisfied both with the chief and the method of the snrvey. Practical results we arrived at soon enongh, and it wae thonght that the head of the survey dieregarded the wishes of the people in not publishing one or more volumee of economic geology, embracing the principal mineral regions of the State, accompenied by maps and illustrations, and giving snch nseful generalizetions, tonching our great leading indnstry of mining—particnlarly that portion of it connected with onr immense gravel deposits end ancient rivere—as would be of immediate practical benefit to the people.

The survey was stopped by the Legislatnre refusing to make any appropriation, and the material was torned over to the Univereity. It is well known that a large amonnt of material hae been collected from which valnable pnblioetions could be prepared, and the chief objection to the snrvey having been removed, by ita head being displaced, there is now no reason why the material could not be utilized and the survey go on again. It is certainly a great shame that ao much material and labor ehould be waeted, and that a partly completed survey of as rich a State aa California should be entirely stopped. The great benefit to accrue to science and to the State from the completion of this survey is recognized and acknowledged by all. Many of the very men who voted against the appropriation hoped to see the anrvey resumed at some futnre time. The method and the chief can easily be chauged.

Thia ia no scheme to be met with jealousy or aversion by politicians of either party. The material advantages to California would aoon compeneate for all ontlay. The etrategraphical arrangement of the rocks on thie coast is altogether unneual and peonliar. The great development of the cretaceoua formation, carrying as it doee our Pacific coast coal measures and all the large quicksilver deposits, is one of the nniqne features of this coaet. The proper definement of this formation together, with the great pliocene gravel deposits in which so much of the hidden wealth of California is stored, wonld of itself repay many times over the neoessary ontlay.

Tho Academy of Sciences of this city is taking the initiative to bring this subject prominently forward. Mr. J. R. Scupham introduced the matter at the laet meeting, and a committee has been appointed to consider ways and meana. Should the appropriation be voted this winter it would still take some time for the survey to be organized and we cannot afford to wait two years moro for this to be commenced.

The New Almaden Continuous Furnace.

We append a table showing the work of a new continuons quicksilver furnace rnnning since the 4th of Mareh last at the New Almaden mine in Santa Clara connty.

	Pounds of ore roasted.	Flasks Quicksilver produced. Free	From Soot.	Total	Per-cent age.	Cords Wood hnrned.	Charco'l & Coke hurned, pounds.
Mar	501,800	449	21	470	7.17	19½	5,866
April	676,000	503	23	526	6.98	20¼	8,640
May.	595,200	738	29	767	9.85	22	8,928
June	676,000	713	31	744	9.88	20⅞	8,640
July	793,600	810	52	862	8.31	24½	11,904
Aug	608,000	658	41	699	8.78	22½	9,120
Sept	676,000	744	23	767	10.18	22½	8,640
Oct	595,200	862	29	891	11.45	25	8,928
Nov	576,000	1,066	46	1,112	14.76	24½	8,640

The general manager, Mr. Randol, who furnishes ns the above figures, etates that this furnace is the "champion" eo far as he knows.

LIEUT. J. H. WEEDEN, of the United States Engineers, ie making surveys for tnrning the San Diego river, having obtained the right of way through private land. Shonld the weather continne favorable he will commence work at once.

ANDREW CASAMAYOU, senior editor of the *Reese River Reveille*, died at Austin, Nevada, on the 7th inst.

THE Manhattan silver mining company shipped bullion valued at $32,000 from Austin on the 7th inst.

ABOUT two hundred men are employed upon the Santa Clara and Alviso narrow gauge railroad.

A LARGE bed of asphaltum has been discovered in Santa Barbara county.

SINCE '49 the month past was the wettest November.

Death of J. Ross Browne.

J. Ross Browne, who has been closely identified with the mining and general interests of California, died enddenly at his residence in Oakland on Wednesday last. Mr. Browne's name is widely known, both from the prominent positione he has held, and from his literary work. Hie travels have been very extensive, nnd as he wae an observing man, his written accounts were inetructing and amusing.

Mr. Browne was a native of Ireland, but was bronght when a child to Kentucky. When nineteen years of age he went to Waehington, and being a good stenographer, obtained a sitnation as reporter in the Senate. His desire to travel was so great, however, that in 1842 he started with a friend for a tonr of Europe, intending to trust to their wits for support, as the joint capital amounted to the modeet eum of $40. Shortly after landing in New York they fonud their money and their chancee of reeching England redneed to a minimum, and being adverse to asking assistance from their friends, fell into the hande of a shipping agont, who hnmbugged them into signing articles for a whaling cruise. They left the ship at Zanzibar and remained there eix months. Mr. Browne retnrned then to America, and became private secretary to R. J. Walker, Secretary of the Treasnry, retaining the position until 1849, when he came to this State by a sailing veesel arouud the Horn, to report the debates and proceedinge of the convention called to frame a Stets Constitntion, then eitting at Monterey. He retnrned to Washington, and after a short sojouru in that city went to Europe, in 1851, as correspondent for several newspapers. After an extended tonr throngh Southero Europe and Palestine, Mr. Browne again turned hie steps toward America, and received at once an appointment as Inspector of Lighthouses on the Pacific coast. In 1861 he vieited Europe for the second time, principally for the benefit of his children, for he had been married meanwhile. Leaving his family at Frankfort-on-the-Main, the seeker after novelty journeyed to thonorth, having first taken a peep at Algeria, and travelled extensively through Ruseia, Poland, Norway and Denmark, Sweden and Iceland. On his return to this country the Government employed him to examine and report upon the mineral resources of the region west of the Rocky mountains, and in 1868 he wae appointed by President Johnson, Minieter to China. This poaition he held until 1870, when he reeigned and retnrned to California, and has aince resided qoietly at his home in Oakland.

Mr. Browne is, perhaps, best known among the mining community hy hie work on the "Reeonrces of the Pacific States and Territories," tho first of a series of reports on the mining industry, published nnder government anspicea. Aa an author hewas amusing and instructive. His earliest published work was, "Etchings of a Whaling Cruise, with Notes of a Sojourn on the Island of Zanzibar." Among his other works are "An American Family in Germany;" "Adventuros in the Apache Country;" "Land of Thor," "Crusoe's Island;" "Yueef;" "Travels in the East." For many years he contribnted articles to *Harper's Magazine*, which were eo bright and charming in their style that they were greatly inatrumental in the snccesa of that periodical. His Washoe experiences, which appeared in that magaziue, will be remembered hy many. He hns, for many yeara, been identified with the intereste of California, and labored hard to foster and uphold them. He bore an unblemished reputation, and had a large oircle of warm frienda. He leaves a wife, aix children and several grandchildren to monrn his loea.

A FRIGHTFUL FALL. — On the 7th inst. a miner named J. .Town, employed in the Oregon mine, at Eureka, wheeled a car from the 390-foot level into the shaft, and fell with it to the sump, a distance of 400 feet. Men engaged at the 59-foot level, hearing the noise of the fall, ran to the station of that level, when Town hailed them and aeked them to lower a rope, telling them that he waa clinging to the guidee and that he believed he was strong enough to come np without assistance. The request was complied with, bnt after being hoisted fifty feet Town cried ont to the men above to lower him quickly as hie hold was weakening and that he felt faint. Two miners then went dowu to his assietance, and he was bronght to the snrface; his mouth waa fonnd to be filled with blood, but beyond thie and a sensation of pain in the region of the back there were no indications of hie being injured. The phyaicians state that the man has not sustained fractnre of any bones, and that nnlese he hae received internal injuries he will recover. He made the frightful deacent of npward of 300 feet down the shaft while clinging to a loaded car. Since the above was written the telegraph informs us of Town's death.

THE President'a mesange, Governor Pacheco'a farewell, ex-Mayor Bryant's salutatory, ex-Mayor Heuston'a valedictory, and Governor Irwin's necessary ioaugural, are so many state papere of importance whioh came upon ns at once, that we are unable to do juetice to them all.

A COLLIERY explosion at Barnaley, England, on Wednesday, was the oause of the loss of 140 lives.

Academy of Sciences.

The regular semi-monthly meeting of the California Academy of Sciences was held on Mondey evening last. A very large nnmber of donatione to the cabinet were received, emong them an extensive collection of California woode, end a number of native fishes not hefore in the collection of the Academy. Dr. Harkness presented a map donated by General Stone through General Purdy, showing the work done by American engineers in Africa for the Egyptian Government, in the course of a enrvey. W. N. Lockington then read a paper descriptive of fishes, presented to the Academy at the laet meeting. Mr. Lockington aleo read a paper on landscape gardening, giving some views as to the proper ornamental plants aud shrubs to plant in onr gardens.

A peper on "New Facts Releting to California Ornithology" was submitted for publication.

Mr. Dameron stated that he had been making some investigations in relation to the propagation of oysters, and thonght that he had diecovered a method which he thought wonld he of value to preeerve the epat and cauee the Eastern oystere to propagnte here. He wonld deecribe his discovery at some future meeting.

Mr. J. R. Scupham made a propositiou for the academy to aid in the resumption of the Geological Survey. Since it was the object of the academy to forward the intereet of science, it would be very appropriate for it to take the initiative in the matter. In no one thing could it do more for science than to have this great work resumed. A committee, consisting of J. R. Scupham, Dr. Jas. Blake and Wm. Ashburner, was appointed to examine into the matter and report at the next meeting.

The Late B. P. Avery.

Robert E. C. Stearns made some feeling remarks on the death of the Hon. Benjamin P. Avery, of which the following is a brief enmmary: Siuce our last meeting the telegraph hss brought us sad newa—information of the death of our follow member, the Hon. Benjamin Parke Avery, U. S. Minister to China, who died in the early part of November, at the city of Peking. The many excellences of the deceased, the co-operative apirit whioh he ever manifested in all matters pertaining to the welfare of his fellow men—qnietly becauee he was singularly modest and undemonstrative, yet nevertheless peresistently pnrsning the eveu tenor of what he conaidered his duty—and that duty the advancement of civilization in a new State, the promotion of knowledge, whether literature, science or art, and the general refinement and elovation of the commonwealth in which he had made his home; euch qualitiee and such aervices make it eminently proper that we ehould inscribe on the permanent records of the academy au appreciative recognition of his life and labors, as well as an appropriate expression of our esteem and of our aorrow for his loea. With the example of his unassuming but honorable career before us—too brief but yet well filled with nseful work—it would he in discord with its harmony to expand theee remarks into formal enlogy * * * Thoee who knew him beat, and who enjoyed the precious freedom of intimacy, will tell yon thet his life waa conapicuoua for its purity, his character for its many virtues, hia intellect for its refined and delicate culture, his heart for its tender and generoua sympathy. The poseeesion of these qualitiea endear a man to hia fellow men; they constitute a charming whole, whoss priceleas wob is woven from the graces of our poor humanity; they form an enchanted mantle, whose shining folde hide the poverty of hnmeu limitations. So lived aud walked our friend among us, crowned with the affection aad esteem of all who knew him; I canuot say that he was perfect, and yet if fault he had, I knew it not uor ever heard it named. Hore let us rest—gratified that so true a life has beeu e part of ours. We place our tribute on his grave, and say, good friend—farewell.

The followiug reaolntions were adopted:

Resolved, That the California Academy of Sciences has learned with profound regret of the death of Hon. Benjamin Parke Avery, a member of this academy, and late U. S. Minister at the court of Peking; that we hereby recognize and express our high appreciation of his many private virtues and public services.

Resolved, That these resolutions he spread on the records of the academy and published in the proceedings.

THE Salines quicksilver mining company has aold to San Francisco partiea for $4,000 the privilege of mining for antimony in two of their several claims in the Stayton district, near Hollister.

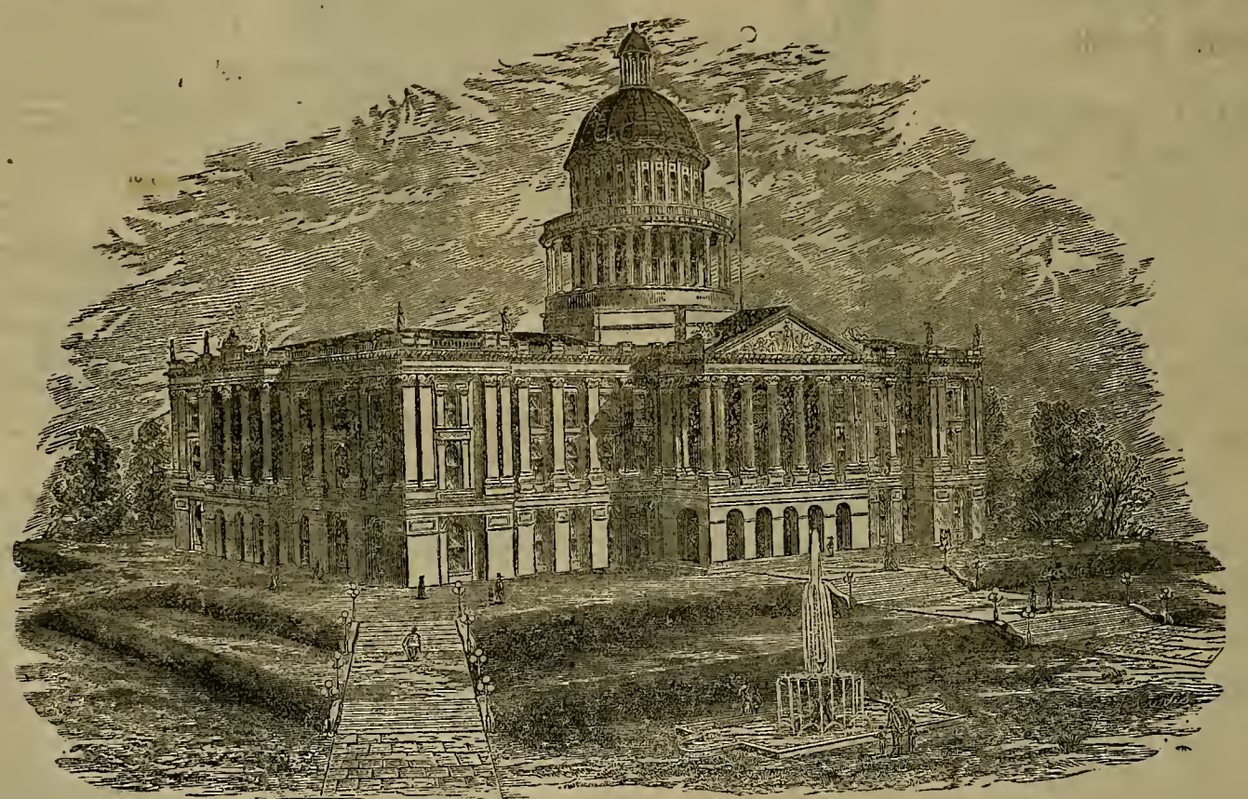
THE manufacture of atone paving blocks in the vicinity of Petaluma ia becoming an important industry. Ahont 700,000 blocks have been made the past year—valned at over $60,000.

THE control of the Kentuck mine, on the Comstock, has paesed into the hands of Senator J. P. Jonea and his aasociates. Samnel L. Jones haa been elected snperintendeut.

THE Board of Aldermen of Virginia City, have finally determined that the crosa streets in the burnt district ehall remain of the same width as previous to the fire.

The State Legislature.

The Legislature of the State of California convened at Sacramento on Monday last, and we consider this an appropriate time to present to our readers a representation of the magnificent State capitol building provided for our law-makers while in session. The building itself is a large and imposing structure of stone, brick and iron, 320 feet in length. Approaching it from Tenth street, it may be regarded as a great central building, from which rises the lofty dome, and having on each side a large wing. The first story of the center is granite, with five arched entrances. The Corinthian columns and pilasters shown are massive and elegant. Several large figures ornament the front above the columns, representing war, science, agriculture and mining. Above this the body of the main dome is surrounded by an open balcony, which is supported by twenty-four columns. Above the balcony the body of the dome is supported by an equal number of ornamental pilasters. From there rises the great metallic dome. From the top of this dome in turn rise twelve Corinthian columns which support the final or small dome, and this is surmounted by a ball. At each prominent point on the building is a colossal statue, giving a fine finish to the structure. From the top of the dome a most magnificent view is seen, and it is well worth the trouble of climbing the 208 steps from the hall floor to get a bird's eye view of the surrounding country.



STATE CAPITOL BUILDING, SACRAMENTO.

The interior of the capitol is in keeping with its external proportions and appearance. In the north wing is the Representative chamber; in the south that of the Senate; between the two is the State library. The library is circular in form, surmounted by a dome supported by twelve beautiful columns. It is divided into nine alcoves radiating from the center, elegantly fitted up. The remainder of the building is occupied by the various State officers. The workmanship in the interior is very fine and costly. Beautiful woods are used in its construction, and everything is of the best quality. The grounds occupy four blocks and form three terraces slightly elevated above each other, and connected by broad and easy flights of steps. They are at present in fine condition, the lawn being closely and smoothly trimmed, and the shrubs and evergreens in good order. The capitol is, in fact, something for the legislators and the people to be well proud of, and is well adapted for its purposes.

As a matter of general interest we take from the Sacramento *Record* a list of the members of the Senate and Assembly that constitute the Twenty-first Legislature, as made out from returns received at the office of the Secretary of State, including hold-over the Senators. The hold-overs are designated by an asterisk (*); the names of Republicans appear in Roman, those of the Democrats in *italic*, and those of Independents in SMALL CAPITALS, while Democrats who were elected independent of any party are indicated by the initials "I. D."

Senate.

First District—Counties of San Diego and San Bernardino—J. W. Satterwhite. (I. D.)

Second District—Los Angeles—C. W. BUSH.

Third District—Ventura, Santa Barbara and San Luis Obispo—*W. J. Graves.*

Fourth District—Tulare, Inyo, Fresno, Mono, Kern—TIPTON LINDSEY.

Fifth District—Mariposa, Merced and Stanislaus—J. M. MONTGOMERY.

Sixth District—Santa Cruz, Monterey, and San Benito—Thomas Flint.

Seventh District—Santa Clara—W. Z. Angney (I. D.), and T. H. LAINE.

Eighth District—San Francisco and San Mateo—*G. H. Rogers.*

Ninth District—San Francisco—*Timothy McCarthy.*

Tenth District—San Francisco—*J. Craig.*

Eleventh District—San Francisco—*Edward Nunan.*

Twelfth District—San Francisco—*M. J. Donovan* and *Wm. M. Pierson.*

Thirteenth District—San Francisco—*Frank McCoppin* and *Robert Howe.*

Fourteenth District—Alameda—*James Beazell* and EDWARD GIBBONS.

Fifteenth District—Contra Costa and Marin—Paul Shirley (I. D.)

Sixteenth District—San Joaquin and Amador—Geo. S. Evans and *J. T. Farley.**

Seventeenth District—Tuolumne and Calaveras—R. Hopkins.*

Eighteenth District—Sacramento—CREED HAYMOND and HENRY EDGERTON.*

Nineteenth District—Yolo and Solano—H E. MCCUNE* and S. G. Hillhorn.

Twentieth District—Napa, Lake and Sonoma—*Wm. McPherson Hill.*

Twenty-first District—Sonoma—*B. F. Tuttle.**

Twenty-second District—Placer—NOBLE MARTIN.*

Twenty-third District—El Dorado and Alpine—Thos. Fraser.*

Twenty-fourth District—Nevada and Sierra—H. K. Turner and *Myles P. O'Connor.**

Twenty-fifth District—Ynba and Sutter—*L. Spencer.**

Twenty-sixth District—Butte, Plumas and Lassen—*W. C. Hendricks.**

Twenty-seventh District—Mendocino, Humboldt and Del Norte—Robert McGarvey (I. D.)

Twenty-eighth District—Siskiyou, Modoc, Trinity and Shasta—*W. J. Tinnin.*

Twenty-ninth District—Colusa and Tehama—*E. J. Lewis.*

In addition to the above, W. A. Eakin (D.) is a hold-over, elected to represent Tuolumne Inyo and Mono; but these counties, under the new apportionment, are in new districts. Washington Bartlett (I.) and Philip A. Roach (D.) are also hold-overs from San Francisco, but do not belong to any particular district.

Assembly.

Alameda—*D. W. Gelvicks, M. W. Dixon* (I. D.), and *T. F. Bayge.*

Alpine and El Dorado—*S. A. Nott.*

Amador—*H. A. Carter* and *Thomas Dunlap.*

Butte—*Thomas J. Jenkins* and *Elijah S. Ruggles.*

Calaveras—*J. B. Reddick* (I. D.)

Colusa and Tehama—*T. J. Hart.*

Contra Costa—Charles Woods.

Del Norte—*James E. Murphy.*

El Dorado—*J. G. Carpenter.*

Fresno—*J. D. Collins.*

Humboldt—*Jonathan Clark.*

Inyo and Mono—*M. Griswold.*

Kern and Tulare—*J. A. Patterson.*

Lake—*R. V. S. Quigley.*

Lassen and Plumas—*John W. S. Chapman.*

Los Angeles—*J. R. McConnell* and *F. Lambourn.*

Marin—*George W. Burbank.*

Mariposa and Merced—*J. W. Wilcox.*

Mendocino—*J. M. Covington.*

Modoc and Siskiyou—*G. F. Harris.*

Monterey—C. S. Abbot.

Napa—*George N. Cornwell.*

Nevada—*S. L. Blackwell, George W. Gifin* and *Thomas A. Blue.*

Placer—W. M. CRUTCHER.

Sacramento—*T. J. Clunie, A. D. Patterson* and *Marion Biggs.*

San Benito—*G. M. Roberts.*

San Bernardino—HENRY SUVENKUUP.

San Diego—J. M. Pierce.

San Francisco—Ninth District—*James V. Coffey, George A. Young, Thomas Barber* and *Thomas McInerney.*

Tenth District—*J. W. Harding, William McMann, S. E. Wetherell* and *J. C. Murphy.*

Eleventh District—*James G. Carson, William O'Connell, J. W. Jourdan* and *M. McCarthy.*

Twelfth District—*William Broderick, R. M. Clarken, J. O. B. Kennedy* and *Herman Rankin.*

Thirteenth District—*James G. Maguire, D. C. Sullivan, Fred. Raisch* and *Henry C. Squires.*

San Joaquin—R. C. Sargent, John Patterson and M. Lammers.

San Luis Obispo—*R. M. Preston.*

San Mateo—John Garretson.

Santa Barbara and Ventura—*W. A. Hayne.*

Santa Clara—LAWRENCE ARCHER, S. J. JAMISON and CYRUS JONES.

Santa Cruz—*Henry Rice.*

Shasta and Trinity—*J. M. Briceland.*

Sierra—JOHN KOUTZ.

Solano—Joseph McKenna and *T. M. Swan.*

Sonoma—E. C HENSHAW, *Walter Ferral* and J. SAMUELS.

Stanislaus—*J. J. Scrivner.*

Sutter—*C. P. Berry.*

Tuolumne—*Thomas C. Birney.*

Yolo—*Jason Watkins.*

Ynba—*Daniel A. Ostrom,* and tie between *E. Goble* and J. C. BRADLEY.

RECAPITULATION.—Senate—Democrats, 24; Independents, 10; Republicans, 6. Assembly—Democrats, 62; Republicans, 9; Independents, 8; one tie between a Democrat and Independent. Totals—Democrats, 86; Independents, 18; Republicans, 15, and 1 in doubt

On Tuesday the election of officers of the respective houses took place, with the following result:

Officers of the Senate.

B. F. Tuttle, president *pro tem.*; for secretary, J. J. Shackleford; assistant secretaries, F. J. Clark and E. Crawford; sergeant-at-arms, J. W. Hawkins; assistant sergeant-at-arms, J. B. Snyder; enrolling clerk, W. F. Howell; engrossing clerk, P. H. Ryan; journal clerk, General Crosby; minute clerk, Newton Benedict; copying clerks, E. Gallagher and J. Conoway; porters, H. Klock, James Watson and B. McMurray; pages, H. Jacobs, H. M. Edwards and W. B. Doland; postmaster, J. C. Berniston; postoffice page, John F. Parsons; paper folder, John M. Kilgariff; night watchman, James Saltry; rear porter, Hawk Jones.

Officers of the Assembly.

Speaker, G. J. Carpenter; speaker *pro tem.*, J. A. Murphy; chief clerk, Robert Ferral; assistant clerks, William Ord and Chas. O'Neil; sergeant-at-arms, Dana C. Perkins; assistant sergeant-at-arms, T. O'Connor; minute clerk, J. W. McCarthy; journal clerk, J. M. Martin; copying clerks, T. C. Morris and J. G. Rogers.

We shall, during the session of the Legislature, give considerable attention to such measures as are of general or special interest to the readers of the Press; and such laws as affect them nearly will be given in full. At the same time, without presuming to offer advice or attempting to dictate, we shall bring before the attention of our legislators the views of the industrial classes whom we represent, on all matters which affect their interests. Many questions of great importance will of course arise during the present session, which will be widely discussed. As representatives of a large and progressive class of the community, we shall take occasion to comment on the measures proposed in a free manner, without any party distinction whatever.

Sierra County Diggings.

There is an abundance of water every where throughout the northern part of the State, and lively times are expected among the miners. A correspondent writes us from Sierra county that a large number of claims at Gibsonville, Howland Flat and Port Wine are expected to pay well this year. At Eureka, the boys on the claims are all washing and taking out pay. At Mt. Pleasant ranch, the Iowa company's diggings are nearly clear of water, working steadily with good prospects. The shaft is 301 feet deep.

At Gibsonville, the Pen Haven gravel company's main tunnel is in 700 feet, and they will soon be ready to take out pay. The Union, Boot Jack and Chalcedony companies are putting in great improvements on their claims.

At Howland Flat, the Fashion Co., Cold canon, is paying very well. Five men took out 17 ounces last week, and the ground seems steadily to increase in richness. The Empire Co. are taking out large amounts of gold. Forest City is crowded with miners from Virginia and other parts of the country, looking for work. The Bald Mountain Co. are washing now, and taking out lots of gold. The North America Co., at Hepsidam, are washing, and reported as doing well.

The Rising Sun Co., Mt. Vernon, adjoining the Green Mountain, and supposed to be equally as good, between Downieville and Forest City, cleaned up during the past fifteen days 24¾ ounces of average coarse gold, with only three men at work.

THE Baltimore and Ohio railway company announce a drawback of three cents per hundred pounds on all grains brought to Baltimore from Western points which passes through their elevators for exportation to foreign ports.

AN application will be made to Congress for an appropriation of $200,000 for a breakwater at Santa Monica.

Banking.

The Merchants' Exchange Bank
OF SAN FRANCISCO.

Capital, Five Million Dollars.

A. HAYWARD.....President.
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BANKING HOUSE,
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KOUNTZE BROTHERS, BANKERS,
12 WALL STREET, NEW YORK,

Allow interest at the rate of Four per cent. upon daily balances of Gold and Currency.
Receive consignments of Gold, Silver and Lead Bullion, and make Cash advances thereon.
Invite Correspondence from Bankers, Mining Companies, Merchants and Smelting Works.

French Savings and Loan Society,

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Business Directory.

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BARTLING & KIMBALL,
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SAVE YOUR HORSE'S FEET!

NO MORE RASPING AND HAMMERING TO CLINCH HORSE-SHOE NAILS. TENDER FOOTED HORSES SHOD WITH EASE. EVERY TEAMSTER HIS OWN BLACKSMITH.

The new patent implement used is an attachment to an ordinary pair of pincers. A scoop-shaped graver, or chisel, and a flattened, roughened plate, (formed in one piece) are hinged and fastened on to the handle of the pincers. When the forceps are closed the graver projects from one side of the handle, and is retained in that position by allowing the end of the plate to enter a slot between another plate on the other handle, and the handle, thus holding the graver steadily, while the forceps are grasped by both hands, and the grooves cut in the hoof below the point where the nails come through. When the grooves are cut the handles are opened, and the roughened plate turned outward, thus carrying the graver into a slot in the socket, out of the way.

To clinch the nails after the grooves are cut, the handles are opened, and the roughened plate is put beneath the hoof. The edge of a steel plate on the handle of the forceps is then placed above the nail point, and by closing the handles the nail will be bent down into the groove already cut, where it lies nearly flush with the hoof. The plate can be adjusted for large or small hoofs. The groove cut by the graver is about one-eighth of an inch long and one-eighth of an inch wide. No hammering or rasping is necessary. The foot is not bruised or scarred. Any one can learn to use it in a few minutes. Tender-footed horses can be shod with no pain to them. Further information given, if desired, by CARLES R. DONNER, Inventor, or C. F. SUHL, Cor. Commercial & Drumm Sts., S. F. eowbp

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For Washing and Cleaning Purposes.

For Sale by all Grocers.

This article is universally used in Europe, and, recently introduced for general family use in San Francisco and neighborhood, is already in great demand. It is now the intention of the manufacturers to introduce it all over the Pacific Coast, at prices which will bring it within the reach of every household.

It is unequalled for cleansing Woolen Fabrics, Cutlery, Carpets or Crockery; for Scrubbing Floors, Washing Paint, Removing Grease Spots, Shampooing or Bathing.

It renders water soft, and imparts a delightful sense of coolness after washing.

DIRECTIONS.—For Laundry, use two to four tablespoonfuls to a washtub of water. For bathing, use one tablespoonful in the bath tub. For removing grease spots, apply with a brush, undiluted, and wash with water afterwards. For stimulating the growth of plants, use a few drops in every pint of water used in watering.

PRICE.—Per Pint Bottle, 25 cents; per quart Quart Bottle, 40 cents; per Half Gallon, 75 cents.

Also, SULPHATE OF AMMONIA for chemical purpose, fertilizing, and the preparation of artificial manures. AMMONIACAL PREPARATION, for the prevention and removal of boiler scale. CRUDE AMMONIA, for general manufacturing, and PURE LIQUOR and AQUA AMMONIA for chemical and pharmaceutical purposes.

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Reduced to Live and Let Live Prices.

These Machines are superior to any and all; nice sewers, straight needle, two threads, shuttle, lock-stitch, the simplest and cheapest, and the lightest running first-class Machines in the market. To see is to convince yourselves.

The Hall Treadle for Sewing Machines,

The most important improvement ever made. It saves labor and preserves health. No more diseases and deaths, side or back aches from using Sewing Machines. No teaching required. A child can run it. Always starts the right way. Never goes backwards and breaks things. Can be stopped instantly. With it on your Machine, you can do double the work you can without it. Fifty stitches can be made with one pressure of one foot. It can be applied to any Sewing Machine. Approved by Massachusetts State Board of Health (see Official Report 1872), Massachusetts Medical Society and Massachusetts Charitable Mechanics' Association. The HALL TREADLE is a part of all HOME MACHINES sold by us.

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Must be seen to be appreciated. For a Farmer or Mechanic to see it, is to buy one. It is an indispensable article in every Farm-house, Shop or Hotel.

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Is an accomplishment in every Workshop. The HALL TREADLE is applicable to all machinery requiring foot-power—Sewing Machines, Grindstones, Jig Saws, Turning Lathes, Jewelers' and Dentists' Lathes, etc. Send for Circulars.

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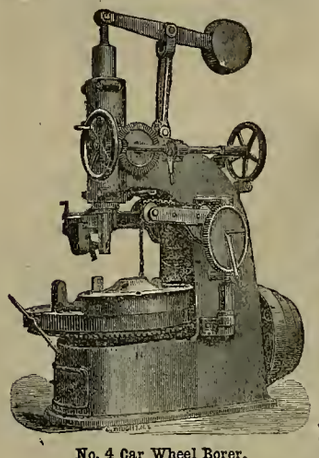

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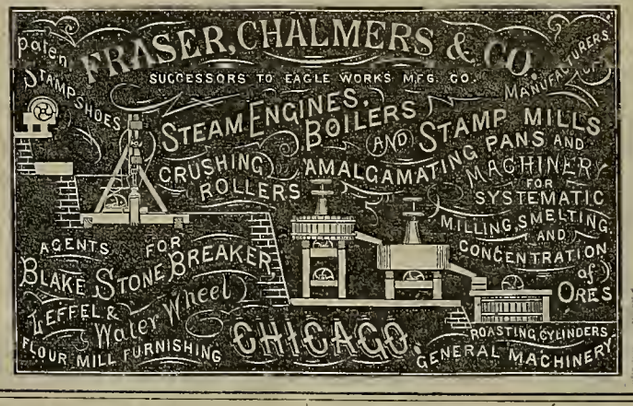
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MINERS write for your paper.

Thursday Noon our last forms go to press. Communications should be received a week in advance and advertisements as early in the week as possible.

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Ores worked by any process.
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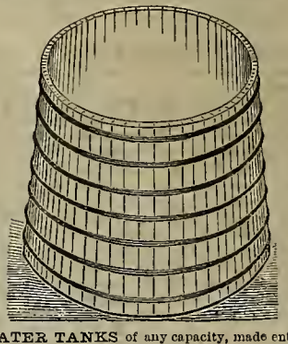

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The undersigned, owners of LESCHOT'S PATENT for DIAMOND-POINTED DRILLS, now brought to the highest state of perfection, are prepared to fill orders for the IMPROVED PROSPECTING and TUNNELING DRILLS, with or without power, at short notice, and at reduced prices. Abundant testimony furnished of the great economy and successful working of numerous machines in operation in the quartz and gravel mines on this coast. Circulars forwarded, and full information given upon application.

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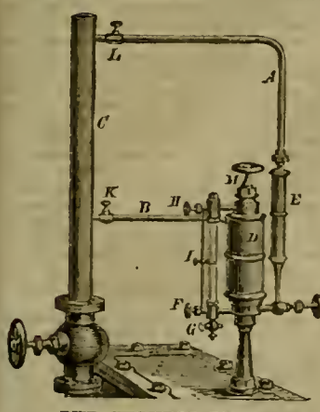
N. Seibert's Eureka Lubricators.



THE HIGHEST PREMIUM

Awarded by the Mechanics' Institute Fair, San Francisco, and State Fair, Sacramento, 1871.

These Lubricators are acknowledged by all engineers to be superior to any they have ever used; feed constantly by pressure of condensed water, supplied by pipe A, regulated under the oil by valve J, and forced out through check valve and pipe B into the steam pipe C; it then becomes greasy steam, passes to all the valves and cylinder at every stroke of the engine; glass tube I indicates amount used per hour. Packing on rods and stems lasts longer, and the rings on the piston will not corrode. One pint of oil will last from three to six days, according to speed and size of engine; I, sliding gauge; K, valve to shut off when engine stopps; H, F, valves to shut off in case of frost; steam does not enter the cup; it is always cool; warranted it give satisfaction. Patented February 14, 1871. Man ufactured by California Brass Works, 125 First street, S F. 21v23

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FOR QUARTZ MILLS,

Made by our improved process. After many years of patient research and experiment we have succeeded in producing STEEL SHOES AND DIES for QUARTZ MILLS, which are unequalled for *Strength*, *Durability* and *Economy*.

Die. Shoe.

Will wear three times longer than any iron Shoes.

BUILDERS AND CONTRACTORS

Of Quartz Mills, Pans, Separators, Concentrators, Jigs, Hydraulic Rock Breakers, Furnaces, Engines, Boilers and Shafting, and General Mining Machinery in all its details, and Furnishers of Mining Supplies.

All orders promptly filled.

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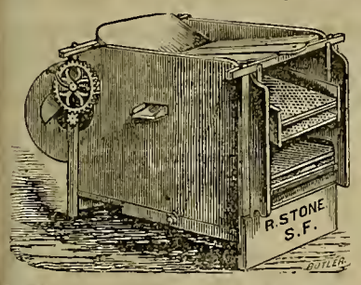
Examination solicited.

THE PATENT
Novelty Mill and Grain Separator



Is one of the greatest improvements of the age for cleaning and separating grain, while it combines all the essential qualities of a first-class Fanning Mill. It also far excels anything that has been invented for the separation of grain. It has been thoroughly tested on all the different kinds of mixed grain. It takes out Mustard, Grass Seeds, Barley and Oats, and makes two distinct qualities of Wheat if desired. For further information, apply to

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Manufacturers of ENGINE LATHES, 48 inches swing and smaller; VERTICAL BORING MACHINES, suitable for Jobbing and boring Car Wheels; UPRIGHT DRILLS, 36 inches and smaller, and other Machinists' Tools.

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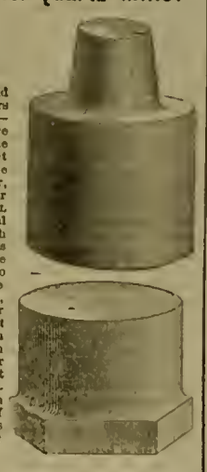
Improved Cast and Forged Steel Shoes and Dies for Quartz Mills.



[PATENTED MAY 26TH, 1874.]

Prices Reduced to 16 Cents Per Pound.

SAN FRANCISCO, November 10th, 1874.

To Supts. of Quartz Mills and Mining Men generally:

We take pleasure in stating that owing to the rapid increase in our orders, our Pittsburg Manufacturers have been compelled to add largely to their works—a new gas furnace and heavier trip hammer—and are thus enabled to reduce the cost of steel and at the same time produce SHOES AND DIES superior to any yet manufactured. We have consequently reduced the price to 16 cents per pound and solicit a trial order, guaranteeing that you will find them at least 10 per cent. cheaper than the best iron. There are no STEEL SHOES AND DIES made excepting under our patent and sold at this office, or by our authorized agents, though certain Eastern manufacturers advertise STEEL SHOES AND DIES which are only cast iron hardened by the addition of a composition. They will not out-wear two sets of common iron, though called steel. They are very brittle and are not capable of being tempered, flying from under the hammer like cast iron. Our STEEL SHOES AND DIES are in use in many of the largest mills on the Pacific Coast, and all who have tried them pronounce them cheaper and far superior to iron in every respect, even at the old price of 20 cents per pound. Their advantages over iron are cheapness on first cost, increased crushing capacity, time saved in changing and in setting tappets, increased value of amalgam by absence of iron dust and chippings, and a saving of 75 per cent. in freight. It takes 50 days to fill orders from the manufactory East. Price 16 cents per pound shipped at San Francisco. Terms liberal.

Address all orders, with dimensions, to W. R. Townsend, Secretary.

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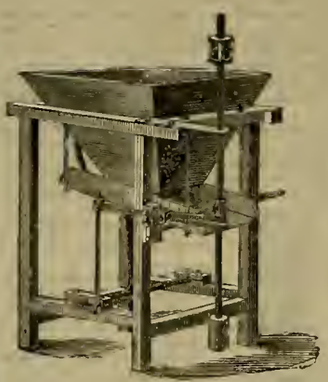

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REFERS TO

Con. Virginia,	California,	Sumner,
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Northern Belle,	Leopard,	Panamint,

And many other Mills using them.

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54 BUSHELS OF CORN AN HOUR.
HARRISON'S
LIGHT VERTICAL BURR MILLS
BARBER & BACON, MILLERS AND LUMBER DEALERS, SOUTH VERNON, VT., write July 15th:
"We have been running two of your LIGHT VERTICAL CORN MILLS for the past 6 months with remarkable results, and have ground over 80,000 bushels of corn into No. 1 meal in that time, running the grist-mill nights only, as we run our saw-mill in the day time. We have often ground in the 36-inch Mill (which weighs about 500 lbs.), 1,000 lbs. of corn in twenty minutes, or 54 bushels in one hour. Our usual night's work is about 24,300 lbs., or 434 bushels. To do this we have to run at a speed of 1,300 turns per minute, and use about 20-horse power. You may refer parties to us for further information, and when we have tested your HEAVY VERTICAL MILL, we shall take great pleasure in giving the results."
SEND FOR ILLUSTRATED CATALOGUE AND PRICE LIST.
EDWARD HARRISON, MANUFACTURER OF
FRENCH BURR STONE MILLS, BOLTERS, FLOURING MILLS &c
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CALIFORNIA WINE COOPERAGE AND MILL CO

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Spear Street,

M. FULDA & SONS
Proprietors.

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WATER TANKS, SHIP TANKS, MINING WORK,

WINE, BEER AND LIQUOR CASKS, TANKS, ETC.

Cooperage and Tanks, Steamed and Dried Before or After Manufacture at Reasonable Rates.

Sawing, Planing, etc. at Short Notice. eowbp

CANDLES.

MITCHELL'S
New York Candles
Full Weight and 14 ounce.
Will be found on comparison to be
Unequalled in Quality.

14 GMG OZ.
STEARIC ACID
CANDLES
GEO. M. GRANT & CO.
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FOR SALE BY ALL THE LEADING JOBBERS.

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ROOT'S "SAFETY" BOILER

MANUFACTURED BY THE

Abendroth & Root M'f'g Co.,
BROOKLYN, N. Y.

THE ROOT WROUGHT-IRON SECTIONAL SAFETY BOILER has been improved and perfected by Eight years experience, and the sale of

Over 1,500 Boilers,

for all purposes. Is perfectly safe from Destructive Explosion, all parts easily accessible for cleaning. Utmost Durability, Highest Economy in Fuel, Reasonable Price. Working portion composed of Wrought-iron Boiler Tubee, tested to a pressure of 500 pounds per square inch. Steam from cold water in from *ten* to *twenty* minutes.

We refer to the following parties, among others, who are using the Root Safety Boilers:

H. F. Williams	San Francisco, Cal
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Union Mill & Mining Co.	Gold Hill, Nevada.
Belcher Silver Mining Co.	Gold Hill, Nevada.
Imperial Mining Co. (170 h-p)	Gold Hill, Nevada.
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Send for Circular and Price List.

J. CURLE, Gen'l. Agent for Pacific Coast,
No. 513 Montgomery St., San Francisco.

Buffalo Excelsior Pony Planer & Matcher.

Patented March 30, 1875.

Best of its kind in use. Price, complete, $375. Also, small Pony Planers and Planing Machine Knives, which are recommended as superior and extra in quality. 100 Scroll work designs free on receipt of stamp For circulars giving detailed information, address

GEO. PARR, Buffalo, N. Y.

Excelsior Scroll Saw.

LATEST IMPROVEMENT.

Double Treadle, including one doz. Saws, thirty illimitable Fret Sawing Patterns and Prepared Wood to the value of $4. A new device for tightening Saw, Power Drilling attachment, Wrench, Oil Cup and Driver. Speed, 800 strokes per minute. Saws 1¾ in. thick. Price, complete, cased and delivered on board cars or at Express office, $12

SMALL STEAM ENGINES,

With copper Boiler, to drive light Lathes, Scroll Saws, etc. 100 Scroll Work Designs, free on receipt of stamp.

Saw only without attachments, $9.

GEO. PARR, Buffalo, N. Y.

BUFFALO PONY PLANER.

Nearly One Thousand in Use,

BUFFALO PONY PLANER Will earn itself and pay expenses of running in 8 days. Price from $ 60 upwards, each. Also, small Pony Planers and Matchers, and Planing Machine Knives. Recommended as superior and extra in quality. Circulars free. One hundred Scroll designs free on receipt of stamp. Address

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DUNHAM, CARRIGAN & CO., San Francisco, are Sole Agents in California for my Heavy Wood Working Machinery.

STEAM ENGINES & BOILERS

From 3 to 75-horse power. Shafting, Pulleys, Hoist Gears Quartz Mills, Water Tanks, Spanish Arastras, Pumps and Pipes, Hepburn and Belden Pans, and all kinds of Machinery for sale at lowest prices by

THOS. P. H. WHITELAW,
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Highest cash prices paid for all kinds of Machinery.

SANBORN & BYRNES,

STAIR BUILDERS.

Mechanics' Mills, Mission Street.

Bet. First and Fremont, San Francisco. Orders from the country promptly attended to. All kinds of Stair Material furnished to order. Wood and Ivory Turners. Billiard Balls and Ten Pins, Fancy Newels and Balusters. 25v8-8m-bp

VIRGINIA CITY SUFFERERS' RELIEF FUND.

NOTICE.—All persons who wish to contribute money to the assistance of the sufferers by the late fire in Virginia City, will please make out their checks in the name of GEO. S. DODGE, Treasurer, and leave the same at Rooms 12 or 17, Hayward's Building, California street. Those sending cash will please forward to the same name and destination.

Several solicitors have been appointed, who are provided with pass-books signed by the President, Treasurer and Secretary. The Secretary will be daily in attendance from 9 A. M. to 3 P. M.

HON. J. P. JONES, President.
GEO. S. DODGE, Treasurer.
RICHARD WHEELER, Secretary.

The Concentrating Works at Falun, Sweden.—Continued.

[Written for the PRESS by CHAS. C. RUECKER.]

Results of Operations in the Year 1870 to 1871.

The following is a summing up of the most interesting dats, conteined in the report of results obtained in the above works in the year 1870 to 1871, the lstest of which I have any relieble acconnt at present.

The works were in operetion 268 days (of twenty-four hours each). The day and night work lested generally from Monday morning to Snadey morniag at fonr o'clock. The rubbish washing works, with its anxiliary appliences, were only in operetion by day, during five and one-half months of the warmer seesons.

There were concentrated, during thie time, 9,713 toae of ore, contaiaig 2.889 per cent., eqnal to 561,219 ponnds of copper.

There were delivered to the emelting works, of piece ore and smell ore, as follows:

	Tons.	Per cent. copper.	Lbs. copper.
Piece ore, first quality	52.74@	18.40=	19,414
Piece ore, second quality	1173.00@	8.48	199,047
Jig ore	578.51@	6.75=	78,081
Small ore from jiggers	72.62@	5.99=	8,709
From percuasion tables	581.52@	7.93=	92,303
From buddles	291.83@	8.93=	52,132
Total	2750.22@	8.17=	449,686

Besides this there were furnished for the lixivieting experiments 335.3 tons fine eand, with 1.75 per cent. of copper, equal to 11,735 pounds, so thet the totel yield of concentretion was therefore 82.22 per cent., and the loss in the work 17.78 per cent.

The average copper value of the concentrated oree, compared with the copper value of the original material, is as 2.84 to 1, and the diminntion of the mass 71.69 per cent.; that is, thirty-five tone are concentrated down to ten tons. A greater enrichment doee not at present take place, because a proportionately large quantity of iron pyritee, conteiaing 1.5 to 2 per cent. of copper, is smelted with the concentrated ores, whereby a better result is ohtained by the use of a poor furnace charge.

The special expenses of concentration, that is, wages, including eapervision, etc., for 100 pounds of copper in eight per cent. of concentrated products, vary, aocording to the percentage of copper in the raw material, between fifty-six cents to $1 25; on the averagé they amonnted to eighty-eight and three-quarter cents, which makes the cost of concentratiag oae ton of ore, as it comes from the mine, thirty-six cents.

From the contiaaance of operations it is confideatly expected that the cost ot concentration, as well as the loss incnrred thereby, will yet he materially decreesed, although the resnits obtained already exceed those previously calculated ou.

In the experimental works the expenses for wagee, includiug supervision, etc., amounted to 5.13 per ceat. (100 pounds) copper contained in the picked ores and concentration products, as sent to the smelting worke—the work being paid for at that time by the day—subsequently it was reduced to 2.28 per cent., hy having the work done in contract, and was then gradually brought down to 1.14 per cent.

Before beginning the erection of the large concentrating works above described, the latter ngure was assumed in the estimatee on the responsihility of the enterprise. The operatives' wagee vary hetween thirteen and fifty cents for a twelve-honr shift.

The loss hy coucentration amounted to 32 3 per cent. in the first trial in the experimental works; in the second trial it was 19 5 per cent., and it varies hetween 25 and 28 per cent. when the worke are in regnlar operation. In the new works the loss is only 17.78 per cent., as stated above. On the other general operating expeases no estimate gen at present he given, the works not haviag heen fally completed at the time, and no reliable accounts of results since then heing at hand.

In the department for the concentration of the ordinary ores twenty-four stamps are still wanting for completion, and besides these an eqnal number of machines and apparatusee, as ahove described, to be set up on the right-haud side of the wing, *B*.

Since the completion of thie divieion will reqnire only ahont one-eighth of the sum which has heen expended for the fitting up of that part of the works at present in operation, and since double the quantity of ore can then be ooncentrated at the eame time, requiring an increase of the number of operatives of only five by day and five hy night, it follows, that on completion of the whole works, the economical results to he ohtained will he much more favorahle than now.

As can he eeen in the plan, the department intended for the concentration of the trikmalm (poor ores), tho wing *C* of the huildiug, is identical in arrangement with the wiug *B*. The stamp hatteries in this division will also contain 56 stamps. When thus fully completed, the works will be ahle to oonceutrate per day 50 to 75 tons of ordiuary malm, with two to threo per cent. copper, and 50 tons poor ores or trikmalm, containing ahout one and one-half per cent. copper. The whole estahlishment will therefore have a working capacity of 100 to 125 toas per day.

The first division of these works will employ 52 workmen by day and 12 by night, and the last mentioned divisiou, 10 by day and an equal numher in the aight, the whole establishment therefore, 84 workmen.

The preceding desoription having heen induced by the desire to show in comparison the manner of work and results as developed by practice here and elsewhere, I wish to revert once more to the cese of the Californie establishment, the experiences in which incited to the comparison.

Although the mine in question is not snfficiently developed to warrent the expeaditnre of a lerge sum of money in the erection of works that could st all be compered with those described, still the fundamental principles in the operations there, end the mechenicel means for oerrying them to practical effect, conld undonhtedly be applied in a limited way to suit the circumstences, and therewith results obteined which would give to the enterprise a firm footing and a more hopeful appearence than it has attained by two yeare of futile efforts to make it pey by the use of rude eppliances, and a yield of ecarcely one-third of the velne which experience elsewhere has proven possible of extraction from an ore of a similer cheraoter.

The main vein of this claim is crossed by several well defined and powerful veins, traceahle for a long distence, and others run perallel to it. A number of these veins contein notehle qnantities of gold beering pyritee. The main vein showed itself quite rich in the croppiags, the rock yieldiag one-third to one-helf of its gold valne to amalgamation of the sulphnrets with which the gold wes origiaally combined. Beyond the limits of surface decomposition, however, very little gold oonld he extracted by amalgamation, although some of the rock was exceedingly rich; reconrse wes therefore teken to concentration and chlorination, as before steted.

The developments on the vein are made by a tunnel ahout 305 feet long, a shaft from the surface to the tunnel about 92 feet deep, and another shaft from the tunnel about 98 feet deeper, at the bottom of which are two short drifts. The vein, contracted in the highest levels near the surface to six to twelve inches, widens rapidly in goiag deeper to eleven to thirteen feet in the tunnel level, then again diminishes. The average width may be set down at ahout fonr feet.

The greater part of the workings were in quartz. The average resnlts of eight to nine months' work show the value to have been quite evenly distributed throughout the parte worked, the average yield of that time approximatiag to that obtained from the concentrating teste spoken of; the values obteined in the latter may therefore be assumed with good reason to tax the value of the vein—by what we know.

As will be remembered, the aversge gold valne of the rock was found by assay to he $30 to $36 per ton. The yield of sulphurets from the rock was ahout one and two-tenths per cent., which contained ahout twenty-three per cent. of gold value. This wonld indicate that the rock contained about five per cent. sulphurets.

This being more than double the average contents of miaeral to be extracted, as found in the ores of Falun, aad the ore being otherwise similar from a concentrating point of view, it is more than probahle that its extraction by the samo method eud means would give a yield at least eqnal to that there obtained—that is, eighty-two per cent.

Grantiug, however, that it would not pay here to carry operations to the same exteat and nicety, we will assume a yield of only two-thirds, or say 50 per cent., and even then the business is worthy of attention. The yield wonld theu he $15 to $18 per ton of ore.

With weges at Falun at fifty cents, as the highest for twelve hours' work, the cost of concentration ie found to be thirty-six cents per ton of ore. Aesuming the average wages here at six timee the above amount, the cost of the concentration, equally multiplied, would be $2.16 per ton; aad the total expense, including mining, etc., not more, probably, than $5 per ton.

The yield being $15 per ton, this would leave a margin of $10 per ton of ore worked, and since 100 tons of ore would yield say five tons concentrated products, containing about fifty per cent. pure sulphurets, these five tons wonld have a net value of $1,000 or $200 per ton.

It would seom that thie onght to suffice to cancel the cost of chlorination; or in the absence of the appliances thereto, defray the expenses of traneportation and eale, and still leave a very acceptable profit. In the latter course ahout $580 would be realized on the 100 tons of ore ahove all expenses.

For the purposes of concentration, the mill on the claim has a crnshing capacity of at least twenty tons per day, end by a judicions method and the aid of other concentrating arrangements the capacity of the works could be raised to thirty tons per day. The cost of these arrangements shonld not exceed $5,000, if designed and built by an experienced person.

This would give a return of ahout $3,000 per month on an investment, in the present standing of the oompany, of about twice that amount, when figured guerdedly on the basis of what others have heen able to do.

The question would naturally be, how long this work could be continued. What prospects in this regard are furnished by a vein, which is well defined on the snrface for about a mile, and whose average yield as far as developed has heen as ahove stated, is left to the speculation of the reader.

Yet such a mine is almost deepaired of by its owners, after an expenditnre of abont $40,000, because the efforts to work it with profit by means of rude and insufficient appliances have failed, and because of a leck of knowledge of and confidence in the meens and methods which elsewhere have proven themselves an unquestioaable success.

The mine above specielly referred to is the Golden Gate, near the town of Sonora, Tuolumne county, Cal., but there are many others in this Stete to which similar remarks wonld apply. With the necessary cepitsl to erect suitable works, many a mine conld be made to yield a reesonable profit, where now the investments of former days are going to waste and irreparable loss.

California Tobacco.

It is only withia the past few years that the cultivetion and manufacture of tobacco has assumed any prominence or heen at all successful in California; but the indnstry hes assnmed such proportions as to wsrrent the belief that in the fature it must be considered a prominent feature in Californie agricultnre and home manufactures. Many of the difficulties experienced have been overcome hy those engaged in the business, and they ere now reaping the reward of persistence and energy and intelligent lahor. It must be confessed, however, thet notwithsteading the excellence of the product, it is much hetter appreciated abroad than at home, sharing in thie respect the disadvantage incident to all new articles of home manufecture. The wines of California, good and pure as they are now conceded to be, had first to he introdnced and appreciated in the Eastern States and elsewhere hefore they came into favor here; and even at this lete day we coasume inferior foreign wines at a high price, while the pure California wines find their best market elsewhere. So, also, with the netive tobacoo. Its excellence is recognized in other States and ooantries, and the consequence is that large exportations are now made, while the home consumption is comparatively small as yet. Our smokers will nee cigars of an inferior character, provided the brand ie foreign aad the price high, in prefereace to cigars made of California grown tobacco, which are sold cheaper, hnt have the stigma of being "home-made."

This prejudice against home-made articles is not peculiar to Californiane, but is, perhaps, more apparent here then elsewhere. It is by no means confined to the case of tobacco, as examples in almost any direction might be cited. Of course in many instances theee prejudices have been gradually overcome by the home-made article driving the foreign competitor out of the market entirely, in which event our people are apt to brag a little of the excellence of the home prodnot. Usually, however, the reputation of the California made article muet he established abroad before it is groperly recognized at home.

Perhaps it may be well to explain a reason for this apparent want of faith in California products by Californians. It is not all prejudice by any means, bnt in many caeee ie a feeling fostered by importers, who desire to keep in the background aay possible opposition. Although this is natural in business competition, it is to he deplored that euch is the case; for the indnstries which would greatly aid California in material progress have, in many instances, been compelled to lie dormant becanse a few people were making money out of au imported article of similar character.

A very striking instaace of this kind is shown in the article of tobacco. The importers of this staple did not wish to see an industry grow up in our midst which would lead to a decrease in their business, and did not desire that a home grown tobacco should be used here at all. Without aay concerted action they individnally held a firm gronnd against the common enemy, and did what they could to discourage its introdnction here. A powerful opposition of this character could wage a euccessful warfare, hy the many means open to it, but in this case the product has forced itself to recognition in spite of all efforts to the contrary. This policy was very shortsighted, as the tobacco might have been procured and the money kept in the country. It has heen the history, however, of very many things here. In the early days everything was imported, and a strong guild of importers grew np, who opposed anything that wonld injure their business. They naturally exercised great power and influence, and do so yet.

As yet thero is hnt one company raising and mannfacturing tobacco on a scale of any magnitude. The American tobacco company and the Pacific tobacco company were organized in 1871 and 1872, and in 1873 they merged into the Consolidated tobacco company, now an organization of considerable importance. Up to that time very little tobecco had been grown here. Some attempts had heen made to make cigars from home raised tobacco, hnt the results were not satisfactory. Smoking tobacco had heen made, however, successfully. In the first year the company grew ahout 30,000 pounds of tobacco, mostly of Havana seed. In 1873 they made np this tobacco into cigars, as a test of the tobacco, and proved at the same time that the claims of the inventor of the process of curing were valid. This ie known as the "Culp procees." They then pnt in 300 acres of tobacco, 100 acres of Havaue seed for cigars, and the rest for filling, emoking, etc. That year they made perhaps 1,000,000 cigars.

In 1874 they had about 500 acree planted, about 150 in Havana seed and the rest in other kinds. This increased the manufacture to 3,000,000 cigers. In 1875 they begen work in eernest, being confident thet time was all they wanted to introduce their products. They had already found favor enough to put up new buildings and enlarge the old one, and et one time dnring the yeer had 785 men at work in the ciger factory at Gilroy alone. All this time the factory for smoking and ohewing tobacco was running elso, 20 men being steadily employed. In this case, however, machinery does awey with hand labor to a great extent.

The compeny prodnced this year abont $600,000 worth of cigers and tobecco. About one-half of this fonnd sale in this market and the rest in Australia and the Eastern States.

The main difficnlty has been, as stated, in first introducing the goods. While meny aoknowledged the excellence of the product it was not for the interest of the trede to enconrage the indnstry. Notwithstending this the company now have a demend for all they can produce. The orders from the East alone are snoh ae to increase the product next year. The excellence and cheapnese of the goods are now both recognized.

The compeny raising end making this tobacco hee a capital stock of $1,000,000, abont 60 per cent. of which hae been peid np. The grounde and factory are et Gilroy, Senta Clara county. The cigar factory ie a large building 275x60, and the other building 130x50. A force of from 750 to 800 men ie worked from April to October, when the force is redneed. The capacity is now abont two million cigars and one million pounds of tobacoo per moath.

We speak of this generally as a home indnstry and will not go into details of manufaotnre or cultivation which would exceed the limits of a newspeper article. If people will nee tobacca they might as well use a home article if it is as good and as cheap, as to use an imported artiole and send the money awey elsewhere. The cigare are well epoken of hy those competent to judge. The company make no pretensions to making a magnificent brand of oigers, which are really made in only one or two distriots ahout Havana, but they claim to mennfacture a good class of cigars and sell them at a rate below the price of cigars not as good, which are called imported. They make some fifty brands of cigare, most of them imitations of well known brands, but they have ten or twelve of their own brands. This tobacco is claimed to conteiu less niootine and to be less injurioue to the smokor than that grown in Havana. The prices are very much below those which are asked for an inferior article of foreign cigars.

PATENTS & INVENTIONS.

A Weekly List of U. S. Patents Issued to Pacific Coast Inventors.

FROM OFFICIAL REPORTS FOR THE MINING AND SCIENTIFIC PRESS, DEWEY & CO., PUBLISHERS AND U. S. AND FOREIGN PATENT AGENTS.]

By Special Dispatch, Dated Washington, D. C., Dec. 13th, 1875.

FOR WEEK ENDING NOVEMBER 30, 1875.*

HARVESTER.—Jean Pierre Delseseanx, Milhrae, Cal.

BISCUIT CUTTER.—Alex. P. Ashbourne, Oakland, Cal.

CHAIR FASTENING.—Lee D. Craig, S. F., Cal.

PIPE JOINT.—Byron Jenninge, San Jose, Cal.

SULKY PLOW.—Geo. Moor, Lafayette, Oregon.

ANT EXTERMINATON.—Michael Barthel, Milpitas, Cal.

ICE MACHINE.—John M. Beath, S. F., Cal.

PROCESS FOR TREATING ORES.—Henry H. Eames, Oakland, Cal., and Ahel Patchen, S. F., Cal.

TRADE-MARK.

FOR MANUFACTURED LEATHER.—Herman Royer, S. F., Cal.

FOR WEEK ENDING NOVEMBER 23, 1875.

PHOTOGRAPHIC BACKGROUND.—Isaiah W. Taber and Thomas H. Boyd, S. F., Cal.

TAPPET CLAMP FOR STAMP STEMS.—N. J. Colman, S. F., Cal.

GANG PLOW.—Frank A. Hill, San Leandro, Cal.

CONCENTRATON.—Francis E. Mille, Virginia City, Nevada.

WATCH CASE SPRING.—Ansel S. Bnckelew, Colusa, Cal.

FAC-SIMILE TELEGRAPHS—John C. Lndwig, S F., Cal.

POTATO DIOGEN.—Wm. P. Martyn, S. F., Cal.

TRADEMARK.

FOR CIGARS.—Lewis Brothers, S. F., Cal.

New Incorporations.

The following companies have filed certificates of incorporation in the County Clerk's Office at San Francisco.

SHASTA CONS. M. Co.—December 4. Location: Shasta county, Cal. Trustees—Silas Selleck, W. A. Grover, W. C. Guerly, H. B. Congdon and J. B. Hollman. Capital stock, $1,000,000.

UNION ICE CO.—December 4. Object, manufacture and sale of machinery-made ice. Capital stock, $100,000 in 1,000 shares. Directors—H. H. Johnson, E. A. Rowe, W. E. Miller, J. C. Swan and Thomas Cook.

ALABAMA M. Co.—December 6. Location: Flowery District, Nev. Capital stock, $10,000,000. Directors—D. L. McDonald, J. F. Boyd, J. M. Classen, C. V. D. Hubbard and W. H. Porter.

QUEEN M. Co.—December 5. Location: Flowery District, Nev. Capital stock, $10,000,000. Directors—D. L. McDonald, J. F. Boyd, J. M. Classen, C. V. D. Hubbard and W. H. Porter.

KENNEBEO G. & M. Co.—December 6. Location: State of Nevada. Capital stock, $10,000.000. Directors—J. Rosa Browne, Chas. T. Botts, E. B. Marsh, Chas. L. Weller and A. Brisacher.

General News Items.

ROLLER skating has been revived in the city.

THE forty-fourth congress commenced its labors on Monday last.

THE ship *Three Brothers* is being loaded with grain for Liverpool.

THE "school book war" has begun at Sacramento.

COMMENTS on the President's messago are now in order.

MR. ANTOINE FOREST is the new French consul in San Francisco.

SIR GEOUGE FEUOUSON BOWEN, governor of Victoria, Australia, is in town.

BOTH HOUSES of the Legislature were formally openod for business on the 6th inst.

THE winter term of the University of California will close on the 22d inst.

THE police have been "raiding" the opium dens of the city recently.

HARRINGTON, the Palace Hotel desperado, tried unsuccessfnlly to hang himself in his cell.

HEAVY rains have cansed floods and considerable damage in portions of Texas.

BOTH the retiring and incoming Mayor of San Francisco advocato abolishing the special police system.

THE State University will petition the Legislature for funds to increase the accomodations for students.

THE Secretary of the Treasnry has rescinded the order recently issued imposing double duty on washed wools of any class.

GOVERNOU PACHECO has denied the petitions for pardou for John J. Marks, Joseph Casey and the Brotherton brothers.

THE Chiuese lost on the steamer *Pacific* when she foundered are supposed to have had $75,000 in their possession.

PROF. CARR, State Superintendent of Pnblic Instruciou, has appointed his wife as his deputy.

GEN. JOHN MCCOMB, the new commander of the Second Brigad, N. G C., has issned his first general order, assuming his command.

SENATOR STEWART, of Nevada, it is said, is about to associate himself with C. R. Greathouse in the practice of law in this city.

THE notorious "Boss Tweed" has escaped and there is no clue to his whereahouts. The sheriff offers a reward of $10,000 for his arrest.

ON Monday noon all the workmen in the department of yards, docks and constrnction at Mare island were snspended until further orders.

SQUIBBEL CARTRIDGE.—A Los Angeles correspondent wants to know where those suffocating cartridges can be had. So do we. Will somebody respond?

THE individual who calls himself Samuel H. Harrington, who last Friday made a murderous assault upon Charles M. Ludlnm, Hopkins & Haley's clerk, in room No. 669, Palace hotel, was in the police conrt Thursday, charged with assault to murder and assault to rob. The Judge, after a brief recital of the facts by the arresting officer, held the accused to answer, with bail fixed at ten thousand dollars upon each charge.

RENEW YOUR SUBSCRIPTIONS.—With encouraging rains, good mining prospects, a rapidly ucreasing population, public improvements and new maunfacturiug and industrial enterprises springiug up throughout the coast, we believe the ensuing year will he one of such progress and importance that no subscriber of the PRESS can afford to miss the record of events and discoveries which will be reported in the successive issues of this journal.

WOODWARD'S GARDENS embraces an Aqnarum, Mnsenm, Art Gallery, Conservatories, Tropical Houses, Menagerie, Seal Ponds and Skatiug Rink.

Before your lungs begin to fester, stop the cough that may otherwise destroy you, with HALE'S HONEY OF HOREHOUND AND TAR.

Pike's Toothache Drops cure in one minute.

LEATHER.

[WHOLESALE.]

WEDNESDAY M., Decem ber 8, 1875.

Oity Tanned Leather, ₰ lb	22@29
Santa Cruz Leather, ₰ lb	22@28
Country Leather, ₰ lb	22@29
Stockton Leather, ₰ lb	25@29
Jodot, 8 Kil., per doz	$50 00@ 54 00
Jodot, 11 to 13 Kil., per doz	68 00@ 72 00
Jodot 14 to 19 Kil., per doz	82 00@ 94 00
Jodot, second choice, 11 to 15 Kil. ₰ doz	57 00@ 74 00
Cornellian, 12 to 15 Ko	57 00@ 67 00
Cornellian Females, 12 to 13	53 00@ 67 00
Cornellian Females, 14 to 15 Kil	71 00@ 78 50
Simon Ullmo Females, 12 to 13, Kil	60 00@ 63 00
Simon Ullmo Females, 14 to 15, Kil	70 00@ 72 00
Simon Ullmo Females, 16 to 17, Kil	73 00@75 00
Simon, 18 Kil., ₰ doz	51 00@ 53 00
Simon, 20 Kil. ₰ doz	65 00@ 67 00
Simon, 24 Kil., ₰ doz	72 00@ 74 00
Robert Calf, 7 and 9 Kil	35 00@ 40 00
French Kipe, ₰ lb	1 00@ 1 15
California Kip, ₰ doz	40 00@ 8? 00
French Sheep, all colors, ₰ doz	8 00@ 15 00
Eastern Calf for Backs, ₰ lb	1 00@ 1 25
Sheep Roana for Topping, all colors, ₰ doz	9 00@ 13 00
Sheep Roans for Linings, ₰ doz	5 50@ 10 50
California Sheep Linings	1 75@ 4 50
Best Jodot Calf Boot Legs, ₰ pair	5 00@ 5 25
Good French Calf Boot Legs, ₰ pair	4 00@ 4 75
French Calf Boot Legs, ₰ pair	4 00@ —
Harness Leather, ₰ lb	24@ 32½
Fair Bridle Leather, ₰ doz	48 00@ 72 —
Skirting Leather, ₰ lb	33@ 37½
Welt Leather, ₰ doz	30 00@ 50 00
Calf leather, ₰ foot	17@ ¾
Wax Side Leather, ₰ foot	17@

METALS.

[WHOLESALE.]

WEDNESDAY M., December 8, 1875.

American Pig Iron, ₰ ton	28 00 @ 35 00
Scotch Pig Iron, ₰ ton	35 00 @ 37 00
White Pig, ₰ ton	— @ 28 00
Oregon Pig, ₰ ton	— @ 40 00
Refined Bar, bad assortment, ₰ lb	— @ — 3½
Refined Bar, good assortment, ₰ lb	— @ — 4
Boiler, No. 1 to 4	— @ — 5½
Plate, No. 5 to 9	— @ — 5½
Sheet, No. 10 to 14	— @ — 5½
Sheet, No. 16 to 20	5¾ @ —
Sheet, No. 22 to 24	6 @ —
Sheet, No. 26 to 28	6¼ @ —
Horse Shoes, per keg	7 50 @ 8 00
Nail Rod	— 10 @ —
Norway Iron	— 9 @ —
Rolled Iron	— 6 @ —
Other Irons for Blacksmiths, Miners, etc.	— @ — 4½
COPPER.—	
Brazier's	— 35 @ —
Copper Tin'd	— 37½ @ —
O'Neil's Pat	— 37½ @ — 40
Sheathing, ₰ lb	— 24 @ — 40
Sheathing, Yellow	— — @ — 25
Sheathing, Old Yellow	— — @ — 12½
Composition Nails	— 24 @ —
Composition Bolts	— 24 @ —
STEEL.—English Cast, ₰ lb	— 20 @ — 25
Anderson & Woods' American Cast	— — @ — 16½
Drill	— — @ — 18½
Flat Bar	— 18 @ — 24
Plow Steel	— 9 @ — 10
TIN PLATES.—	
10x14 I C Charcoal	10 50 @ 11 00
10x14 I X Charcoal	12 50 @ 13 00
Roofing Plate 1 C Charcoal	10 00 @ 10 50
Banca Tin	— 26 @ —
Australian	— 18 @ — 20
ZINC....By the Cask	— — @ — 11
Zinc, Sheet 7x3 ft, No 7 to 10 ₰ lb	— — @ — 11
do do 7x3 ft, No 11 to 14	— — @ — 11½
do do 8x4 ft, No 8 to 10	— — @ — 11½
do do 8x4 ft, No 11 to 16	— — @ — 12
NAILS Assorted sizes	3 60 @ 3 75
QUICKSILVER, per lb	— 65 @ — 70

Gold, Legal Tenders, Exchange, Etc.

[Corrected Weekly by CHARLES SUTRO & CO.]

SAN FRANCISCO, December 8, 3 P. M.

LEGAL TENDERS in S. F., 11 A. M., 87¼ to 88¾.

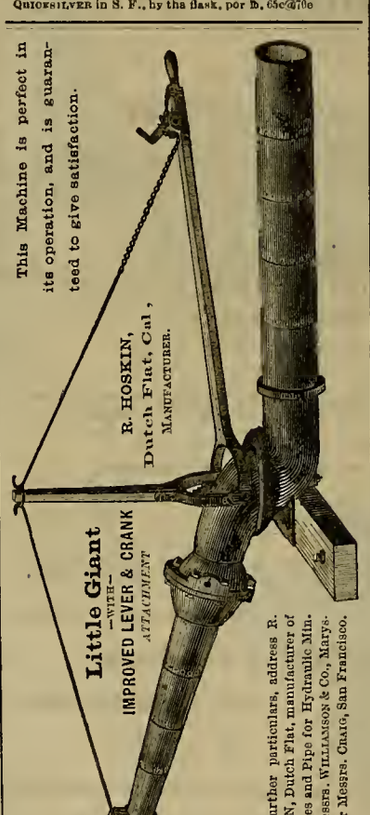
GOLD IN N. Y. 114⅛.

GOLD BARS, 890. SILVER BARS, 7½ and 8 per cent. discount.

EXCHANGE on N.Y., 60-100 per cent premium for gold; on London bankers, 49; Commercial, 49¼; Paris, five francs per dollar; Mexican dollars, three to five per cent. discount.

LONDON — Concols, 93 to 93¼; Bonds, 102¼

QUICKSILVER in S. F., by the flask, per lb, 65c@70c


This Machine is perfect in its operation, and is guaranteed to give satisfaction.
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For further particulars, address R. HOSKIN, Dutch Flat, manufacturer of Machines and Pipe for Hydraulic Mining; Messrs. WILLIAMSON & CO., Marysville, or Messrs. CHAIG, San Francisco.

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Near Market, — — — — SAN FRANCISCO.

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Glasgow Iron and Metal Importing Co.

Have always on hand a large Stock of

Bar and Bundle Iron, Sheet and Plate Iron Boiler Flues, Gasand Water Pipe. Caet Steel, Plow and Shear Steel, Anvils, Cumberland Coal, Etc.

WM. MCORINDLE, Manager, 22 & 24 Fremont St., S.

m5-m2

At a Stated Term of the Circuit Court

of the United States of America of the Ninth Judicial Circuit in and for the District of California, held at the court room in the city and county of San Francisco, on Thursday, the 30th day of September, in the year of our Lord one thousand eight hundred and seventy-five. Present—The Honorable Lorenzo Sawyer, Judge.

Nicholas Selbert, complainant, vs. Wm. T. Garratt, defendant—In equity.

DECREE.

This cause came in to be heard at the February Term, A. D. 1875, of this Court and was argued by counsel and thereupon upon consideration thereof, it was ordered, adjudged and decreed, as follows, viz: That defendant, William T. Garratt, was not the first or original inventor, or discoverer of the improvement or discovery claimed by him, in and by those certain reissued letters patent of the United States, number five thousand three hundred and twenty-eight (No. 5328), for an alleged new and useful improvement in lubricators, issued to said defendant, William T. Garratt, on the 18th day of March, A. D. 1873, and is not entitled to a petent therefor, and that said reissued letters patent, number five thousand three hundred and twenty-eight (No. 5328) are declared void and the same are hereby vacated and set aside by reason of their interference with those certain letters patent of the United States, number one hundred and eleven thousand eight hundred and eighty-one (No. 111,881) for a new and useful improvement in lubricators, issued to complainant, Nicholas Selbert, on the fourteenth (14th) day of February, A. D. 1871.

It was also further ordered, adjudged and decreed that complainant do have and recover of and from defendant his costs and expenses to be taxed herein.

(Signed) LORENZO SAWYER,
Circuit Judge.

The above decree has reference to "Selbert's Eureka Lubricator" for oiling the valves and cylinders of steam engines.

It has a glass gange and condensing pipe, or reservoir, with a regulating feed valve, and works as follows: As the water of condensation is admitted, under the oil, just so fast the oil passes ont at the top through a pipe into the steam pipe to oil the valves and cylinder.

Parties who infringe or purchase the infringed lubricators, will be held strictly responsible.

N. SEIBERT, Patentee,
125 First Street, S. F.

OF INTEREST TO

MINING COMPANIES.

A Mining and Civil Engineer, of long experience, collected in Europe and America, well acquainted with correct management of mines and mills, practised in projecting and constructing mining and milling machinery, and especially *machinery for mechanical ore concentration*, is open for re-engagement, and would prefer the task of constructing works for mechanical concentration of low grade ores on a well developed mine, or of remodeling ineffective works in the ore milling line for successful operation. Apply to Messrs. DEWEY & CO., of this office, for reference.

PACIFIC OIL AND LEAD WORKS,

SAN FRANCISCO,

Manufacturers of

Linseed and Castor Oils,

OIL CAKES AND MEAL.

Highest price paid for Flax Seed and Castor Beans delivered at our works.

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Mining Superintendent

Of fifteen years' experience in working the most rebellious ores on the continent, desires employment. The gentleman thoroughly understands the opening and development of mines, and the construction of all kinds of machinery and appliances for the reduction of ores, and especially those termed rebellions. Can be communicated with through this office.

Mining and Other Companies.

Cloverdale Mining Company—Location

of principal place of business, San Francisco. Location of works, Cinnabar district, Sonoma county, Cal.

NOTICE.—There are delinquent upon the following described stock, on account of assessment (No. 3) levied on the fifteenth day of October, A. D., 1875, the several amounts set opposite the names of the respective shareholders, as follows:

Names.	No. Certificate.	No. Shares.	Amount.
H J Cooper	5	5	$1000 00
H J Cooper	6	5	1000 00
Woods Crawford	7	1	200 00
Woods Crawford	8	1	200 00
Woods Crawford	9	1	200 00
Woods Crawford	10	1	200 00
Woods Crawford	11	1	200 00
Woods Crawford	17	2	400 00
Woods Crawford	18	3	600 00
J D Adams	19	2	400 00
J D Adams	21	2	400 00
J D Adams	22	2	400 00
J D Adams	23	2	400 00
Wright Mathews	24	3	600 00
Wright Mathews	25	1	200 00
Wright Mathews	26	1	200 00
Theodore Deming	40	5	1000 00
H C Boggs	42	15	3000 00
John K Fraser	43	1	200 00
Kimbal Favor	45	2	400 00
Kimbal Favor	46	1	200 00
Kimbal Favor	48	1	200 00
J O Origler (not issued)	49	2½	500 00
Sarchel Bynum	52	1	200 00
Sarshel Bynum	53	1	200 00
Sarshel Bynum	54	1	200 00
Sarshel Bynum	55	1	200 00
Sarshel Bynum	56	1	200 00

And in accordance with law, and an order of the Board of Trustees made on the fifteenth day of October, A. D., 1875, so many shares of each parcel of such stock as may be necessary, will be sold at public auction, at the office of said company, No. 300 Clay street, San Francisco, on Thursday, the sixteenth day of December, A. D., 1875, at the hour of one o'clock P. M., of such day, to pay said delinquent assessment thereon, together with costs of advertising and expenses of the sale. ED. B. PARTRIDGE, Secretary.

Office, No. 308 Olay street, San Francisco, Cal.

Lake Mining Company — Location of

principal place of business, San Francisco, California. Location of mine and works, Quicksilver Mining District, Napa County, California.

NOTICE.—There are delinquent upon the following described stock, on account of assessment (No. 4) levied on the third day of November, 1875, the several amounts set opposite the names of the respective shareholders, as follows:

Names.	No. Certificate.	No. Shares.	Amount.
J H Goodman	25	2	$40 00
J H Goodman	31	10	200 00
P Christianson	35	10	200 00
James Lefferts	*unknown	8	160 00

*All the Company's records having been burned.

And in accordance with law, and an order of the Board of Directors, made on the third day of November, 1875, so many shares of each parcel of such stock as may be necessary, will be sold at public auction, at the office of the Company, No. 19 First street, San Francisco, Cal., on Monday, the twenty-seventh day of December, 1875, at the hour of 3 o'clock P. M., of said day, to pay the delinquent assessment thereon, together with cost of advertising and expenses of sale.

R. T. KNOX, Secretary.

Office, 19 and 21 First street, San Francisco, Cal.

Mariposa Land and Mining Company of

California. Location of principal place of business, San Francisco, Cal. Location of works, Mariposa County, Cal.

Notice is hereby given, that at a meeting of the Board of Directors, held on the thirtieth day of November, 1875 an assessment, (No. 2) of one dollar per share was levied upon the capital stock of the corporation, payable immediately, in United States currency, to the Secretary, at the office of the company, room 33, Nevada Block, No. 309 Montgomery street, San Francisco, Cal., or to the Assistant Secretary, at the office, No. 9 Nassau street, New York City, N. Y.

Any stock upon which this assessment shall remain unpaid on the thirty-first day of December, 1875, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Tuesday, the first day of February, 1876, to pay the delinquent assessment, together with costs of advertising and expenses of sale. By order of the Board of Directors.

LEANDER LEAVITT, Secretary.

Office, Room 33, Nevada Block, No. 309 Montgomery Street, San Francisco, California.

Owyhee Water and Gravel Mining Company.

Location of principal place of business, San Francisco, California. Location of mines, Elko county, Nev.

Notice is hereby given, that at a meeting of the Trustees, held on the 1st of November, 1875, an assessment (No. 1) of thirty cents per share was levied upon the capital stock of the corporation, payable immediately, in United States gold coin, to the Secretary, at the office of the company, No. 405 California street, San Francisco, Cal.

Any stock upon which this assessment shall remain unpaid on the 15th day of December, 1875, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on the 15th day of January, 1876, to pay the delinquent assessment, together with costs of advertising and expenses of sale. By order of the Trustees. JOHN E. MCDONALD, Secretary.

Office, 405 California street, San Francisco, California.

Pauper Mining Company — Location of

principal place of business, San Francisco, Cal. Location of works, Owyhee County, Idaho Territory.

Notice is hereby given, that at a meeting of the Board of Directors, held on the 9th day of November, 1875, an assessment (No. 6) of twenty cents per share was levied upon the capital stock of the corporation, payable immediately, in United States gold coin, to the Secretary, at the office of the company, room 1, No. 402 Montgomery street, San Francisco, Cal.

Any stock upon which this assessment shall remain unpaid on the 16th day of December, 1875, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Thursday, the 6th day of January, 1876, to pay the delinquent assessment, together with costs of advertising and expenses of sale. By order of the Board of Directors.

W. F. BOGART, Secretary.

Office, Room 1, No. 402 Montgomery street, San Francisco, California.

Peytona Gold and Silver Mining Company.

Location of works, Virginia District, Storey county, Nevada.

NOTICE.—There are delinquent upon the following described stock, on account of assessment (No. ——) levied on the 23d day of October, 1875, the several amounts set opposite the names of the respective shareholders, as follows:

Names.	No. Certificate.	No. Shares.	Amount.
Jacob Meyer	42	25	125 00
Jacob Mayer	41	10	50 00
Levi Strause	121	5	25 00
O. V. Hobart	154	5	25 00
Wm. Doolan	195	933	4,665 00
T J Owens	203	15	75 00

And in accordance with law, and an order of the Board of Trustees, made on the 23d day of October, 1875, so many shares of each parcel of said stock as may be necessary, will be sold at public auction, at the office of the Company, room No. 11, 215 Sansome street, San Francisco, on the 18th day of December, 1875, at the hour of 12 o'clock, M., of said day, to pay said delinquent assessment thereon, together with costs of advertising and expenses of the sale.

T. J. OWENS, Secretary.

Office, Room No. 11, 215 Sansome street, San Francisco, Cal.

Pioneer Fluming Company—Location of

principal place of business, San Francisco, Cal. Location of works, Shirt-tail Canon, Placer County, Cal.

Notice is hereby given, that at a meeting of the Board of Directors, held on the thirtieth day of November, 1875, an assessment of five cents ($0.05) per share was levied upon the capital stock of the corporation, payable immediately, in United States gold and silver coin, to the Secretary, at 116 Leidersdorff street, San Francisco, Cal.

Any stock upon which this assessment shall remain unpaid on the third day of January, 1876, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Monday, the seventeenth day of January, 1876, to pay the delinquent assessment, together with costs of advertising and expenses of sale.

W. AUG. KNAPP, Secretary.

Office, 116 Leidesdorff street, San Francisco, Cal.

Averill Chemical Paint,

MANUFACTURED BY THE

Cal. Chemical Paint Co.

PURE WHITE, AND ANY SHADE OR COLOR.

This Paint is prepared in liquid form, READY FOR APPLICATION—requiring no thinner or dryer, and will not epoil by standing any length of time.

It is Cheaper, more durable, more Elastic, and produces a more Beautiful Finish than the best of any other Paint.

It will not Fade, Chalk, Crack, or Peel off, and will last twice as long as any other Paint.

In ordering White, state whether for Outside or Inside use, as we manufacture an Inside White (Flat) for inside use, which will not turn yellow, and produces a finish superior to any other White known.

Put up in ¼, ½, 1, 2 and 5 gallon packages, and in Barrels. Sold by the Gallon.

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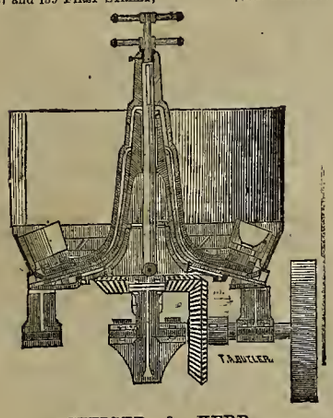
Occidental Foundry,

137 and 139 First Street, - - San Francisco



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Notice.—Particular attention paid to making Superior Shoes and Dies. 20v26.3m

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CAPITAL.....$1,000,000.

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Manufacturers of Steam Engines, Quartz and Flour Mill Machinery, Steam Boilers (Marine, Locomotive and Stationary), Marine Engines (High and Low Pressure). All kinds of light and heavy Castings at lowest prices. Cams and Tappets, with chilled faces, guaranteed 40 per cent. more durable than ordinary iron.

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James D. Walker.

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JOSEPH MOORE.....Vice-President and Superintendent
LEWIS R. MEAD.....Secretary

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MANUFACTURERS OF

STEAM ENGINES,

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PACKING, for new and old Cylinders.

And all kinds of Mining Machinery.

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LIGHT AND HEAVY CASTINGS,

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IRON PIPE

FOR STEAM, GAS AND WATER.

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LAP-WELDED PUMP COLUMN

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THE ONLY SAFE BLASTING POWDER IN USE.

GIANT POWDER, NO. 1,

For hard and wet Rock, Iron, Copper, etc., and Submarine Blasting.

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For medium and seamy Rock, Lime, Marble, Sulphur, Coal, Pipe Clay and Gravel Bank Blasting, Wood, etc.

Its EXCLUSIVE use saves from 30 to 60 per cent. in expenses, besides doing the work in half the time required for black powder.

☞ The only Blasting Powder used in Europe and the Eastern States.

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Established for the Manufacture of

RAILROAD AND OTHER IRON

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Every Variety of Shafting,

Embracing ALL SIZES of

Steamboat Shafts, Cranke, Pieton and Connecting Rods, Car and Locomotive Axles and Frames,

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HAMMERED IRON

Of every descript on and size,

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Are prepared to make SHEET IRON AND ASPHALTUM PIPE, of any size and for any pressure, and contract to lay the same where wanted, guaranteeing a perfect working pipe with the least amount of material.

Standard sizes of railroad Car Wheels, with special patterns for Mining Cars. These small wheels are made of the best Car Wheel Iron, properly chilled, and can be fitted up with the improved axle and box—introduced by this company, and guaranteed to outlast any other wheels made in this State.

☞ All kinds of Machinery made and repaired.

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Sole Proprietor and Manufacturer of the

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☞ Special attention paid to Brewers', Distillers', Beer and Hot Liquor Pumps and Wine Pumps. Particular attention paid to AIR PUMPS, also to

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Artesian Well Pumps Made to Order.

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STEAM ENGINES AND BOILERS

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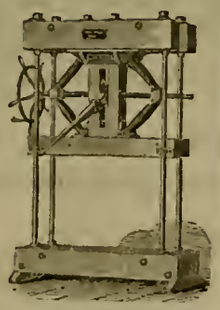

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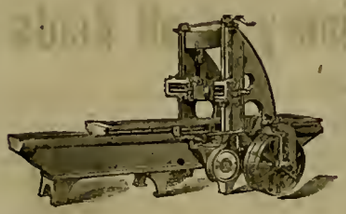

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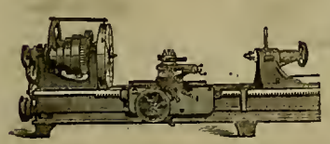

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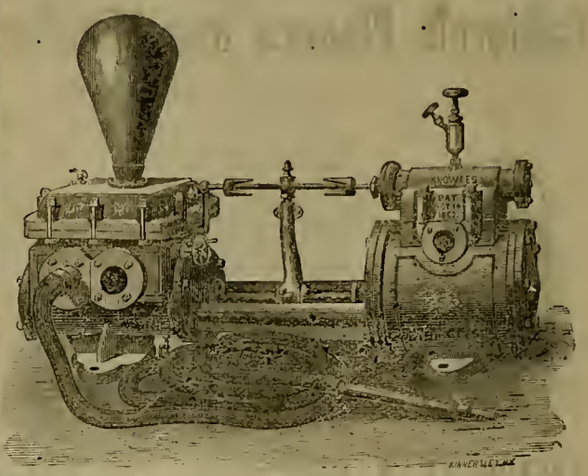

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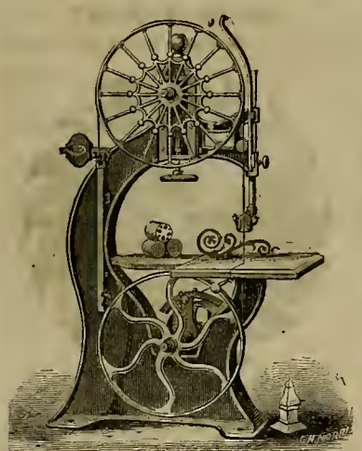

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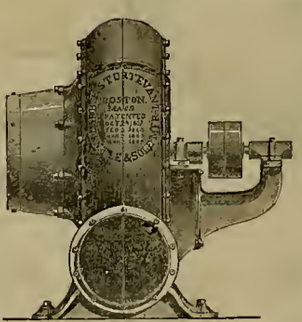

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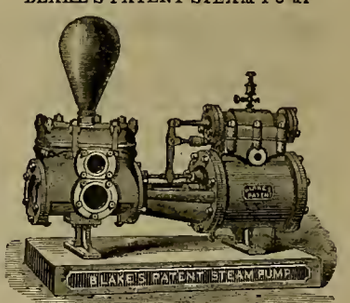

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Haskin's Steam Engines, Hoisting and Yacht, from 1 to 50 H. P.,
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Farmer's Dynamo-Electric Machine for Blasting,
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Important in regard to Pumps.

Aurora, Nevada, November 10, 1875.

H. P. Gregory & Co., San Francisco.

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Yours Respectfully,

Warren Rose, Supt. Juniata Cons. S. M. Co.

We are prepared to put in the "BLAKE IMPROVED STEAM PUMP" in connection with the "MORTON EJECTOR CONDENSER" and fully guarantee a saving of from thirty to forty per cent. over any other direct acting Steam Pump in use.

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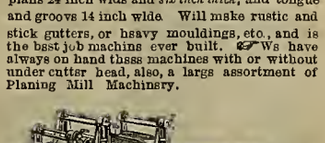

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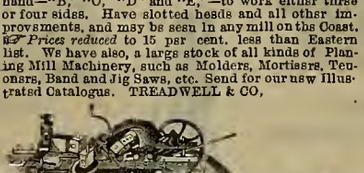

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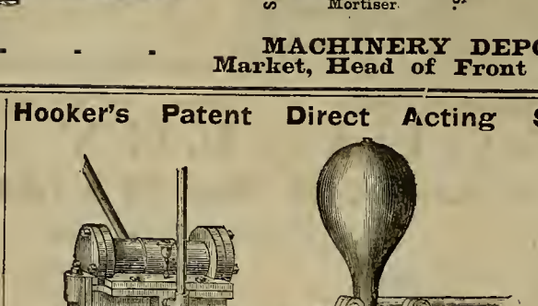

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MINING AND SCIENTIFIC PRESS.

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SAN FRANCISCO, SATURDAY, DECEMBER 18, 1875.

VOLUME XXXI Number 25.

Formation of Geyser Mounds.

In describing the extinct geysers in Montana, Professor Hayden speaks of a trip to the Clark Fork mines, on the road to which he passed the Soda Butte, a prominent extinct geyser. Soda Butte is a large mound, the materials of which are mostly calcareous, and show clearly that these limestones run under the valley, and that the waters of the geysers rose to the surface through them, dissolving more or less lime in the passage upward. The accompanying cut represents an ideal section of Soda Butte, showing the pipe or orifice and the manner of the deposition of the layers, or growth of the mound. As a curious geological formation the engraving is interesting. The other engraving represents a view of extinct oblong geysers. These are from 50 to 150 yards in length, from 6 to 10 feet high, and from 10 to 15 feet broad at the base. There is in all cases a fissure from one end of the summit to the other, usually from 6 to 10 inches wide, from which steam sometimes issues in considerable quantities. The inner portion of the shell, as far down as can be seen, is lined with a hard, white enamel like porcelain; in some places beautiful crystals of sulphur have been precipitated by the steam. These have been built up by a kind of oblong fissure spring, in the same way that the cones have been constructed. The water was continually spouting up, depositing sediment around the edge of the fissure, until the force was exhausted and then the calcareous basin was rounded up, something like a thatched roof, by overlapping layers. The view given shows one of these extinct oblong geysers, some of which were broken down, so as to leave a mere shell or cavity, which is now the abode of wild animals. When Professor Hayden and his party entered one of them it was filled with bones and sticks, which had been carried in by wild beasts. Some of these mounds have been worn away, so that sections are exposed, showing the great number and thickness of the overlapping layers of sediment.

At the Kossuth mine, on the Comstock, a novel method for furnishing air has been adopted at the 350-ft station. An air machine has been attached to the pump rod, saving the necessity of extra machinery and power for driving it, and which furnishes a bountiful supply of air for the 350-ft level. Several important improvements to the machinery have just been completed. A new 54-inch boiler has just been put in, new reels and brakes added, new wire cables. 3⅛ inches wide and 1¼ inches thick, put on, and a new steam pump erected for supplying the boilers with water, the old steam engine being kept ready for use in case of fire.

The Belcher mine's gross yield for the month of November amounted to $440,000, netting a clear profit over and above all expenses of $210,000—a pretty good showing for the Belcher mine, and proving conclusively that the mine really occupies a higher and more favorable rank on the list of Comstock mines, than the figures at which the stock is selling seems to warrant, as compared with others.

The Best & Belcher company proposes erecting heavy machinery shortly to work deeper and open the mine to a much lower level, at the same time extracting the good ore at the present level to pay expenses.

The Globe Consolidated mine, on the Comstock, is to have pumping works of the best and most powerful description. The plans are now being drawn.

On the Utah mine a large force of workmen are at present employed on the new hoisting works, which are being pressed to completion with all the energy possible.

The Original Gold Hill company have leased the Woodville mill, and the Hope mill is now running on ore from the mine.

T. J. McClellan has been appointed Superintendent of the Justice mine, in place of John Dunn, resigned.

The White Pine Bonanza.

It was only a week or so since that we gave an account of the closing down of several mines at White Pine, Nevada, and stated that the prospects of the district were very gloomy. On the heels of this announcement, however, comes the pleasanter one that White Pine has struck her bonanza, and that at a sufficient depth to assure a permanency to the different deposits. The impression has always prevailed, after the great and exciting rush to the district, that the mines were composed of surface deposits that did not "go down." Others, however, believed that the big ore channel run through Treasure hill, and was not only on the top. The late discovery in a measure settles the question, and the English company deserve great credit for their persistency in solving it.

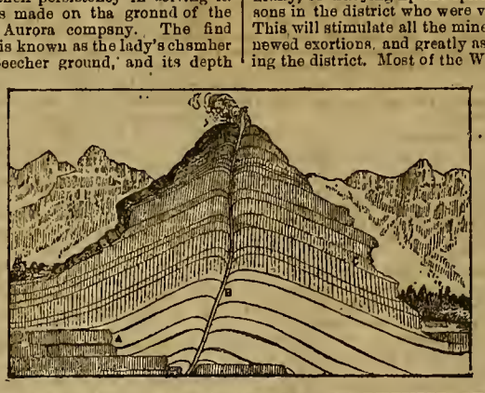
The strike was made on the ground of the Eberhardt and Aurora company. The find lies under what is known as the lady's chamber of the Ward Beecher ground, and its depth connect with that. The Eberhardt and Aurora company are sinking a working shaft, which is now down to a depth of 600 feet, and the indications are very flattering for striking a body of ore almost any day. When this occurs, then the problem of the "ore not going down," will be solved, and every company owning mines on the hill will be ready and willing to go down. It is stated that several San Francisco companies are only waiting for the English company to do the prospecting, when they hope to reap the benefits of it.

In addition to this strike the Elko mine in the same district has just struck it richer than ever. The body of ore they are now working

EXTINCT OBLONG GEYSERS.

is worth from $200 to $300 per ton, and there is a large amount of it in sight. It is thought further developments will expose a very large deposit.

The new discoveries have had the effect, naturally, of buoying up the spirits of many persons in the district who were very despondent. This will stimulate all the mine owners to renewed exertions, and greatly assist in developing the district. Most of the White Pines now



CARBONIFEROUS LIMESTONE SECTION OF EXTINCT GEYSER.

from the surface is 560 feet. We have no information as to the extent or richness of the body, but the supposition is that an immense bonanza of high grade ore has been uncovered. At latest accounts the bonanza was still widening out and improving greatly. It is believed to be by far the largest body of ore ever discovered in White Pine county, and what is better still, it is of exceeding high grade. Taken right through it is believed that the whole deposit will average about $300 per ton. Considering the great depth of this find and its general trend into the mountains, there can hardly be a question that it is the most important development that has been made in Eastern Nevada for a long time.

The new discovery is in virgin ground and will require some time to determine its extent. The White Pine *News* states that there is one thing known positively about it, however, that directly under the new body of ore, at a depth of 105 feet, there was ore in the old workings, and it is probable that this new discovery will look upon the permanency of the district as an assured fact. Those who have had faith, and have seen their predictions verified, ought now to reap their reward. The Eberhardt and Aurora company intend doing a great amount of work this winter, both in drifting and sinking. The old workings of this company are very extensive, some of which have not been touched for years, and by further developments the chances are now very favorable for discovering other chambers of ore that now lie hidden. We are glad to see, after all their bad luck, that the company will probably be rewarded. We sincerely hope that all that is anticipated will be realized, as these discoveries go far toward restoring confidence in much abused White Pine.

Preparations are being made on the Lady Bryan mine to put in pumping machinery of the largest and best character, which, when completed, will place the Lady Bryan on a footing with the first-class mines of the Comstock.

Legislative.

The current proceedings of both Congress and the State Legislature have been pretty fully reported in the daily press, and much that is done is of little general interest. Our State Legislature has done little as yet except stopping any chance for change in text books in the public schools. Now that the inaugural ball is over, however, we may expect the members to knuckle down to work. We note the following matters of general interest: McGarvey's bill relative to the collection of taxes provides that taxes shall become delinquent on the first Monday in July, instead of January, and that, unless paid prior thereto, ten per cent. will be added, instead of five. Any person may pay half his tax prior to the first Monday in January; in all cases where this is not done, ten per cent. on one-half of the whole amount shall be collected for the use of the county. The delinquent list must be furnished on or before the first Monday in August.

A bill has been introduced by Senator Haymond to provide for the permanent improvement of the State capitol grounds.

Assemblyman McCarthy is getting up an apprentice law.

The "No Fence" law will probably crop out this session.

The sale of mineral lands was the subject of much discussion two years ago, and now it is to come up again. Senate bill No. 40 is to amend the act approved March, 1874, and provides that any person in actual possession of any mineral land belonging to the State, or owning a mining claim thereon at the time of the United States survey or the passage of this act, shall be considered a preferred purchaser thereof to the extent of his or her mining claim, provided that within ten months from the passage of this act a copy of the plat is already filed, or if not within six months of the filing of the plat in the United States land office, he makes demand and tenders the purchase money. There are other provisions where a mining claim covers only a portion of a section.

Some half dozen bills will be introduced relative to the completion of the City hall in this city.

An act for the suppression of quackery has been introduced.

Senator Rosch has introduced a bill providing that wife-beaters be punished by the lash.

Mr. Clark's bill for the protection of lumber manufacturers has a special interest for the counties of Del Norte, Mendocino and Humboldt. It provides that the driving into or placing within any tree, or log, shingle, bolt or other wood intended by the owner to be manufactured into lumber, any material likely to injure saws, shall be considered a felony, and shall be punished as such; and that the destruction of booms shall also be considered a felony.

The committee on mines is composed of Birney, Blue, Griswold, Dunlap and Critchen.

The committee on agriculture, mining and mechanics' arts college is composed of Carson, Dixon, Sullivan, Quigley, Reddick, Raisch and Jones.

McCoppin has introduced a bill providing for an amendment to the constitution, restricting the power of all counties, cities and incorporated towns in the State to create any debt or liability, for any purpose whatsoever, exceeding five per cent. of the property therein from which revenue is actually derivable; and all existing debts and liabilities of said counties, cities and towns shall be included in the said five per cent. limitation.

A State inspector of boilers is spoken of.

The San Francisco water supply is taken care of in Senator Roach's bill.

From the Victoria *Colonist* of November 28th: Within a very short time past it has come out that a very large quantity of bogus metal was introduced into the gold dust during Cassiar, by some knave from south of the line. The mixing was done at Cassiar. The bogus stuff is known as spelter. It is not calculated to deceive an experienced person, except in the hurry and hustle of a mining camp, where an examination is not always possible.

McCloud River Salmon Fishery.

Work Done by U. S. Fish Commission Under Superintendence of Deputy Commissioner L. Stone.

Part First—Historical.

Far off as any such result may seem now, it is nevertheless true, that were the salmon rivers of this coast left to take care of themselves they would in a few years be despoiled of their inhabitants and therewith lose their chief value. Such has been the result in the Eastern States, where salmon once swarmed in the streams, and it is only after long years of almost utter barrenness that they are now being fitted for the reception of and restocked with the fish that once made them their homes.

This work of preparation is one of great trouble and expense. Fish-ways have to be built over dams and falls; manufacturers have to be compelled to keep the injurious drainage from their factories from polluting the streams, and many a suit has to be instituted and carried on to bring about all the results necessary to fit the water for the reception of the fish. When their home is ready the fish have to be put into and protected for a number of years, to be allowed to breed and restock the waters.

The stocking of rivers by catching and transporting the fish alive is a slow and tedious process and one unproductive of quick results, and in its place—quicker, safer and cheaper—has grown up the new art of fish hatching. The art, as it is now practiced, has in truth grown from seeds sown hardly more than ten years ago, when the attention of legislators was most forcibly called to the condition of the fish rivers of the East.

Although the process of the artificial impregnation of fish eggs was discovered in 1763 by Jacobi, a German, yet it had undergone no change of any great note till about twelve years ago, when the thoughts of many intelligent Americans were turned to it. Then it was taken up in good earnest, and like that of many other Old World inventions, its history in America is but a record of rapid and continued improvement, and here in California it has made, within the last four years, some of its most rapid advances, and has adapted itself to the scale of grandeur characteristic of all things in the land.

The Rise of Fish Culture.

About 1866 almost all the Eastern States passed laws providing for the protection and propagation of fish within their limits, and appointed commissioners to take charge of the work. Very good work has been done by these commissioners, and the Western and far Western States have taken up the work, and many are now reaping the fruit of their wisdom. In our own State much good has been done by the State Commissioners and the Acclimatization society; white-fish have been put into Clear lake, shad into the Sacramento, and salmon into Lake Merced, the Truckee, the McCloud, etc., and the work of protection carried on as thoroughly as possible.

In 1871 a United States Fish Commission was organized, with Prof. Spencer F. Baird as chief commissioner, and a fishery was established, in conjunction with several State Commissions, on the Penobscot river in Maine, under the superintendence of Mr. C. G. Atkins, where salmon were caught and their eggs taken and prepared for shipment. This was, till the establishment of the McCloud river fishery, the largest salmon fishery in the world, and great good has been done by it.

There are there, however, several disadvantages that are not experienced on the McCloud. As the fishing grounds on the Penobscot are all owned by private parties, the Government has no right to use them for procuring salmon eggs; all fish, therefore, have to be bought from owners of the grounds at $3 apiece. Then, as there are laws prohibiting the capture of salmon for some time before the spawning season, all the fish have to be caught five months before they are ripe, transported to a pond a mile from the river and there kept till ready to spawn. The consequence of all this handling and interference with nature is that the eggs are soft shelled—the shell of a salmon egg is a tough membrane—and consequently very difficult to handle. Notwithstanding these disadvantages, the Maine fishery has done an immense amount of good work, and millions of young fish from it have been put into the Connecticut and other Eastern rivers.

Numbers of private persons have also gone into fish culture with great success, and to many of them the eggs from California are sent to be hatched out for the different States, by whom the cost of the packing, transportation and hatching is paid.

Successful as were the results obtained at the Maine fishery, yet the number of eggs was found so inadequate to the demand that it became necessary to provide some other source of supply, and California being well known as having rivers well filled with salmon, was selected as the new field of operations.

The McCloud Fishery, 1872.

In the summer of 1872, Mr. Livingston Stone, Deputy Fish Commissioner, came to California, in compliance with orders from Professor Baird, to inspect the salmon rivers of the State, to find a site for a salmon fishery, and to commence work immediately if possible. Strange as it may seem, he could find no one in San Francisco who could answer his inquiries as to the time and place of the spawning of the California salmon. It was generally known that they were most abundant in the Sacramento, and that they ascended it in the fall; but no one to whom he applied had ever seen them on their spawning beds. After many days of fruitless inquiry, Mr. Stone learned from Mr. Montague, Chief Engineer of the Central Pacific railroad, that he had seen salmon in great numbers in the McCloud river, and he pointed out on a map a spot that he thought would do for the site of a fishery. Thither Mr. Stone and his assistant, Mr. J. G. Woodbury, proceeded, arriving September 1st, 1872.

They found the salmon abundant, but on examination it became apparent that almost all had spawned, and that the number of eggs would necessarily be but small that year. They established themselves at a stage station, about three-quarters of a mile from the river, by a small brook, and in three days, by hard labor, built a house and troughs, and were ready to set to work to collect eggs. Here came trouble for them. They experienced great difficulty in obtaining fish. They tried many nets, but all failed, except the seine, and theirs was not suited to the rapid current and did not work well, and most of their fish were got by watching the Indians, and as soon as any one speared one to rush and take it from him and take the eggs. But the fall run was nearly over, and twelve ripe females, yielding 50,000 eggs, were all that could be obtained.

The now old style of troughs, with charcoal and gravel bottom, were then in use, and into such the eggs were put, out in the sun, with the thermometer sometimes at 110, with only a board to cover them, for there was no time to build a roof. There many died, but the remainder prospered till the water, stirred by animals, began to deposit on them a coating of hard mud that could not be washed off. No remedy could be found for this, and it went on till not an egg was visible and all were in imminent danger of suffocation. All hope was given up at one time, but Mr. Woodbury decided to run the risk of killing them immediately in washing off the dirt. Taking the eggs in a bucket, he put in a handful of sand and held them under a stream of water, that stirred them gently till all were scoured clean. Of the eggs thus treated, only a small percentage died from the operation, and most of these were unimpregnated. Of the original 50,000, 20,000 died from heat and other causes, and 30,000 were shipped East, hatched and put into East, ern water, and last year the grilse were taken being three times as large as Eastern grilse of the same age.

These eggs were packed in wooden boxes, instead of tin or glass jars; this was then necessary from the length of the journey, and more so since from the immense number of eggs and the rapidity with which it is necessary to pack them. The results, too, are more favorable with wooden than with tin boxes.

Season of 1873.

After a season's experience, Mr. Stone decided, as there was no clear spring water available, to move his whole establishment down to the river, near the seining ground, and, contrary to all precedent, to use the water from the river in the troughs. This was done, a dwelling house erected, troughs put up under a tent sixty feet by thirty feet, and an undershot wheel, twelve feet diameter and eleven feet shaft, was made and set up to raise water, a fish barrier put in the river to stop the salmon, and by August 19th all was in readiness to begin the work.

The McCloud.

The McCloud river, on which the fishery is situated, is a tributary of the Pit or Upper Sacramento. It rises in two forks in the foothills of Shasta butte, and nearly half its volume comes from a spring that rises in the bed of the stream, coming underground from the melting snows of Shasta. This is very cold, and gives the river a low temperature that it never loses, running an icy flood to its mouth. The temperature of the water in mid-summer is never above 63°, though the air is sometimes 130°, and at night it generally falls to 40°; in the winter it is still lower, but it never freezes, on account of its rapidity. The descent of the river is very swift—about forty feet to the mile—and every few hundred yards there is a rapid, where the water boils and surges over the rocks with tremendous force. At the fishery the stream is from thirty to fifty yards wide, with an average depth of seven feet. About sixty miles from its mouth the river passes over a perpendicular fall about seventy feet high, said to be one of the most beautiful in the State. The edge of the fall is perfectly even, and the water passes over it in one unbroken mass, twenty or thirty yards wide.

The valley of the McCloud is shut in by high hills, or, more properly, mountains—as some of them rise 4,000 feet high—that rise but a short distance from it, leaving but little low land that is of any value; this is covered with oak, pine, ash and underwood, and was once thickly inhabited by a tribe of superior Indians, but they are nearly extinct, and none are to be found more than twelve miles from the mouth. The banks of the river are fringed with a water-plant, bearing large green leaves. This lives naturally in higher altitudes, but has become naturalized to the McCloud valley from the coldness of the stream.

The river is one of the chief spawning grounds of the Sacramento salmon, and so long as its waters are kept clear and unobstructed there can be little fear of the extinction of this fish. To this end all miners must be kept from it, and the wisest use that the Government can make of the whole valley is to appropriate it for an Indian reservation.

Inventions and Improvements.

In 1872, Mr. Woodbury, the foreman, had experienced great inconvenience from the cracking of the charred bottom and sides of the old troughs, and experimented with various substances in the endeavor to find something that could be used in place of the charring to prevent the growth of fungus, that would have no harmful effect on the eggs. All others seeming useless and thinking of the insolubility of asphaltum, he experimented with it with favorable results, and the second year part of the troughs were coated with it. No harm resulted from it, and ever since it has been used exclusively with the greatest success. It gives a hard, glossy coating to the wood and can be very easily cleaned of any dirt deposited on it and renders the trough perfectly water-tight.

In 1873 some of the then new trays of wire gauze were used to hold the eggs and the accompanying double dams to secure complete circulation of water. These were found to be an improvement on the gravel, but had to be handled with care, as the eggs rolled off from them with perfect ease. From this circumstance Mr. Woodbury decided to put sides to these trays, and contrary to the directions of fish culturists, to put in several layers of eggs. This was done in 1874 with part of the trays, all charcoal and gravel being done away with, and 25,000 eggs were placed in a tray two feet by one foot and six inches deep; the double dams being also used.

This invention was a great success; the eggs were more healthy and could be handled with great ease and rapidity; by moving them gently up and down all dirt could be freed from them; and it is principally by the use of them that this fishery has been able to send away such large numbers of eggs.

Season of 1875.

The seasons of 1873 and 1874 were very successful in their results, and the latter in particular noteworthy for the large number of eggs taken, but the season of 1875 has far surpassed any preceding in all respects. Not only has the number of eggs been larger, but they have been much healthier, and although the water brought down more sediment—for there was no freshet last winter to clear the river bottom of last year's deposit—the eggs at packing were noticeably clean, having no fungus attached to them, and as bright as when first taken.

Whether it was the natural result of experience or some favorable condition of the work is not evident; but this year it was found that two men, with Indian assistants, could spawn twice as many fish as in any previous year, and that the eggs taken thus rapidly were in no wise inferior, but rather superior to those of former years. The greatest number taken in one day was 896,500, and more fish could have been spawned but could not be obtained. The largest number taken from one female was 9,000.

The Result.

The whole number taken in 1875 was 7,822,900; of these about four per cent., 314,900, died and were picked out; 5,658,000 were shipped East, and 1,850,000 left for California. Of those left for California 240,000 were sent to the Truckee river and hatched, and as many to Kern river, but the latter were killed by the alkali water. 1,370,000 were hatched on and put into the McCloud. 50,000 eggs were sent to New Zealand by the Acclimatization society, and as every effort has failed to get them from England, if this succeeds—as it can be made to with sufficient care—there will be quite a demand for eggs from the countries beyond the equator. Those sent East went to various States as follows: Utah, 160,000; Colorado, 240,000; Iowa, 300,000; Minnesota, 400,000; Illinois, 80,000; Wisconsin, 40,000; New York, 80,000; Pennsylvania, 480,000; Michigan, 800,000; New Jersey, 320,000; Maryland, 560,000; Virginia, 320,000; Connecticut, 480,000; Rhode Island, 200 000; Massachusetts, 80,000; the Canadian Government, 80,000; N. W. Clarke, for U. S. Fish Commission, 988,000. Those first sent arrived in good condition, the others have not been heard from. The following is a comparative table of the four years' work. Twice as many males were taken as females.

	1872.	1873.	1874.	1875.	Total.
Females.	12	5,00	1,350	1,792	3,654
Eggs Hatched.	50,000	2,000,000	5,675,000	7,822,900	15,547,900
Eggs Shipped.	30,000	1,500,000	4,100,000	5,658,000	11,488,000
Eggs Hat'd at Fishery.	.....	.....	850,000	1,370,000	2,220,000

Future Work.

It is now evident that the fishery, as now arranged, has nearly reached its maximum of productiveness, and that that can only be increased by the establisment of new seining grounds, above and below the present one, and the building of a permanent hatching house. Both of these are of easy performance and will, in all probability, be carried out next year. The hatching tent, as now situated, is in the bed of the river in winter time; but about a hundred yards up stream, close to the hill, a permanent hatching house can be built, that will be out of the reach of the floods, and opposite is a rapid where a wheel can be placed to raise water to it.

As there is plenty of timber of all kinds on the hills around, and numbers of Indians ready to work for moderate wages, one white man can, during this winter, get out all timbers necessary for the frame, and next summer all the hands can be employed in putting up this building, instead of the tent that has to be taken down every year. Perhaps it may seem strange to speak of taking hands from raising a tent to a building; but, be it known that to put up and *take down* every year the tent, boxes and flumes, costs between one and two thousand dollars. Thus the building expenses for not more than two years would easily pay for any hatching house that is needed on the McCloud. All the sawn lumber needed will be shakes for roofing and sugar pine boards for boxes, flumes, etc., and if this is ordered and sawed a month before it is wanted, so as to have time to season, the expense of hauling will be but small.

After the troughs have been once erected there would be no need of tearing them down, which cracks and injures them; but they could remain for years with no repairs but a coat of asphaltum annually. If this house were erected the cost of the eggs would be very small and the usefulness of the fishery greatly increased.

As one of the men is to remain at the fishery all winter, there is all probability that this work will be done next year.

Future Hatching on the McCloud

As the fish hatched from the eggs taken here will, in due time, grow up and spawn in Eastern rivers, and their eggs can then be taken and hatched there, the demand on California will, before long, be over.

As the State Commissioners have every year numbers of eggs hatched on the McCloud, as soon as this establishment is suspended, there will be need for them to have a fishery of their own on the McCloud; and Mr. Woodbury, the superintendent of their works, has found a place that seems to possess all the advantages that can possibly be imagined for hatching salmon, and collecting the eggs of the "Dolly Varden" trout.

The Dolly Varden or Wye-dar-d'ee-kit

Is a trout indigenous to the McCloud and Little Sacramento. There are reports of its having been found in some other streams, but they are not well authenticated. It is peculiar in shape, having a large head and mouth, and increases in size regularly from the tail to the head. It is bright yellow in color and has along its back rows of large dark spots, and on its sides spangles of red, silver and gold; presenting altogether a very beautiful appearance. Its tail and fins are of the most beautiful construction, giving it great power and rapidity in the water. They are frequently caught of eight and ten pounds weight, and there are rumors of larger ones, but only rumors. It is comparatively rare, being usually found near the head waters, and only in cool water. It is, altogether, perhaps the finest trout in the world, and if it were once known there would be an increasing demand for it. It is the intention of the commissioners to obtain eggs, if possible, and introduce them into other streams.

The Place for a Fishery.

But the work of obtaining these eggs from the river will be attended with great difficulty, as they probably spawn in the winter; when the river is high; but there is a place about eight miles above the fishery, where a brook comes down from the mountains. On this brook, near where it empties into the river, lives an old Californian, Mr. J. B. Campbell, who has there a garden and orchard watered by the water from the brook. This is a fine, cold stream at all seasons, and the only one on the river available for hatching purposes, as above it all is an uninhabited wilderness for sixty miles.

In this stream, every winter, spawn the Dolly Varden and other trout, and their young are frequently seen in the irrigating ditch in summer. Here then is the place, and the only place on the McCloud, to establish a permanent State hatching house and fishery for front and salmon; and the conformation of the brook bed is such that a large fish pond for breeding trout could be built there at a trifling expense.

Mr. Campbell favors the establishment of a fishery there; and as he has been, during this whole season, assisting at the fishery, understands the business thoroughly and could thus render valuable assistance. The only trouble in having a fishery there would be the necessity of widening the present trail into a road, as it is eight miles from the stage road; but as this runs along the valley bottom, it can be done at no great expense. It will be done sometime, and the sooner the better.

The keel of an immense double turreted monitor is being laid at Roach's ship yard, Chester. The vessel, when completed, will be a monster, and will no doubt be a valuable addition to the United States navy.

All the forms of law have been complied with in the removal of the principal office of the Cherokee gravel mining company, from the town of San Juan, Nevada county, to San Francisco.

The Northern Belle mine shipped $7,315 on the 3rd inst.

MECHANICAL PROGRESS.

Utilizing Old Railroad Iron.

Tha Russians seem to be making rapid progress iu almost every department of manufacture. The labor reports for that country report the following in the matter of utilizing worn out rails:

Conversion of Old Rails Into Steel.

The Russlao railway company have been experimenting in their works at St. Petersburg, on the conversion of old rails into steel by the ferro-manganese process. Rails taken out of use from the Russian railways were subjected to treatment in a Siemens-Martin furnace, in the following order: (1) rails manufactured in the company's works from old rails made from puddled iron got from Finland pig; (2) ditto, with steel heads; (3) old rails made at Ponti-loff, similar to the foregoing; (4) old rails of English make, marked Dowlais and Weardale; (5) Bessemer rails of English make (Cammel, Brown, Bailey and Dixon). In the first bath a Swedish pig, almost white, and very impure, was used. The different samples contained the following proportions of phosphor: Old rails, 2.62 to 4.52 thousandths; old steel rails, 0.82 to 1.65; Swedish pig, 2.95. The ferro-manganese employed contained from 42 to 44 per cent. of manganese. Nine runnings were made with different mixtures; the respective quantities of the substances varied from 17 to 25 per cent. for the pig iron; 80 to 72 per cent. for the old rails; 3 per cent. of ferro-manganese. The contents in phosphorus varied, in the products obtained, from 2.30 to 3.35 thousandths for rails manufactured from old iron rails, and from 0.48 to 1.50 thousandths for rails made from old steel rails. The rails of phosphoric steel thus obtained have resisted successfully the tests of both crushing and tensile strains as prescribed by the directors of the Russian railway company.

A Six Cylinder Engine.

A six cylinder stationary engine has been brought out, and under a fair trial has shown good results. The engine consists of a bed plate supporting a circular iron casing, in which are placed six small cylinders in a ring, with their axes parallel to the main shaft that passes between them all. Each cylinder is single acting, and has a hollow piston, having a smoothly rounded end, in place of a piston rod. At the rear of the casing is a disk, balanced in the center, and supported by a joint that allows it to turn freely in any way. To this is fastened a short arm that is geared to the main shaft. The operation of this engine is quite simple. On admitting steam one of the cylinders pushes its piston back against the disk, and makes a partial revolution on its pivot, dragging the shaft round with it. Before this piston advances far the port of the next cylinder opens and begins its work. The next cylinder comes into play by the time the first has nearly completed its stroke, and this one then exhausts and its piston is driven back by the motion of the disk. In this manner each piston makes its stroke in turn, and its piston is returned by the disk for the next stroke. As each overlaps the other the motion is continuous, and in making one revolution of the shaft and disk each cylinder makes two strokes. Three are at work and three are going out at the same time. Each piston presses the disk in turn as it rolls under them, and each in turn is pushed back. The exhaust steam makes some resistance, so that the disk and returning pistons are kept in contact, and there is no shock or jar. A four horse power engine of this pattern measures outside only 17x17 inches, and gives a combined piston area of 33 square inches. All the parts are easily examined and the engine is said to run at a high rate of speed and with a good economy of steam.—*Scribner.*

A New Pin is exhibited, which promises to become quite popular for many purposes, on account of the impossibility of its working out of the fabric in which it is placed. It is made of a piece of ordinary wire sharpened at both ends. One extremity is then turned down and wound spirally for a couple of turns about the shank. When the pin is inserted, a slight twist given to the bent end causes the sharp point on the spiral to catch and enter in the cloth. The inventor has not only devised the pin, but some very ingenious machinery for its manufacture. One apparatus cuts off the wire, sharpens the ends, and throws the piece into a hopper, whence it passes into another machine which produces the spiral. The rate of production of the pins is about 200 per minute. Mr. R. W. Huston, of Brooklyn, New York, is the inventor.

Mineral Wool.—This new substance, made from furnace slag, was placed on exhibition at the late fair of the American Institute, N. Y. The material weighs about thirty pounds per cubic foot, and is sold at two cents per pound. It costs about five cents per square foot of surface, one inch in thickness. It closely resembles genuine wool, but is of much shorter fiber, and is somewhat gritty. From a report of tests made by a committee of the Franklin Institute, we learn that, when used as felting, the mineral wool retains heat somewhat more than one-tenth longer than common felting. The material is entirely indifferent to dampness and fire, and does not decay.

The Oil Engine.

In regard to this engine, already noticed in these columns, the New York *Evening Post* of recent date, remarks as follows: An engine has lately been devised, and is now in successful operation, in which oil and common air supply the place of steam, and which can be started by applying a match as easy as a gas burner is lighted. The system is an improvement on that of the Brayton gas engine, the principle being substantially the same in both machines, while there is some necessary differences of construction. The cost of running the oil engine is much less than the expense of the other, which was invented about two years ago.

The oil engine, which is also the invention of Mr. Brayton, resembles a steam engine in many respects, but is, of course, without a boiler. A can is attached, containing the oil, which is introduced by a pump into the cylinder of the engine. The oil enters a burner in the cylinder in the form of a spray. An air pump forces air into a reservoir at the bottom of the engine, from which, through an induction pipe, it passes into the cylinder. There it comes into contact with the oil in the burner and is instantly carbonized. The combustion, which is occasioned by simply lighting a match, results in an expansion of the air at the rate of six to one, and thereby the power is produced. A little jet of air constantly passes around the induction valve opening into the burner, and keeps the flame alive when the valve is closed.

The required pressure is obtained within a minute after starting, and is regulated as in an ordinary engine. The oil engine is therefore always ready for use, without causing any expense to the owner when not in actual operation. It has no highly heated surfaces, requires no manual work in its setting, and is free from sparks, smoke and cinders.

The power of the engine ranges from half a horse power to thirty horse power, but it is hoped to build some still more powerful.

Rolling Rail Blooms.—Another new thing in the iron trade of that country is reported by an English correspondent of the *American Manufacturer*, as follows: "Let me announce as a new thing in the iron trade of Russia, that in the part of the kingdom of which I speak blooms to make tops or tops and bottoms of rails in Russia, (according to whether the rails are double or single headed) are being largely rolled. The Russian engineers, no longer extravagant, certainly as to rail making, are importing half manufactured iron of this class and will thereby economize their own old rails, which will form the centre of the piles out of which the new rails will be rolled. Note the economy of this. Instead of sending their old rails to England as scrap, they keep them there and use them up with these blooms, which they buy from us rolled to the sizes and cut to the lengths adaptable to the section of rails to be rolled in Russia. So long as old rails can be made to last out, this plan will keep down the import of rails into Russia very materially, inasmuch as an order for perhaps 600 tons of bloome will be made to suffice for what otherwise would have been an order for 2,000 tons of completed rails.

Long Rails.—During the recent celebration of Darlington of the fiftieth anniversary of the opening of the first passenger railway, the Britannia iron works company, at their works at the neighboring town of Middlesborough, rolled for the inspection of visitors some rails of unprecedented length, and it is proposed to place one of them, 130 feet long, near the first locomotive engine, opposite the Darlington station, as a memorial of the jubilee. During the same week this company rolled in one mill, 1,350 tons of rails 40 lbs. per yard, a quantity which it is believed has never been even approached in any other mill in the same space of time. The rails were for the New Zealand Government railways.

The Consumption of Iron—or more properly the utilization of iron in its raw and unworked state, for iron is never consumed—in the United States, up to 1867, was not far from one hundred pounds per capita. In England it was 189 per head, and in France 69¼ pounds. In the whole world the rate was only about twenty pounds per head. Since these estimates were made, the rate is thought to have increased to 223 pounds per capita in the United States, and 220 in Great Britain.

The Largest Steam Hammer.—There seems to be scarcely any limit to the power and weight of steam hammers. As soon as the largest is built, another, still larger, is immediately undertaken. The latest whose immediate construction is announced, has been projected by Krupp, which will be capable of beating up a mass of steel weighing 100 tons, and will cost one million of dollars.

The Brotherhood of Locomotive Engineers seems to be steadily increasing in numbers and influence, and bids fair to exert a most important and healthy influence over the large body of mechanics for whose benefit it has been instituted. The order now numbers 180 divisions. Its last annual meeting was held at Irving hall, N. Y., Oct. 20th.

The most ancient manufactories extant are said to be the glass works of Venice and Murano, which have had an uninterrupted existence of twelve centuries.

SCIENTIFIC PROGRESS.

Progress of the Sciences.

Our habitat is a world of wonders. The universe is a vast laboratory in which our brief lives afford us scarcely time enough to investigate our surroundings, to examine and admire the handiwork of the Creator, and to reverence him for his power, wisdom and beneficence. Here, by the way, we have a theology that cannot be counterfeited by the errors of repeated translations, or by the superstitions of Grecian mythology.

The natural or physical sciences have been cultivated by slow degrees. Each has been developed from seeming mysteries—each has had its stage of incipiency, and withstood the anathemas of the ignorant and bigoted. The wild Arabs gave us the rudiments of algebra, and six centuries ago these Ishmaelites and the Chinese devised the mariner's compass and the astrolobe. The Yzedies—devil worshipers—once held their curaivals on the ground afterward consecrated by Babyloo in her pride, and finally in her ruins.

Franklin caught the electric spark that now goes on our swiftest errands; traverses the various ocean; links two continents together, and makes of antipodes door neighbors. The incidental heating of a flask containing some fluid has brought enterprise, convenience and wealth to cover all the lands and waters of our earth.

Geology, though a young science, presents an attractive field for thought. It has hightened our conceptions and expanded our knowledge much in every way. Beyond doubt our earth is many thousands of years older than the Mosaic account, as formerly received, had led us to suppose. Whether our globe was formed from nothing by omnipotent power, or resulted from the condensation of gases, or was originally a molten liquid thrown from the burning sun, its ten strata mark many thousands of years. Fossils of animals have been exhumed from the solid rock, five miles deep, under the very spot where it is supposed Eden bloomed. Even our coal beds are the fossils of trees that grew before Moses' Adam had an existence. What then of the Siluriaa, Cambrian and Laurentian eras?

The microscope, as well as the telescope, has opened new worlds to our astonished gaze. How boundless the wisdom, the works, and the empire of the Deity! Let man, who stands midway between God and matter, for a moment look, with a telescope in one hand and a microscope in the other. Here, he beholds a vast system of infinitely ponderous worlds. There, he sees a world of animalculæ—creatures so small that a drop of water would make an ocean for millions of them—so diminutive that a battalion of them could drill on the point of a cambric needle! And yet these animalculæ are as various in their forms and characters as are the huge beasts that roam our forests and plains—each has a complex system of organs, and the adaptations and functions for digestion, nutrition and reproduction.

Now, we have confined life to the smallest possible compass; still it is a mystery that baffles all science. What is life? What the origin of living matter? Fallopias, of England, called it "vital force;" Beale called it "germinal matter;" Prof. Nelson, of Chicago, calls it "bioplasm;" and Huxley calls it "protoplasm;" and maintains, if I understand him, that life inheres in protoplasm, which is spontaneously generated by accidental combinations of oxygen, hydrogen, carbon and nitrogen, but in equivalents yet incognito. I believe that life can not originate spontaneously, and that its origin will ever remain a mystery to all but the Creator.

Now, looking again upward, and we muse. Strange! our mighty earth is not more than a grain of sand, compared with the systems of worlds we behold! By the use of the spectroscope the sun is found to be surrounded by a gaseous envelope, more than 4,000 miles thick. This is called its chromosphere, and consists mainly of glowing hydrogen; but in its deeper strata are found the vapors of sodium and magnesium. The moon has been really photographed, and in different lunations; her surface has been thus accurately mapped out, showing her mountains, valleys and rocks, but not her rivers, for she has no water.

Chemistry reveals volumes of startling wonders, and is a boon to the world of art and science. In photography and photogeny light has been chemicalized; but it is in the department of medicine that it has worked the greatest wonders and the greatest good. Medicine, though progressing slowly, has made a grand march, and achieved for mankind countless blessings.—*Ex.*

Animal and Vegetable Life.—The lowest forms or stages of animal and vegetable life—those consisting of single cells—so closely resemble each other that it is extremely difficult to distinguish the plant from the animal; their form, motions and contents are similar, yet one by development and growth becomes an unmistakable animal, the other a plant. Herein, it seems to us, lies the greatest obstacle for those to surmount who claim that there is no such thing as vital power. What but a distinguishing force—life—in each could determine and direct the wonderful results arising from these minute cells? There must also be two distinct phases of this force life—vegetable and animal.

A New Reagent for Gold.

Sergius Kern says: Studying the action of sulphocyanates on some double salts of gold, I have found a remarkably delicate test for gold; experiments prove that even less than one-fifteen thousandth of a grain of gold may be easily detected by using my reagent.

The gold is first separated from foreign metals, and next converted by means of sodium chloride into sodio-gold chloride; the solution is then concentrated by evaporation. In order to detect gold, an aqueous solution of potassium sulphocyanide is used, containing for one part of the salts about fifteen to twenty parts of water. About ninety-two grains of this solution are poured into a test tube, and some drops of the concentrated solution, obtained by treating the sample as described above, are added. If gold is present, a red orange turbidity is immediately obtained, which soon falls in the form of a precipitate; on gently heating the contents of the test tube, the precipitate dissolves and the solution turns colorless.

The reagent is so delicate that one drop of a solution of sodio-gold chloride (fifteen grains of the salt dissolved in 600 grains water) gives a very clear reaction.

This reaction showed the existence of very interesting double sulphocyanides of gold.—*Chemical News.*

Latent Heat of the Vapor of Petroleum. The average latent heat of vapor of petroleum has not been very satisfactorily determined, but it is known to be very low. Dr. Ure states it at 184, that of steam being 1,000, of alcohol vapor 457, and of ether vapor 313—that is, an amount of heat that will vaporize but 1 lb. of water, and about 2.2 lbs. of alcohol will vaporize 5.4 lbs. of petroleum (assuming on important change of specific heat during the change of state). By measure, the amount of heat or fuel that will vaporize one gallon of water should vaporize no less than 6¾ gallons of petroleum. This is an important practical point in this connection. The density of its vapor is very high, averaging, if the whole mass be converted into vapor, six and a-half times the density of air at the same temperature. At 500 deg. Fah. it will pass into vaporous form, except a trifling percentage.

Relation between Spectral Lines and Atomic Weights.—A correspondent of the *Scientific American*, writing from this city, cites a series of facts which appear to disclose an intimate connection between the Fraunhofer lines of the solar spectrum and the atomic weights of the substances whose glowing vapors they represent, which, if confirmed, he thinks, and justly so, will prove of the highest importance and interest.

The facts which he cites go to show a close relationship between the spectral lines of hydrogen gas and their atomic weights. The importance of the conclusions to be derived from the existence of such relations is apparent. The evidence of atomic molecules, when brought within the reach of scientific investigation, and their dependence on the general law of gravitation, would disclose the inner constitution of matter, the nature of chemical affinity and valency, and the nature of electricity and magnetism; and it would be instrumental in the solution of many problems.

A New Theory of the Nebulæ.—M. Plante has recently communicated to the French Academy of Sciences the results of some experiments which may lead, it is believed, to a new theory for the circumstances to which are due the spiral forms of many of the nebulæ. The experiments consist in the exact reproduction of these forms by the combined action of electricity and magnetism. Two copper electrodes of a battery of fifteen elements, being plunged in water acidulated to 1-10 with sulphuric acid, the end of the positive electrode is brought to one pole of the magnet. The cloud of metallic matter carried from the electrode by the current at once assumes in the liquid a gyratory spiral movement, of which the general disposition strongly recalls that of the nebulæ. The investigator is proceeding with further experiments in the light of this idea.

Tinning various Metals in the Humid way.—The following method is given by Wegler: A solution of perchloride of tin is first prepared by passing washed chlorine gas into a concentrated aqueous solution of tin salt, and expelling the excess of chlorine by gently warming it, then diluting it with eight to ten times its volume of water, and filtering it, if necessary. The article, well pickled in dilute sulphuric acid, and polished with sand and a steel scratch-brush, and rinsed with water, is loosely wound with a zinc wire, and immersed for ten or fifteen minutes, at the ordinary temperature, in the dilute solution of perchloride of tin. When tinned in this way, it is raised, brushed with a scratch-brush, dried, and finally polished with whitening. This applies to tinning cast iron, wrought iron, steel, copper, brass, lead, and zinc.

Greatest Power of a Horse.—A horse can exert his greatest strength in drawing in a straight line, being equal to twenty-seven men in this direction. This is seen in the way they draw loads on the road. In a circle a horse exerts his greatest strength with a diameter of forty feet. Reduce the diameter of the circle one-half, and you reduce the power of the horse two-fifths.

Sales at S. F. Stock Exchange.

FRIDAY, A.M., DEC. 10.

700 Best & Belcher...52½@53½
100 ...do...h 5...54
895 Belcher...32@32¾
3000 Buckeye...2¼@2⅜
35 Bullion...42@42½
60 Bath Con...2⅞
250 Con Virginia...36⅜@36⅝
1955 California...65⅜@66
100 ...do...s 30...65
1140 C Point...31@31½
150 Confidence...17
110 Caledonia...23@23½
40 Exchequer...12⅝@12¾
540 Empire M...9¼
20 Eclipse...5
450 Gould & Curry...18⅝@18¾
105 Hale & Norcross...9⅝@10
255 Imperial...4
1015 Justice...39@39½
480 Julia...15¾@16⅛
285 Kentuck...14@14⅜
970 Lady Bryan...2¼@2⅜
230 Mexican...19@19¼
55 New York...21@22½
3055 Ophir...42½@44½
90 ...do...h 5...44
65 Overman...55
75 Rock Island...2¼@3⅜
983 Savage...13¼@13⅝
1265 S Nevada...h 30...15⅜
75 Succor...25½
20 Sil Hill...7½
500 Union...9@9¼
100 Utah...1⅜
50 Y Yellow Jacket...85

AFTERNOON SESSION.

200 Advance...1¼@⅝
80 Am Flat...2
196 Andes...3⅜@3¼
185 Alta...2¾@2⅞
350 Amazon...1⅜@1⅝
625 Best & Belcher...36⅝@36¾
575 Belcher...33½@33⅝
70 ...do...b 5...34
20 ...do...h 30...34½
100 Cosmopolitan...35c
1000 Chonta...1¼
400 Con Virginia...37⅞@38
420 California...66⅝@66¾
335 Crown Point...31@31½
100 Chollar...1.02@0.90
10 Eureka Con...16
100 Eldorado S...1½
140 Gila...2¼
30 Golden Chariot...82½
890 Gould & Curry...19¼@19¾
110 Hale & Norcross...41@42
100 Julia...14⅞@15
815 Justice...
100 ...do...h 30...14½
140 Kentuck...14½
15 Leopard...9½
120 Lady Wash...3
985 Leviathan...2¾@3
100 ...do...h 10...2½
10 Meadow Valley...3
1475 Mansfield...1@1.80
1000 ...do...h 10...1.77½
300 Ides...1.70@1.71
925 Monumental...15c
10 Occidental...3¼
895 Ophir...46½@46
50 ...do...h 5...46
30 Overman...57@56½
1500 Panther...1@1¼
275 S California...2¾
1005 S Nevada...19@19¾
150 Woodville...2¼
650 Welle-Fargo...20@25c

SATURDAY, A.M., DEC. 11.

20 Alpha...18
1835 Belcher...35@35¼
1255 Best & Bel...58½@59¼
100 ...do...h 30...60½
60 Bullion...43
570 Buckeye...1⅞@2
220 Chollar...1.00@0.95
3350 O Point...32@29
470 ...do...b 5...29½
710 Con Virginia...37⅛@38
2120 California...66@66¾
100 ...do...b 10...67
100 ...do...s 5...66
50 ...do...h 30...67½
225 Caledonia...23@24
30 Confidence...19
90 Empire Mill...8¾
80 Eureka Con...15@16½
820 Gould & Curry...20
125 Hale & Nor...8½@8¾
10 ...do...b 5...8
1050 Imperial...9¾@9½
1515 Justice...28¾@29
20 ...do...b 10...29½
285 Julia...14¾@15
100 ...do...h 5...14⅞
735 Kentuck...15@15¾
1370 Lady Bryan...2¼@2⅜
260 Mexican...19½@19⅝
100 ...do...b 5...19
140 Meadow Valley...3@3¼
1715 Ophir...46@46½
50 ...do...s 10...46⅜
110 ...do...h 30...46½
360 Overman...59½@59¾
10 ...do...b 10...60
10 Occidental...3¼
300 Ray & Ely...18¾@19
1085 Savage...16½@16¾
2045 Sierra Nevada...20@21
10 Seg Belcher...86
140 Succor...87½@88
320 Union Con...9¾@9⅞
50 ...do...h 30...10
195 Yellow Jacket...87@90

MONDAY, A.M., DEC. 13.

270 Alpha...18@18½
10 Am Flat...1½
50 Bullion...46
520 Best & Bel...59@58¾
50 ...do...h...59
850 Belcher...34@33
20 Buckeye...1⅞
30 Bal Con...2⅛
1740 Crown Point...29@28
165 Con Vir...37½@37¾
1095 California...67½@68
20 Confidence...24
410 Chollar...90@92
90 Caledonia...
145 Dayton...9@1⅝
70 Empire Mill...56½
140 Exchequer...12½@12
665 Gould & C...19¾@20
100 Halo & Nor...43@43½
610 Imperial...9⅞@9¾
1096 Justice...27½@27
50 ...do...h 10...27½
345 Julia...
990 Kentuck...14@13½
1305 Lady Bryan...2¼@2⅜
45 Mexican...19½
90 New York...
400 Overman...60@58½
1550 Ophir...47½@46½
100 ...do...b 5...47
100 ...do...h 30...48
105 Rock Island...3¾@3⅝
985 Sierra Nevada...20@20¼
265 Savage...16¾@16¼
35 Seg Belcher...85@86
50 Succor...
110 Silver Hill...7½@7¾
215 Union Con...9¾@9⅝
25 Utah...1¼
1150 Woodville...4½@3¾
150 Y Jacket...36@35

AFTERNOON SESSION.

250 Alps...1⅜
170 Advance...
890 Andes...3¼@3⅜
200 Alta...3
100 Amazon...1⅜
480 Belmont...1¾@1
220 B & Bel...58@58½
50 ...do...b 5...60
270 Belcher...34@34⅜
600 Ubonta...1¾@1¾
490 Chollar...97@94
630 California...68¾@68½
1350 Crown Point...23@29

20 Defiance...4½
10 Eureka Con...18
185 Eldorado S...1¾
425 Europa...1¼@1⅝
1730 Gila...2¾@2¾
60 Gould & Curry...20
1500 Hussey...50@50c
220 Jefferson...4½
1500 Justice...28@26½
150 ...do...s 3...25¾
20 ...do...h 5...26
700 Kentuck...27@27
630 Leopard...10@10¼
215 Lady Wash...2⅞@3
970 Leviathan...2¾@2⅞
40 Meadow Valley...
200 M Star...4
1300 Monumental...1¾@1⅝
725 Mansfield...1⅞@1¾
200 ...do...h 10...2
350 Mides...7
100 N Carson...35c
20 No Belle...
200 Niagara...40@50c
490 Ophir...48½@48⅝
100 ...do...b 5...49
475 O G Hill...3¼@3⅜
400 Pacific...75c@1
450 Wells-Fargo...25c
75 Y Jacket...10¼@10⅝

TUESDAY, A.M., DEC. 14.

110 Alpha...18½
870 B & Belcher...35⅜@35½
720 Belcher...3½@34⅛
100 ...do...h 5...34½
45 Bullion...45
450 Buckeye...1¾@1⅞
145 Baltimore Con...22½
465 Chollar...96@94
488 Crown Point...30¾@30¾
155 Confidence...21@21½
40 Con Virginia...38@38
775 California...67¾@67¾
215 Caledonia...23@24
110 Challenge...5½@5⅝
300 Dayton...4½@4⅝
55 Exchequer...12
110 Empire...5½
90 Europa...5½
100 ...do...b 5...5½
490 Gould & Curry...20@20½
340 Hale & Nor...8½@9
280 Imperial...9@8¾
3945 Justice...27@26
690 Julia...15@15¼
275 Kentuck...14½@14¾
2260 Lady Bryan...2¼@2⅜
265 Mexican...20@19¾
280 Ophir...49@48¾
100 ...do...s 90...49
190 Overman...58@60
925 Rock Island...3¾@3⅝
1555 S Nevada...22@21
375 Savage...18½@18¾
100 ...do...b 5...19
20 Seg Belcher...85
270 Succor...87½@91
50 Sil Hill...7
470 Union Con...9¾@9¾
100 Utah...15½
140 Y Jacket...105@104

AFTERNOON SESSION.

1198 Alps...1½@1¾
445 Alta...3
750 Amazon...1½@1⅝
180 Andes...3⅜@3½
1300 Mansfield...1⅞@2
50 Mint...370
1746 New York...2@2¼
100 Occidental...3¼
300 Coso Con...75c
150 Con Virginia...37⅞@38
100 ...do...s 30...38⅝
150 Cosmopolitan...35c
469 C Point...30@30½
148 Chollar...98@96
100 Eureka G Y...3
275 Europa...1⅛@1½
1425 Gila...2¾@2½
25 G & Bertrand...3
100 Golden Chariot...75c
220 Hussey...55c@60c
2005 Justice...29@27½
108 ...do...b 5...27½
940 Kossuth...2¾@3⅛
510 Leopard...10½@11
130 Lady Wash...2½
50 ...do...h 30...3
650 Leo...1
345 Leviathan...2¾@2¾
225 Meadow Val...3¼@3⅝
100 Mansfield...1⅞
200 ...do...b 5...1⅞
200 M Star...4¼@4
50 Mint...36c
450 Mides...7
1135 Monumental...1½@1¾
30 N Belle...2
100 Niagara...40c
300 N Carson...35c
471 New York...2@2⅛
35 Occident...3⅜
850 O G Hill...2⅞
200 Prussian...1½@1⅝
1300 Panther...1
50 Poorman...50c
200 Phil Sheridan...
100 Pacific...1¾
20 Prospect...5
25 Ray & Ely...19@18½
1209 South Cal...2¾@2⅞
560 Woodville...3¾@3⅝
50 Wells-Fargo...25c
120 Y Jacket...99@100

WEDN'SDAY, A.M., DEC. 15.

80 Alpha...17¾
1200 Belcher...32½@33
50 ...do...h 5...33
50 ...do...h 30...33½
670 Best & Belcher...36⅜@37
100 ...do...h 5...37
200 ...do...h 30...37½
30 Bullion...40
525 Buckeye...1½@1¾
150 Bath Con...3
255 Chollar...96@98
405 Crown Point...30@29½
120 Con Virginia...36¾@36¾
25 Confidence...20
215 California...67@68
15 Caledonia...22@22½
325 Exchequer...10½@12
565 Gould & Curry...18¾@19¾
10 Hale & Nor...44
210 Imperial...8½@8¾
4225 Justice...26¾@28
170 Julia...14¾@14⅝
395 Kentuck...14@14¼
1060 Lady Bryan...2¼@2⅜
240 Mexican...18¾@19¼
100 ...do...b 5...19
1160 Ophir...46@46¾
100 ...do...h 30...47
680 Overman...59@57½
355 Savage...15½@16
2210 Sierra Nevada...19½@20
Seg Belcher...85
930 Union Con...8¾@9¼
565 Utah...15½@14½
480 Yellow Jacket...94@96

AFTERNOON SESSION.

775 Alps...1¾@1¼
270 Advance...9@8¾
185 Andes...3¼@3⅜
1300 Amazon...1¾@1⅝
30 Alta...3
33 Belmont...1¾
110 Best & Bel...58
250 Coso Con...1¾
60 Con Virginia...37⅞@37¾
280 California...68@68¾
80 Chollar...98@97
450 Dayton...4½@4¼
20 Eureka Con...17
50 Eureka...3
500 Europa...1¼@1⅜

100 El Dorado South...1¼
100 Golden Chsr...50c
1110 Gila...2⅜
300 Gould & Cur...19@18¾
400 Hussey...60c
500 Jefferson...4½@4¾
200 Justice...28¾@28½
200 ...do...h 5...25¾@25½
1115 Kossuth...3¼@3½
535 Leopard...11@11¼
40 ...do...h 30...11¼
195 Lady Wash...3@2¾
445 Leviathan...2¾
580 Mansfield...1¾@1⅞
1690 Monumental...1¼@1
69 Mexican...19

SALES OF LAST WEEK AND THIS COMPARED.

THURSDAY A.M., DEC. 9.

20 Alpha...18
20 Bullion...41½@42
1450 Buckeye...1¾@1⅞
1085 Best & Bel...54@54½
1360 Belcher...32½@34
30 Confidence...19
3470 California...64¾@66
198 Con Virginia...36⅝@37½
20 ...do...b 5...37½
2000 Crown Point...31¾@32
220 Chollar...83
30 Caledonia...21½@22
135 Exchequer...11¾@12½
145 Gould & Curry...18@19
55 Empire Mill...5¾
640 S Nevada...20½@21¼
210 Utah...10½@5
450 Wells-Fargo...25c
75 Y Jacket...10½@10⅝

TUESDAY, A.M., DEC. 14.

110 Alpha...18½
870 B & Belcher...35⅜@35½
720 Belcher...3½@34⅛
100 ...do...h 5...34½
45 Bullion...45
450 Buckeye...1¾@1⅞
145 Baltimore Con...22½
465 Chollar...96@94
488 Crown Point...30¾@30¾
155 Confidence...21@21½
40 Con Virginia...38@38
775 California...67¾@67¾
215 Caledonia...23@24
110 Challenge...5½@5⅝
300 Dayton...4½@4⅝
55 Exchequer...12
110 Empire...5½
90 Europa...5½
100 ...do...b 5...5½
490 Gould & Curry...20@20½
340 Hale & Nor...8½@9
280 Imperial...9@8¾
3945 Justice...27@26
690 Julia...15@15¼
275 Kentuck...14½@14¾
2260 Lady Bryan...2¼@2⅜
265 Mexican...20@19¾
280 Ophir...49@48¾
100 ...do...s 90...49
190 Overman...58@60
925 Rock Island...3¾@3⅝
1555 S Nevada...22@21
375 Savage...18½@18¾
100 ...do...b 5...19
20 Seg Belcher...85
270 Succor...87½@91
50 Sil Hill...7
470 Union Con...9¾@9¾
100 Utah...15½
140 Y Jacket...105@104

AFTERNOON SESSION.

1198 Alps...1½@1¾
445 Alta...3
750 Amazon...1½@1⅝
180 Andes...3⅜@3½
1300 Mansfield...1⅞@2
50 Mint...370
1746 New York...2@2¼
100 Occidental...3¼
300 Coso Con...75c
150 Con Virginia...37⅞@38
100 ...do...s 30...38⅝
150 Cosmopolitan...35c
469 C Point...30@30½
148 Chollar...98@96
100 Eureka G Y...3
275 Europa...1⅛@1½
1425 Gila...2¾@2½
25 G & Bertrand...3
100 Golden Chariot...75c
220 Hussey...55c@60c
2005 Justice...29@27½
108 ...do...b 5...27½
940 Kossuth...2¾@3⅛
510 Leopard...10½@11
130 Lady Wash...2½
50 ...do...h 30...3
650 Leo...1
345 Leviathan...2¾@2¾
225 Meadow Val...3¼@3⅝
100 Mansfield...1⅞
200 ...do...b 5...1⅞
200 M Star...4¼@4
50 Mint...36c
450 Mides...7
1135 Monumental...1½@1¾
30 N Belle...2
100 Niagara...40c
300 N Carson...35c
471 New York...2@2⅛
35 Occident...3⅜
850 O G Hill...2⅞
200 Prussian...1½@1⅝
1300 Panther...1
50 Poorman...50c
200 Phil Sheridan...
100 Pacific...1¾
20 Prospect...5
25 Ray & Ely...19@18½
1209 South Cal...2¾@2⅞
560 Woodville...3¾@3⅝
50 Wells-Fargo...25c
120 Y Jacket...99@100

THURSDAY A.M., DEC. 16.

10 Alpha...17½
50 Am Flat...1½
795 Best & Belcher...58@56⅞
855 Belcher...32¼@32½
30 Bullion...42
150 Buckeye...1¾
305 Baltimore Con...2¾@2¾
155 Confidence...20@19¾
220 Chollar...
1035 California...68@68¾
50 ...do...b 10...69
100 Caledonia...22¾@23
85 Con Virginia...37⅝@37⅞
1000 Crown Point...29¾@29¾
100 Dayton...4¾
330 Exchequer...10½@10
610 G & Curry...18¾@19¾
435 Hale & Nor...8¾@9
320 Imperial...8½@8¾
75 Justice...24@23¾
30 ...do...b 30...24½
100 ...do...s 90...24
1000 Julia...14½@15
70 Kentuck...14@13⅝
855 Lady Bryan...2¾
200 Lady Wash...3
1280 Mexican...18½@18¾
525 New York...2¾@2⅝
1150 Ophir...46½@46¾
40 ...do...h 30...47
190 Overman...56@56⅝
1000 Crown Point...31@32
340 Eureka Con...18@17
100 Eureka G V...3
1000 Chonta...1¼@1¾
20 Obollar...91
15 Con Virginia...38½@38½
1000 Crown Point...31@32
340 Eureka Con...18@17
100 Eureka G V...3
1000 Chonta...1¼@1¾
20 Obollar...91
15 Con Virginia...38½@38½
1000 Crown Point...31@32
340 Eureka Con...18@17
100 Eureka G V...3
200 O Chariot...2s@30c
325 Hussey...75c
20 Jackson...50c
160 Jefferson...4¼@4½
780 Justice...24¾@24¾
150 Kentuck...13¾
1030 Kossuth...3¼@3⅜
300 Leopard...11¾
150 Leviathan...2
500 Mansfield...1⅞@2
500 Mides...7¾
350 Maryland...50c
350 M Star...4½@4¾
300 Monumental...1¾
1850 N Coco...2
100 N Carson...35c
1245 Ophir...45@47
200 O G Hill...2¾
500 Pioche...57½
300 Prussian...1⅞
100 Pacific...1¼
60 Raymond & Ely...18½@18⅝
5 S California...2⅜
200 Utah...16½@17½
300 Welle-Fargo...25c

The Mining Share Market.

The stock market continues dull, tho sales thst are made showing very low prices. There has been no animation whatever dnring the past week in any direction, Ophir, the thermometer of the market, being almost stationary. Possibly the brokers who failed to get np a "fall rise" are waiting on their oars to get np the "spring rise." At all events little or nothing is doing in the market. We have in onr "Shareholders' Directory" ahout a dozen new assessments this week, and hnt one dividend, that of the Northern Belle mine. From whst is said in our editorial columns the resder may lesrn what is being done by the different investigating committees, which are stirring up their respective managements.

On the Comstock the local papers certify that everything is going on swimmingly. All the mills that were rnnning on Consolidated Virginia ore before the fire will he started np again shortly, viz: the Bacon, Trench, Woodworth, Brnnswick, Morgan, Occidental and Msriposa. The new California mill will also he pnt to work ss soon as the battery department shall have been completed, which will be ahont the first of next month. There is bnt one engine in the Consolidated hoisting works ready to run at present. The old assay office possessed a capacity snfficient for the assaying and melting of bullion to the amonnt of $1,000,000 per month; the new one will have a capacity of $4,000,000 per month.

On the Ophir every portion of the work on the machinery is being pressed to completion as rapidly ss it is possihle for it to be done. The hoiler house has been erected over the incline engine, and they are putting the hydraulic apparatus of their new ore dump in order. The pumping engine is in place and the fonndation timbers are ready for the reception of the heavy mschinery of the pump. The Winfield mill is steadily rnnning on the ore reserve, turning out hullion sufficient to pay all running expenses; and the appearances are that the mine will soon resnme its former prosperous condition.

The new mill of the California is fast approsching completion. The building is finished; the frame work for the hatteries and mortar beds in place; the smoke stacks np; the engine and other machinery heing rapidly placed in position.

MINING SHAREHOLDERS' DIRECTORY.

Compiled every Thursday from Advertisements in the Mining and Scientific Press and other S. F. Journals.]

ASSESSMENTS.—STOCKS ON THE LIST OF THE BOARDS.

Company.	Location.	No.	Amt. Levied.	Deling'nt.	Sale.	Secretary.	Place of Business.
Belmont M Co	Nye Co Nev	7	50	Dec 9	Jan 13	Feh 8	F Swift	419 California st
Caledonia S M Co	Washoe	15	3 00	Nov 1	Dec 3	Dec 23	R Wegener	414 California st
Cederberg G M Co	Cal	5	50	Nov 9	Dec 9	Dec 30	R Brown	215 Sansome st
Chariot Mill & M Co	San Diego Co Cal	5	10	Dec 11	Jan 11	Feh 4	F Swift	419 California st
Cherry Creek M & M Co	Cherry Creek	5	25	Oct 21	Nov 29	Dec 27	D F Verdenal	409 California st
Crown Point Ravine M Co	Washoe	3	25	Dec 7	Jan 12	Jan 31	J M Buffington	311 California st
Empire M Co	Idaho	11	50	Oct 23	Nov 29	Dec 20	W Willie	419 California st
Florida S M Co	Nev	3	50	Nov 5	Dec 11	Jan 3	L Hermann	330 Pine st
Globe Cons M Co	Washoe		50	Dec 3	Jan 7	Jan 28	J Maguire	419 California st
Golden Chariot M Co	Idsho	15	75	Dec 13	Jan 19	Feh 9	L Kaplan	Merchants' Ex
Gould & Curry S M Co	Washoe	24	1 00	Oct 26	Nov 27	Dec 18	A K Durbrow	309 Montgomery st
Hale & Norcross S M Co	Washoe	48	5 00	Nov 9	Dec 11	Dec 31	J F Lightner	Nevada Blonk
Imperial S M Co	Washoe	25	1 00	Nov 9	Dec 14	Jan 4	W R Dean	419 California st
Justice M Co (New Stock)	Washoe	17	1 00	Nov 26	Dec 20	Jan 18	J S Kennedy	Merchants' Ex
Lady Bryan M Co	Washoe	10	1 00	Nov 30	Jan 4	Jan 25	F Swift	419 California st
Lady Washington M Co	Washoe	6	50	Nov 4	Dec 9	Dec 28	H C Kibbe	419 California st
New York Cons M Co	Washoe	18	1 25	Oct 27	Dec 1	Dec 20	H C Kibbe	419 California st
New York M Co	Washoe	7	75	Oct 27	Dec 1	Dec 18	H C Kibbe	419 California st
North Bloomfield Gravel M Co	Cal	40	1 00	Oct 21	Dec 8	Dec 20	T Derby	320 California st
Pauper M Co	Idaho	6	20	Nov 9	Dec 15	Jan 6	W F Bogart	402 Montgomery st
Pioche S M Co	Ely Dist	11	50	Dec 1	Jan 11	Feh 8	C E Elliott	419 California st
Pictou M Co	Washoe	9	25	Nov 26	Dec 27	Jan 14	S Phillin	408 California st
Pingan G & S M Co	Idaho	4	50	Nov 24	Dec 29	Jan 18	W Willis	Nevada Block
Raymond & Ely M Co	Pioche Dist	5	3 00	Nov 5	Dec 14	Jan 10	T W Colhurn	418 California st
Sneha S M Co	Nevada	3	10	Oct 27	Nov 29	Dec 22	A Halsey	200 Montgomery st
Tiger M Co	Cornucopia	2	10	Oct 29	Dec 8	Dec 28	Frank Swift	419 California st
Woodville G & S M Co	Washoe	12	1 40	Nov 1	Dec 8	Dec 27	W M Helman	309 California st
Woodville Con M Co	Washoe	4	1 00	Nov 4	Dec 8	Dec 27	W M Helman	309 California st

OTHER COMPANIES—NOT ON THE LISTS OF THE BOARDS.

American Nevada M Co	Washoe	1	10	Dec 4	Jan 10	Feh 2	L Hermann	330 Pine st
Black Hawk C al M Co	Cal		5	Oct 25	Dec 24	Jan 15	H A Powell	520 Montgomery st
Brooke S M Co	Washoe		25	Dec 10	Jan 12	Jan 31	J T Milliken	304 Montgomery st
Corinoo Hydraulic M Co	Plumas Co Cal		1	20	Nov 1	Oec 6	O W Reed	Sacramento City
Constitution M Co	Cornucopia Dist		2	10	Oct 29	Dec 4	Frank Swift	419 California st
Edith Cavell Silver M Co	Cal		6	15	Nov 24	Jan 3	Jan 20	W Stuart	113 Leidesdorff st
El Dorado Water & D G M Co	Cal	12	20	00	Nov 15	Dec 16	Dec 31	H Elias	427 Montgomery st
Electric M Co	Butte Co Cal		7	5	Nov 26	Jan 3	Jan 22	A S Paul	318 California st
Equitable Tunnel & M Co	Utah		11	20	Nov 13	Dec 18	Jan 7	G S Healy	Merchants' Ex
Geyser M Co	Cal		2	10	Nov 20	Dec 27	Jan 24	F B Rogers	Academy Bldg
Great Eastern Oons Q M Co	Cal		1	25	Oct 30	Nov 30	Dec 18	J G Riley	331 Montgomery st
Howard Hill M Co	Grass Valley	Cal	5	50	Nov 26	Jan 5	Jan 24	F J Herinann	418 Kearny st
Kearsarge Con Q M Co	Cal		2	15	Nov 4	Dec 10	Dec 30	J Mo8affie	105 California st
Kennedy M Co	Cal		11	00	Nov 1	Dec 6	Dec 27	A Wissel	210 California st
Lake Mining Co	Napa Co	Cal	4	20	00	Nov 3	Dec 4	Dec 27	R F Knox	19 & 21 Fine st
Los Prietos M Co		Cal	4	30	Nov 12	Dec 31	Jan 25	S H Smith	6 Montgomery Av
Mariposa Land & M Co		Cal	3	1	00	Nov 30	Dec 31	Feh 1	L Leavitt	309 California st
North Fork M Co	Plumas Co	Cal	9	25	Nov 2	Dec 6	Dec 23	A Martin	520 Washington st
New Coso M Co	Inyo Co	Cal	1	0	Oct 28	Nov 30	Dec 23	D F Verdenal	409 California st
Oakland Quicksilver M Co		Cal	1	50	Dec 11	Jan 13	Jan 31	W W Traylor	Nevada Block
Ocean View Q M Co		Cal	1	50	Nov 4	Dec 5	Dec 28	D Buck	309 Montgomery st
Omoga Tablo Mt M Co		Cal	8	5	Dec 2	Jan 3	Jan 24	D Wildor	Merchants' Ex
Orleans M Co		Cal	8	2	00	Oct 27	Nov 20	Dec 18	Geo P Thrston	315 California st
Owyhee Water & Cravel Co		Nev	1	30	Nov 1	Dec 15	Jan 15	J E McDonald	405 California st
Panther M Co	Cornnopia		2	25	Oct 29	Dco 1	Dec 20	Frank Swift	419 California st
Peytona G & S M Co	Nevada			5	00	Oct 25	Nov 30	Dec 18	T J Owens	315 Sansome st
Pioneer Fluming Co	Cal			5	Nov 30	Dec 17	Jan 12	W Aug Knapp	116 Leidesdorff st
Pocahontas G M Co	Cal		12	25	Dec 14	Jan 18	Feh 8	G J Eckstein	Express Bldg
San Francisco Copper M Co	Cal		3	8	Dec 10	Jan 15	Feh 15	R de Clairmont Cor Front & Jackson
San Jose M Co	Nev		10	5	00	Dec 10	Jan 17	Feh 29	A Carrigan	109 Front st
South Comstock G & S M Co	Washoe		2	25	Nov 11	Dec 16	Jan 4	J M Buffington	309 California st
Table Mt Alpha M Co	Cal		9	10	Oct 29	Nov 30	Dec 20	L Leavitt	401 California st
Taylor M & M Co	Cal			50	Dec 9	Jan 19	Feh 19	S S Murfey	607 Montgomery st
Union Gravel M Co	Cal		12	1	0	Oct 21	Dec 3	Dec 20	T Derby	320 California st
Valley Copper M Co		Cal			20	Dec 10	Jan 12	Feb 3	W H Martin	323 Montgomery st
Wehfoot M Co	Nevada		2	20	Nov 11	Dec 13	Jan 4	D A Jennings	401 California st
Woodside M & M Co	Cal		3	25	Nov 24	Jan 4	Jan 24	J Olassman	335 Montgomery st
Young America M Co	Nevada		1	25	Oct 27	Nov 29	Dec 18	R H Brown	40 Montgomery st

MEETINGS TO BE HELD.

Name of Co.	Location.	Secretary.	Office in S. F.	Meeting.	Date.
Andes S M Co	Washoe	M Landers	Nevada Block	Annual	Dec 18
Boston Cinnahar M Co	Cal	O Allenberg	438 California st	Special	Dec 20
Coos Say Coal M Co	Oregon	T P Beach	77 Montgomery Block	Annual	Jan 10
Georgia S M Co	Washoe	R Wegener	414 California st	Annual	Dec 21
Golden Crown M Co	Nevada	Daniel Beck	Nevada Block	Annual	Dec 27
Gould & Curry S M Co	Washos	A K Durhrow	Nnvada Block	Annnal	Dec 18
Hogdon M & M Co		J M Moore	Montgomery Block	Annual	Dec 24
Hungarian Hill Gravel M Co	Cal	F H Rogers	Academy Bldg	Annnal	Jan 10
Lead M Co	Ncv	O J Eston	Express Bldg	Annual	Dec 24
Leopard M Co	Nov	R H Brown	402 Montgomery st	Annual	Dec 27
Panamint Wagon & Toll Road Co	Cal	W R Townsend	330 Pine st	Annnal	Dec 28
Surprise Valley M & Water Co	Cal	W R Townsend	330 Pine st	Annnal	Dec 28
Wonder Cons M Co	Cal	W R Townsend	330 Pine st	Annnal	Dec 28
Wyoming Cons M Co	Cal	W R Townsend	330 Pine st	Annnal	Dec 28

LATEST DIVIDENDS (within three months)—MINING INCORPORATIONS.

Name of Co.	Location.	Secretary.	Office in S. F.	Amount.	Payable.
Black Bear Quartz	Cal	W L Oliver		25	Sept 13
Oone Virginia M Co	Washoe	Chas H Fish	401 California st	10 00	Dec 11
Empire M Co	Nevada Co Cal	D A Jennings	401 California st	50	Sept 15
Indian Queon M & M Co		A K Durbrow		50	Ont 11
Northern Bello M & M Co		W Willie	419 California st	1 00	Dec 13
West Comstock G & S M Co	Washoe	Oliver G Wood	534 California st	50	Dec 21

MINING SUMMARY.

THE following is mostly condensed from journals published in the interior, in proximity to the mines mentioned.

California.

AMADOR.

MONTREAL PLACER CLAIM.—Amador *Ledger*, Dec. 11: This claim is located beyond Jackson Gate, and adjoins the claim now being worked by the caual company. The owners are Messrs. Troeh and Belliard. For nearly two years the work has been confined to driving a tunnel into the hill, for the pnrpose of reaching the main lead of pay dirt. The tnnnel is now in a distance of 950 ft—about 100 ft from the point aimed at. It is expected to reach the desired spot in three weeks, when the enterprising owners oslculate npon realizing a snbstantial reward for the time and ontlay of the psst two years. Several minor leads have been out in running the tunnel, which were fonnd to pay fair wsges, bnt not snfficient object to delay the tunnel for the sake of working them. A perpendicular shaft connecting with the surface at a distance of 400 ft, supplies the tnnnel with a cnrrent of fresh air. Altogether this is oerisinly worthy to he ranged among the higgest boring nndertakings of the county. The claim hss been worked for over 20 years, and considerahle gold has been taken from it. Its richness has been demonstrated beyond a douht. It will yet require a life-time to work it ont.

HYNRAULIC CLAIM.—Dnring the past week we have taken the opportnnity of visiting the hydranlic claim purchased by the Amador canal company last year, which is familiarly known as the Martell's claim. It is situated some fonr miles from Jackson, and operations sre condncted ou a scale of msgnitude that completely throws in the shade all other efforts at hydraulic mining at present carried on in Amador county. There are facilities for throwing two streams of water; one is called the Little Giant, the other, thrown from a nozzle measuring 4½ inches in diameter, is appropriately termed the Big Giant. At the time of onr visit the latter was playing upon the claim, supplied by a flow of between 200 snd 300 inches of water in the hranch ditch. Work had been resumed hnt five days, bnt in this short space of time a large slice of the hill had been washed down the creek, leaving its precions contents in the slnices. The claim is reputed a rich one, and as the proprietors are enahled to work it at a very little expense, being the owners of the ditch, they will nndonhtedly reap sn abnndant harvest at the close of the season.

AMADOR MINE.—We are informed that the sinking operations recently carried on in the Amador Consolidated mine, of Sntter, have led to the discovery of a rich ledge, at a depth of npwards of 2,000 feet. The vein is narrow, bnt the rock is said to he of a richer character than any taken ont of the mine for a long time. Sinking has been snspended, and miners are now drifting on the lead.

LINCOLN MINE.—It is gratifying to learn that everything connected with this mine is looking well. Heretofore the rock for crushing hss been tsken principally from the upper levels. Now, however, the richest rock is being taken from the 600-ft level. The mill gets through its 90 tons of ore daily. The last clean np, made early in the month, wss considerably above the average.

BUTTE.

PURE GOLD.—Oroville *Mercury*, Dec. 10: At the express office (Tuesday last), we saw a $10,000 har of gold from the Spring Valley company's claims, that was valned at over $20 per ounce. A new piece of gronnd had been worked and a few hoxes were cleaned np to see what the clsim was paying. The excellent qnality of the gold, and the ahnndance of it, if the small piece of gronnd worked is a sample of the balance, gives promise of a rich harvest. It was sent below to the mint.

ELECTRIC MINING COMPANY.—It has been some time since we have mentioned anything abont the above company's doings, as their mill has been standing idle for a number of

months, on accoant of the scarcity of water last summer. Nevertheless, as we lately learned, they have not been quiet altogether; they have improved their mines, taking ont large qnentitica of good ores, and to prevent a repetition or stoppage of their mill in the future, they have erected a snbstential dam in the South fork, abont a quarter of a mile above their mill. They possess now as good a water-power as they oan desire, not alone for the present capacity of their mill, bnt enough for hundreds of tons, and at the lowest stage of the river—enough water to redace from twenty to thirty tons per dey. It is now only a question of time for them to increase their milling facilitiee according to the power they possess at present. They are now busy in building e flume aad nn overshot wheel, the castings for the latter baving arrived at the railroad warehonse. They intend to heve all ready in as short a time as possible, to make a long and steady run in the work of redncing their ores.

CALAVERAS.

West Point District.—Calaveras *Chronicle*, Dec. 11: Charscter of the ore in the Cheene is improving. The country rock is now working easier. The Constancia looks very promising, judging by the qnartz on the dump. Tho Mina Rica has now gained very extensive backs, aggregating 115 ft in depth, measured with the inclination of the lode. Preparations aro being made to start levels near the bottom of the shaft, which is about 250 ft in depth. A large quantity of first-olass ore has accamulated on the dump from sinking the shaft alone. Tho mill will resnme crushing as soon aa the roads are in condition to haul ore.

Glencoe District.—Over 50 toua of quartz from the Herryhousen mine were crushed at Garland's mill, yielding a fraction over $30 per ton. The first-class oro is still lying on the dump, as the custom mills are not of sufficient capacity to snit customers. Captain Woodworth's new hoisting works, on the Grasshopper, are nearly complete. The engine rates at 16-horse powor, bnt it is estimated that it will work the mine at least 300 ft deop. The hoisting works have been constructed in an economical manner. The old workings are only 93 ft in depth, showing two separate ore chutes, which have yielded rock worth $140 to $190 per ton, respectively. Some 500 linear ft from this, another fine ore chnte haa been worked which is very extensivo but not quite as rich as the former two. Mr. Woodworth bought the mine at a comparatively very low figure. A new tunnel is being run on the Monte Christo. The Rickman mine has well filled dumps of fine ore, witb extensive reserves. Good authority states that the Glencee Consolidated will be worked on a very large scale. The San Bruno, Good Hope and Monte Christo were examined last week by an experienced agent of a heavy Washoe miniug firm. The present owners of thoee minea are not able now to carry on the costly developments which are necessary hereafter. The San Bruno has a substantial and well earned reputation as a first class mine, but its works are in a sad condition for future nse. The Hadlock mine commenced a new shaft last Thursday with a view of making extensive developments. The pay ore is from 3 to 6 ft in width, averaging in the vicinity of $30 per ton. Partnership complications have retarded developments heretofore.

CONTRA COSTA.

New Coal Strike in the Pittsburg.—Contra Costa *Gazette*, Dec. 11: By a tnnnel of some 700 ft, which they have been nearly a year in running from the lower level gangway of the Clark vein, the Pittsburg company struck the Black Diamond vein on their ground last week, finding it nearly 4 ft in thickness and the coal of remarkably fine quality. They have a lift of about 400 ft above the tunnel level, as is reported, and feel well recompensed for the outlay made in reaching the vein.

The Empire Coal Mine. — The new coal mine, called the Emnire, belonging to Messrs. Hawxhnrst & Ronse, is thought to he one of the very best yet opened in the county. The location is some two milee east of Somereville, in one of the little valleys opening on the plains. The mine is opened by a slope on the vein, now down abont 400 ft. The vein is said to be 4 ft or more, and the coal of very snperior qnality. The engines for pumping and hoisting being now ready for operation, the work of raising coal and the further opening of the mine is to be vigorously proaecuted.

EL DORADO.

Woodside.—El Dorado *Republican*, Dec. 9: By the breaking of the pump about two weeks ago, the Woodside mine was obliged to shut down. A large cornish pump is now being put in, and steam will doubtless be got up again within a week, and as soon as the water oan be got out work will be resumed in the lower depths, where good pay rock was being extracted at the time of the accident to the old pnmp.

We understand that arrangements have been made for thoronghly developing the Young Harmon mine. This mine has every indication of being valuable, and if properly worked .we believe will prove so.

INYO.

Coso District.—*Coso Mining News*, Dec. 11: The Defiance mine continues to improve in a most remarkable and satisfactory manner. The ledge has now heen prospected hy drifts run npon it for a distance of 265 ft along its course from north to south, and throughout this entire length the very best of ore has been extracted. No breaks have occarred to disturb its continnity, and the indications are all favorable for it to continue on its course without disturbance. In fact the further the explorations go the more solidified becomes the ledge, while the ore improves in quality. At the bottom of the winzs, which is 60 ft below the first level, a drift has been run south for a distance of 30 ft, and at this point was encountered the rich ore spokon of in our last week's report, and it was determined to cross-cut and ascertain the width of the ledge. This cross-cut has now penetrated a distance of 30 ft and no signs of the foot wall appear, and the ore is of average richness, higher than any yet found; the last assays showing returns of $416.16 in silver and 45 per cent. lead to the ton. The mine is looking extremely well in every quarter, and is now opened sufficiently to produce 1,000 tons of ore weekly, if it is required to turn out this large quantity. The ore teams are running constantly and regularly and transporting daily more than the furnace can smelt, while the indications are that no interruption will occur during the winter to stop the transit of ors.

The Bella Union mine discloses new treasures every day, improving with the advance of every foot, in width and extent of vein and quality of ore. It oan now be nuresorvedly ranked as one of the leading mines of Inyo county, for the explorations have demonstrated beyond any farther question its permanency and warrant the immediate erection of hoisting works to enable them to raise ore from the numerous openings. This is now essentially necessary, and when procured should be erected over a working shaft of proper dimensions that should be started as soon as it is decided to order the hoisting works. The work has now reached a point where it must proceed slowly if the extraction and raising of ore is further prosecuted, for the lower level is glutted with it taken from the cross cuts and left to enable them to remove the ore and material taken from the face of the drift.

Lookout District.—We learn that J. R. Norton and James Kyle have purchased in the Kearsarge mine in the above district, paying for 300 ft the sum of $3,000. There are many very rich mines in that locality, which when once prospected will develop into most excellent property, and we are pleased to note the fact of transfers being made to parties who will endeavor to make them productive.

NEVADA.

More Rich Rock.—Nevada *Transcript*, Dec. 11: Last spring Curry & Blam discovered, in working a ledge located about two and a half miles from town, near Rush creek, some very rich rock, out of which they got several thousand dollars in a very short space of time. They worked out the richest part of the rock as they supposed, and Mr. Blum sold his intereat to T. C. Randall, who, in company with Mr. Curry, has continned prospecting up to the present time, most of the time, we believe, doing dend work. This week they went back to the point the rich rock was taken out before, and commenced stoping, when they discovered that they had run across and over the ledge, and that on the back side of the shaft it continues as rich as ever. They took out $300 in abont an hour after they discovered the fact, and have in all taken out ahout $1,500 during the few days since they struck the deposit. The ledge is three feet thick, and through the center is a streak of rock composed mostly of gold. How far it rnns they do not know, as they have not drifted much since they fonnd it. They have taken out three tons of rock, besides the rich specimens, and it looks rich enongh to pay several hnndred dollars to the ton. When they quit the place last summer they were not over a foot from the present rock. Mr. Curry informs us that the appearance of the ledge indicates that the deposit is extensive. Some of the specimens are composed almost wholly of gold, and enongh is in sight to guarantee a good stake to the enterprising and persevering owners.

Gold.—The effects of the late rains begin to be realized now. Nearly all the mines of the county are at work with a full force. Gold dust has begun to come into market, as any one can find out hy stopping aronnd the bank a little while. It is the beginning of a stream which will continne to flow steadily nntil next September, and will do more to solve the financial problem than all the speeches and newspaper editorials which have been written or delivered for the last year. After all, the miner, with his pick and shovel, is the ablest financier. He goes in for hard money, and has no difficnlty in making people believe that it is the best circnlating medium. He does not counsel a return to specie payments, because he never made any other, and he is not perplexed to discover a means to bring it about or keep it up. The jingle of his gold dust is more musical and eloqnent than the tones of the most eloqnent financier in the land.

The Manzanita mine started up over a week ago, and is now using 15,000 inches of water, which will be continued throughout the season. Other mines in the vicinity have also been washing. Everything ought to be crowded now. There is plenty of water and bushels of treasure in the hills, waiting to he washed out. The country needs the gold, and we believe owners of mines have a hankering after it too. Turn on the nozzles.

PLACER.

Nugget.—Placer *Argus*, Dec. 11: John Burke washed out an $84 nugget the other day, near town. There is still some gold in the ravines around Aburn. A short time ago a young man named Jacob Keiser came to this place from Missouri, and went to work in North ravine. He fonnd a nugget worth $17 the first day, besides fine gold enough to pay him well for his work.

The Auburn gravel mine still holds its own, as being one of the best mines in the county. All reports of it are very favorable, and it is not to be doubted that its owners will be liberally rewarded with the precious "color." On last Sunday a blast of 100 kegs of powder was set off, directly after which washing was resumed. The prospects continue good and the results are satisfactory to all concerned in this mine.

Mining Items.—Dutch Flat *Forum*, Dec. 9: The various claims heretofore mentioned as having commenced operations, namely, the Yankee, Jehoshaphat, Central, Lekamp and Pacific, still continue washing. The Summersett and Elmore Hill claims have since started up. We can now say that our washing season has fairly commenced, and so far has opened as favorably as the most noted growler could ask. The weather has been warm and favorable for mining and the quantity of gold now being accumulated in the sluice boxes of the various claims must be immense. The superintendents are anticipating large returns and the results of approaching clean ups will be watched with interest. In the Yankee claim, Supt. Lindlum is having four powder drifts run, which will be completed in about two weeks, wherein he intends to explode about 500 kegs of powder. In the Jehoshaphat claim the pipes are turned against a large body of blue gravel loosened up by a blast which was exploded the last season. The gravel has become more or less slacked and will in all probability pay largely. The Yankee, Boston, Franklin, and Buckeye tunnels are being driven with all possible speed. In the latter the contractors have commenced to raise an incline, and we may expect, in a short time, to have the Buckeye as one of our gold producers. The ditches of the Miners' ditch, South Yuba canal and Cedar creek companies are all running as full of water as prudence will permit. As a whole, the outlook for the approaching winter is unusually encouraging to our miners. A great many men are being employed, and our merchants anticipate brisk times for the future.

PLUMAS.

A Splendid Water Season.—Plumas *National*, Dec. 4: The frequent and continuous rain storms give promise that the present water season will be the best for many years, and the miners are in the very best of spirits, and confident that the next few months will put them in easy circumstances, and also enhance the value of their claims. We think their hopes are certain to be realized, for there is no doubt of the richness of the Plumas mines, and most of the hydraulic claims are well prepared for work. The cry of "hard times" will soon be over in this part of the country.

Runs Nicely.—Richard Jacks, of Meadow valley, was in town the other day, and informs us that the Golden Enterprise is prospering. The question as to whether the big flume would stand the high water has been thoroughly settled, the recent heavy floods not having injured it in the least.

It is rumored that the Providence Hill company contemplate bringing the water of Mountain Meadows creek to their ground on Rush creek. As the cost of pipe, ditches, etc., would amount to about $250,000, this will be an extensive operation, bnt we are assured that there is a strong probability of the work being inaugurated, and st no very distant day.

Items.—Heavy rains have been in order for the past week, and the ground is thoroughly saturated. Let it come. The miners can stand it. The Hnngarian Hill company now have their pipes in full blast, and we expect to hear of some good results from that quarter this season. The North Fork company have been getting in a huge quantity of supplies, and are now fitted up to run until July next. Garland has commeaced piping in his lava bed claims near Spanish ranch. Dick has got some valuable ground, and we hope he'll make a fortune. The Light's canon miners are getting to work, the rains having started up the water. Some of the best mining ground in the county is located in and ahout Light's canon. The water has started on Massac, and Galpin is again at work on the "bonanza." He has got a good claim and will make money at a lively rate this season.

SAN BENITO.

Started Up Again. — Hollister *Enterprise*, Dec. 11: Work in the Picacho mine, owned by M. Cody & Co., has been resumed, and late developments are very flattering. A conditional sale of the property was made a few months ago to an English company, but they failed to carry out their egreement, hence the mine has recently been unworked. Abont 100 flasks have been smelted, and large quantities of good ore are lying on the dump. Some twelve or fifteen hands are employed in running tunnels and excavating ore. Mr. Cody is one of the most competent and energetic mine managers in the country snd under his snpervision the company may confidently anticipate the best possible results. This property bids fair to be very valuable, and as it is in San Benito county, we may look forward to its contribntion to onr revenne.

SIERRA.

Rumor.—*Mountain Messenger*, Dec. 4: It is rnmored that the Bald Mountain company have sent for fifty Chinamen to work in their claim in place of that many white men. We hope, for the sake of business men of Forest City, that the rumor is not true.

Gibsonville.—Pen Haven gravol diggings, main tunnel in 700 ft. The company will soon be ready to take out pay gravel. Works in good order for winter. Union claim, Mt. Pleasant, paying well. Keiffer & Emerten, working large force of men. Boot-Jack and Chalcedony companies putting in many improvements. Very little snow this week at Gibsonville.

Newark.—North America company busy at work washing gravel; said to pay well.

Some Monitors.—There are three monitors working at Morgan & Donahue's diggings, St. Louis, and two at the Pioneer claim, Gardner's point.

Howland Flat.—Fashion claim, Cold canon, paying well. Five men took out last week 17 ounces of gold. Alex. McNee, T. McFarland, Wm. Stone and M. A. Norton, owners. Prospect of its paying an ounce to the pick per day before Christmas, as the richness of the gravel to all appearances seems to be steadily increasing. Empire company's dividends as large as ever. Chittenden, Stephen Jackson and Jacob Small have pipes all laid, reservoirs all completed and tunnel in 150 ft. Will be ready for active operations by next spring. Gurly & Thatcher are piping in the old California claim, and doing well. Sears Union water company, ditto. Virginia company, Potosi, are opening a drifting claim, adjoining the Empire on the north, about 500 ft from their line. Calculate to strike pay next fall, about 1,300 ft more to run. Surveyor Jones busy drawing lines for the Empire. Tom McFarland has thanks for a rousing dinner, which, to his credit he it said, he cooked himself. We put him up against the best cook in the county, and bet on him every time.

Rising Sun.—The Rising Sun company, Mt. Vernon, adjoining the Green Mountain, supposed to be equally as good, cleaned up during the past fifteen days 24¾ ounces, averagely coarse gold; total amount of work, 40 days with three men.

Mt. Pleasant Ranch.—Iowa diggings nearly clear of water; boys working steadily, with bright future ahead; depth of new shaft, 301 ft; 13 men employed; new pump, costing $1,100, down 270 ft; old pump valued at $650.

TRINITY.

Notes North.—Trinity *Journal*, Dec. 11: "Water, water, everywhere," between Weaver and Trinity Center. Ditches, creeks, gulches and everything else where water can run are filled and the ground is thoroughly soaked.

The miners here are still preparing for work ahead. On Shoo Fly hill the company is working away with might and main. Negotiations are pending in regard to payment on the old Coyle claim, a settlement *in toto* having been nearly effected. Mr. Edward Allison, now proprietor, is at the Center, full of jollity and hopes for the future. He will soon begin operations at the claim.

The large retorts have been removed to Cinnahar—three of them for the Boston company and five for the Altoona. The latter company, from crude ore, during the month of November, turned out 78 flasks of quicksilver.

Nevada.

WASHOE DISTRICT.

Lady Bayan.—Gold Hill *News*, Dec. 9: The new pump station at the 500-ft level is nearly completed. The north and south drifts, on the 380-ft level, are steadily advancing, the face of the south drift being still in a fine character of White Comstock quartz with spots of excellent ore. The east and west cross-cuts from this drift, 380 ft south of the shaft, are also in fine quartz.

Julia.—The main southwest drift on the 1500-ft level is rapidly advancing, the face in quartz and porphyry, carrying some fine streaks of ore. The main southwest drift on the 1400-ft level is also making good progress, the face in a much better character of quartz and ore. The face of the cross-cut from this drift is also in a much more encouraging quality of quartz. The chances are that the Julia may find paying bodies of ore almost any day.

Amazon and Glasgow.—Sinking the shaft is going rapidly forward. It is now down 288 ft. The north drift from the 259-ft station is in 77 ft, following the hanging wall of the ledge, showing the ledge to be well defined and carrying good ore almost the entire distance. At the rate the shaft is being sunk it will be but a very short time before the company will be ready to open another level, when some rich ore developments are looked for.

Lady Washington.—Three or four days ago a splendid streak of vein matter, consisting of clay and quartz carrying metal, came in at the north side of the shaft, and to-day the whole bottom of the shaft is in the same very promising material. Water increases, but the very powerful machinery is capable of handling twenty times the amount met with at present.

Buckeye.—Sinking the main incline is making rapid headway. A winze has been sunk on the ledge 100 ft south of the 550-ft station, which is down 22 ft, the bottom in fine quartz and ore. The prospects are excellent for the opening of a good mine on the next level below.

North Carson.—This mine has shown decided improvement during the past week, especially in the winze below the upper tunnel, the bottom of which has run into a body or seam of ore over 10 ft in width. This ore is superior to any heretofore found in the mine, being more of the Comstock character, such as is found in the upper workings. The lower tunnel is to be pushed ahead more vigorously

(Continued on Page 396.)

School and Mineral Lands.

The *Territorial Enterprise* gives the decision of the Supreme Court of Nevada in the case of Solomon Heydenfeldt sgsinst the Daney gold and silver mining company. The case involved the title of the State to the sixteenth and thirty-sixth sections of the unoccupied public lands granted to the commonwealth by Congress, where the same embrace mineral lands. The Supreme Court considers it one of unusual interest, involving principles of great importance, and says it was ably argued by learned counsel and received the careful attention of the court. The title to a large number of these sections had been secured by persons under the assumption that Congress had secured them to the State for educational purposes, regardless of the fact that many of them contained valuable mines. This opinion was hooked by a decision of the Supreme Court of California; but is now set aside by the Supreme Court of this State, which decides in effect that these school sections cannot be claimed by the State when they contain minerals. This opinion is by Chief Justice Hawley, and is concurred in by Judge Earll. Judge Beatty differs from the majority of the court on some points, and is of the opinion that all the sixteenth and thirty sixth sections, whether mineral lands or not, belong to the State, unless they have been disposed of by act of Congress prior to the passage of the Enabling act, by which they were granted to Nevada. He does not think, however, that the appellant can derive any advantage from this conclusion, for the Legislature has acquiesced in the Congressional interpretation of the grant, that it does not embrace the mineral lands, and has agreed that they shall be reserved from sale. He therefore concurs in the opinion of the court in the case at issue, which was an action of ejectment to recover a portion of the sixteenth section, in which the Daney mine is located.

State Lands and Agricultural Products.

A volume of reports has recently been issued from the office of the Surveyor General, containing much valuable statistical information in regard to the present acreage and agricultural resources of the State. In these reports the total area of the State is estimated at 100,500,000 acres, or 157,031¼ square miles. This is 30,000 square miles below the estimates of former years. Of this area, 2,648 townships, or 41,627,759 acres had been surveyed prior to June 30, 1875, and 46,611,000 acres remained unsurveyed. The swamp and overflowed lands are put at 1,720,000 acres, of which 1,553,115 acres have been returned as such by the United States Surveyors.

Federal Land Grants.

The grants of land made to California by the United States are approximated at 7,590,035 acres. Classified—500,000 acres are entered under the head of internal improvements, 1,553,115 as swamp and overflowed lands, 5,229,440 for Thirteenth and Thirty-sixth sections, 46,080 as seminary grant, 6,400 for the erection of public buildings, 150,000 for the benefit of agriculture and the mechanic arts, and 105,000 as salt marsh and tide lands. This makes a territorial area of 7,598,030 acres, or 50 per cent. greater than that of the state of Massachusetts, which State covers but 4,922,000 acres.

Lands Sold by the State.

During the last two years the State sold 100,934 acres of swamp land; of which 31,785 acres is in Kern, 26,250 in Tulare, 17,259 in Lassen, and 8,005 in Plumas; making 83,309 acres for these four counties, and leaving for 20 other counties 17,626 acres. During the two years ending August 1, 1875, there were 79 swamp land districts organized and reported at the Surveyor General's office.

Swamp Lands Reclaimed.

The reclamation is reported "complete" in 27 out of a total of 187 districts organized since the passage of the Reclamation Act of 1868. The acreage of these 27 districts completely reclaimed is 118,255½. That is, about 1 acre of every 12 of this sort of land in the State has been completely reclaimed. In 55 other districts $2 per acre has been expended in the work of reclamation. These 55 districts cover 442,441 acres. The amount of money refunded to purchasers under the law is $248,578.93.

Area and Products of Cultivated Lands.

The agricultural and horticultural statistics, incomplete as they must be, are nevertheless highly interesting. In 1873 there were 3,366,716 acres of land in cultivation, and 3,541,900 in 1874, an increase of 205,184 acres, or about 6⅛ per cent. in a year. A like per cent. of increase for 1875 would give us a present area in cultivation of 3,758,841 acres. The acres in wheat last year were 2,156,149, or about 62 per cent. of the whole area in cultivation. The area in wheat and barley was 75 per cent. of the whole area of cultivation. The wheat production for 1873 is placed at 28,784,571 bushels; for 1874, at 30,248,341. The acreage in barley in 1873 was 496,217; production, 11,063,564 bushels. In 1874 the acreage was 490,274; production, 9,261,940. Acreage in oats in 1873, 74,729; production, 2,077,804 bushels: in 1874 the acreage was 65,217, and the production was 1,683,150 bushels. The ten counties foremost in the production of wheat and barley in 1874 were as follows:

	WHEAT.		BARLEY.
Butte, bushels..	3,170,600	Sutter, bushels....	616,416
San Joaquin	3,050,000	San Luis Obispo..	1,053,800
Stanislaus.....	3,002,000	San Joaquin.....	625,000
Colusa.....	3,000,000	Alameda.....	516,282
Sonoma.....	2,624,250	Monterey.....	508,500
Monterey.....	2,430,500	Yolo.....	503,780
Yolo.....	2,056,135	Stanislaus	460,000
Santa Clara.....	1,701,131	Tulare.....	446,190
Contra Costa....	1,500,830	Butte.....	442,300
Sutter.....	1,284,688	Los Angeles.....	388,600
Total 10 counties.	23,824,104	Total 10 counties.	6,458,868

The above ten foremost wheat counties yielded in 1874 very nearly 79 per cent. of the entire wheet production of the Stete—(78 5-6 per cent.) The ten foremost berley counties yielded the same year very nearly 59 per cent. of ell the harley produced in the State.

The Hop Crop.

Santa Clera comes first in hops, 431,277 pounds; Sacramento second, 367,500 pounds; Mendocino third, 192,000 pounds; and Alameda fourth, 82,000 pounds. The four counties yielded very nearly 80 per cent. of the entire production, 1,346,894 pounds.

The Tobacco Crop.

Los Angeles produced 10,000 pounds, San Benito 190,000 pounds, and Santa Clara 802,793 pounds, being all the tobacco raised in the State in 1874, but 69,941 pounds.

Comparative Statement of other Agricultural Products.

In 1874 we had a yield of corn from 40,992 acres, of 1,449,002 bushels, against 1,307,679 bushels from 39,594 acres in 1873. The following tabular comparison of various products for 1873 and 1874 is collated from the report. It will exhibit in the shortest method the progress made in the industries covering the productions given:

	1873.	1874.
Peas (bushels).....	78,076	106,628
Peanuts (pounds).....	287,954	161,200
Beans (bushels).....	162,379	169,155
Castor beans (pounds).....	145,600	123,400
Potatoes (tons).....	183,000	131,321
Potatoes (acres).....	24,704	25,449
Sweet potatoes (tons).....	5,236	4,998
Onions (bushels).....	81,052	110,385
Onions (acres).....	912	869
Hay (tons).....	566,144	752,214
Flax (pounds).....	1,405,080	2,239,800
Hops (pounds).....	899,660	1,346,894
Hops (acres).....	847	1,125
Tobacco (pounds).....	1,071,030	1,243,734
Butter (pounds).....	6,822,091	6,924,140
*Cheese (pounds).....	1,722,328	3,412,642
Wool (pounds).....	19,633,813	21,340,482
Honey (pounds).....	529,679	897,060
Grapevines	30,196,429	35,182,501
Wine (gallons).....	3,858,027	3,892,775
Brandy (gallons).....	176,944	223,763
Whisky (gallons).....	1,347,700	1,763,150
Breweries.....	144	170
†Beer.....	4,386,672	14,633,354
Horses.....	243,711	230,522
Mules.....	23,629	23,557
Cows.....	302,366	288,938
Beef Cattle.....	182,796	195,378
Oxen.....	47,793	8,804
Neat Cattle.....	794,073	848,585
Sheep.....	4,898,001	5,464,711
Hogs.....	219,939	242,819
Grist mills.....	204	225
Barrels flour made.....	1,714,218	2,016,803
Bushels corn ground.....	234,940	269,237
Feet of lumber sawed.....	442,018,387	446,371,490
Woolen Mills.....	8	8
Pounds wool manufactured.....	5,601,976	3,865,995
Railroads (miles).....	1,214	1,326

*The increase in the production of cheese and butter from 1873 to 1874 was remarkable—particularly in cheese. The increase in wool was 9¾ per cent. An equal increase for this year will give us 23,316,000 lbs., and very nearly 6,000,000 sheep. The leading sheep counties are Los Angeles, Fresno, Kern, Santa Barbara, Merced and Tehama. The leading cattle counties are Kern, Santa Clara, Fresno, Monterey and San Luis Obispo. The dairy counties are Sonoma, Marin, San Mateo, Sacramento, Plumas and San Luis Obispo. In 1873 the assessed property of the State was $611,256,939; in 1874 it was $655,036,235.

†San Francisco was omitted in the report of 1873.

ANOTHER BONANZA FOUND.—Intelligence was brought from Treasure hill on Wednesday morning last that another rich bonanza had been struck in one of the Eberhardt & Aurora company's workings. Of course this was welcome and joyful news to the citizens of Hamilton, as this company at the present time is our main support, and everything that is beneficial to them is also a god-send to our people. It is stated that the find did not so much astonish those connected with the mine as it did the outsiders, for a 200 feet drift was being run to strike the ledge that was found. The ore just discovered is at a depth of 280 feet, or about eighty feet lower than any body of ore was ever found in the workings, and is pitching eastward, or into the hill, which is a contrary direction to all other bodies of ore heretofore found. At this writing no idea of the extent of the find can be approximated, but Foreman Maxwell has seen enough to warrant him in giving the workmen a "blow out" down in the mine. The character of the ore is very similar to that found in the Eberhardt in early times, and should it prove to be a large body, as is confidently expected, the company have indeed found a very rich bonanza. We hope to be able in our next issue to give all particulars in regard to this new discovery.—*White Pine News, Dec. 4th*

NEW HOISTING WORKS.—The new hoisting works at the Richmond mine are nearly completed and will be ready for operation some time during the present week. They are said to be the finest works in the State, and they are certainly the heaviest of any, with the exception of some upon the Comstock, being of a sufficient power for hoisting from a depth of 2,000 feet.—*Eureka Sentinel.*

Pancake Coal Company.

J. Montgomery, the great furnace and quartz mill builder, and general mechanic, returned here from Pancake on Wednesday last, where he has just completed for the company extensive hoisting works. He has also been remodeling the engine, which now works from a friction to a link motion, reversible. Some time ago this company let a contract for sinking a new double shaft, nine by four feet and a half in the clear, to a depth of 300 feet. One hundred and forty feet of contract has been completed, and one hundred feet of the shaft is now timbered. They are now sinking at the rate of four feet per day, and when twenty feet more will have been completed, they expect to strike the first layer of coal. At a depth of 260 feet they will strike the large body of coal that has been developed by the old workings. A great amount of work has been done on this mine, but it was performed in a very unskillful manner, and it was deemed best by the present owners to sink a new shaft and commence working the mine in a more scientific way. The old workings are at a much greater depth than the new, and have developed two fine layers of coal. The hoisting works just erected are calculated to work the mine to a depth of 600 feet. Mr. Welch, the superintendent, expects to deliver 1,000 tons of good, merchantable coal in Eureka by the first of July next. The company is now using the coal for all needed purposes about their engine at the works, and say that it burns splendidly. Now that wood is becoming scarcer every year, and has to be hauled long distances, the coal from this mine will be of much benefit to the town of Eureka, where they are using such large quantities of wood, and which will probably be a much more economical fuel. We have a great abundance of wood at present, but the amount that will be needed during the next year or two, by our mills and furnaces, will draw heavily upon the supply, when this coal will also be of great benefit to our people. Even for domestic purposes every one would prefer coal to wood.—*White Pine News.*

MAKING BOXES.—The Swiss have a clever way of making cheap boxes without the use of nails, the mitred sides being fastened together by wedge shaped pieces of wood. An English inventor has recently patented another process, which may be used for heavy as well as light boxes. The two pieces of wood to be fastened together are first mitred in the ordinary way, and a hole is then drilled in each piece vertically from the bottom upward at a short distance from the mitred edge. A channel or groove is then cut by a saw or otherwise from the mitred edge to the drilled hole. This channel is of less width than the diameter of the hole, and may be cut either parallel to the sides of the pieces of wood or at right angles to the mitred edge, so that when the two edges are put together there shall be a continuous channel from one side to the other, shaped somewhat like a dumb bell, add running from the top to the bottom of the box. A key is formed by running a fusible metal, such as lead, into this channel. The key may be made separately of solid metal and driven into the channel—but, in either way, a joint is formed which can be broken only by tearing away the mitred edges of the wood.

ALE AND PORTER.—There seems to be quite a mystery in regard to some of the constituents of ale and porter. At present chemical science is completely baffled by the ingredients. All that is known with certainty respecting the composition of these liquids is that they contain some marvelously intoxicating elements, but what these elements are no chemist can yet tell. Mr. Anderson, the English analyst, in his last quarterly report, states that ale and porter—the latter especially—have for a long time continued to show insupereble difficulties as to the detection of the ingredients used in place of malt and hops. "The cause of the peculiar intoxicating effects of porter, for instance, cannot," says Mr. Anderson, "for one moment be supposed to result from the almost minute and surprisingly small amount of alcohol I find contained in that class of beer; yet a quart or two of it will produce more decided drunkenness than brandy or whisky containing twenty times that amount. I am sparing no efforts to find the nature of the substances which exercise this remarkable action—a point, I may mention, which has hitherto puzzled not only chemists, but those of the Inland revenue department, who from long experience, should know all about it." In the mean time it seems unfair that persons becoming stupefied on the unknown ingredients of drugged ale or porter, should be liable to the same penalty as those who get fairly drunk on alcohol. The culprits are the publicans who sell the mysterious drink, and who, in strict justice, should be heavily fined for the drunkenness of each customer.

ANTIMONY DISTRICT.—We learn from an authentic source that the antimony mines of Gilbert, Graves and Goodell, in Antimony district, south of Pleasant valley, have been leased by a French company in San Francisco for one year. The company agrees to pay the owners of the mines a certain price per ton for all ore extracted during that period. As we understand it the lessees intend to work the mines and commence shipping ore without delay. There is said to be plenty of ore in sight, and undoubtedly this company will ship enough to supply the demand in San Francisco.—*Silver State.*

Using the Raw Material to the Utmost.

One of the greatest discoveries ever chronicled is that of petroleum. Its importance is even yet but half comprehended, as illustrated by the following from an exchange:

Nature's economy, in all of her productions, is in no instance more strikingly illustrated than the varied merchantable commodities that are wrought from crude oils that are so bountifully deposited in some sections of our country; and the great waste that attended its treatment would do for an excellent text for a telling sermon on the startling ignorance of man and its rapid disappearance under the incisive application of his intellect. Upon the first discovery of the oil in the Pennsylvania districts, of course immense quantities were lost while yet in a crude state, owing to the inadequate means and contrivances for preserving it; then in treating the product the residue in the stills of the refiner was regarded as fit only for fuel, this was, however, soon found to be an error, and the tar was taken from the oil refinery, submitted to another treatment, and parafine oil is the result; again, a residuum was found, and this in its turn is now pressed and refined and enters largely into the manufacture of candles; submitted to a still further treatment, the wax becomes a transparent and tasteless mass, in which condition it is converted into chewing gum. After undergoing all these varied treatments there still remains a hard, crisp cinder, which still contains sufficient live matter to render it combustible and fully equal to the best coal in its heating qualities, and this, notwithstanding the fact that in its later treatment the mass is submitted to a white heat, which we would naturally suppose would so thoroughly disintegrate the matter and render any residue unfit for any purpose, much less a fuel. What science may yet accomplish in drawing from this cinder an article to swell the list of analogous products is as yet undetermined, but we are not prepared to believe that even this mass, although it leaves scarcely a vestige of ash after being burned as a fuel, will be allowed to go to waste.

PALACE HOTEL STATISTICS.—P. M. Wellen, as foreman, had charge of receiving all the wood-work of the Palace hotel, of which he kept a regular account. In summing up he finds some interesting facts, for instance: There were 298 miles of mouldings used in the interior, around the doors and windows; 101 miles of casing to doors and windows; 26⅛ miles of base-boards, and 22¼ miles of door jambs. There were 1,963 window frames, 3,441 pairs of sash, and 60,126 feet of inside blinds. There are 2,125 turned and fluted columns in use as supports to the corridors, dining and breakfast-rooms, office, halls and bay-windows. The sky-light over the court is 88x144 feet, the largest in the world. The glass is supported by 3½ miles of sash bars. The millions of brick, barrels of lime and cement, the tons of iron and tons of putty are not included in this statement. It is 136 feet from the lower floor to the top of the ridge pole of the sky-light.

NEVADA PLACER DIGGINGS.—The *Silver State* says: The late storms have increased the flow of water in the ravine near the Eagle mine, in Spring valley, and the placer miners who had to suspend operations during the dry season are preparing to resume. The men who worked these mines, almost without exception, made fair wages, and if water can be had, no doubt they will again do so until the weather becomes too cold. We are not advised as to the extent of the diggings, but it is believed that with plenty of water all the gulches in the vicinity would pay wages. Indian creek, which finds its way into Buena Vista valley, a few miles north of Spring canon, affords several large sluice heads of water for several months in the spring and summer, and it can be conveyed by a ditch to the diggings. All the placer mining heretofore carried on in Spring canon has been by the antiquated "rocker" system, and the gravel must be rich to pay even four or five dollars a day to the miners engaged in the business of washing it.

SAND PAPER.—One of the old industries, the nature and extent of which are comparatively little known, is the manufacture of sand paper, the amount of which article annually produced in the United States is estimated at not less than 200,000 reams, including the various grades and qualities. Formerly it was made of ordinary brown paper, glue and sand. At present, for the most part, the paper is made of old rope, the best quality of glue is used, and, instead of sand, pulverized quartz or flint. By this means a superior fabric is produced, of a constantly uniform grade, and at so low a price that the use of it has become greatly extended, large quantities being exported to Europe, South America, the Pacific islands and elsewhere. For emery paper and emery cloth a large demand has been created by the finished iron works in steam engine shops, the sewing machine factories and other similar industries which require them for polishing purposes.

AMERICAN PASSION FOR FLOWERS.—It is stated that more bouquets (not buttonhole) are made up in a single month in the city of New York than in the course of a whole year in the city of London. This is, perhaps, a trifling exaggeration, but Mr. Dickens said very much the same thing in writing of his American experience several years ago, so that it is evident that our love for flowers is sufficiently conspicuous to attract the attention of foreigners.—*Horticulturist.*

Useful Information.

Why do not Photographic Portraits Always Look Like the Sitter?

The *Manufacturer and Builder* answers the question as follows: A very common cause is the improper illumination of the features while the picture is being taken. Different faces require different kinds of light to bring out the characteristic features, which are different in every individual; some require the light sideways, some more from above or below, others in front or more from behind; and if the photographer is a portrait painter, or at least an artist, he will know how to manage the light and illuminate the face of the sitter in such a way as to show the prominent characteristic features, and at the same time show the face to the greatest possible advantage. As a photograph consists of nothing but lights and shades, every phase of light and shadow as it falls on the face of the sitter is reproduced with the utmost fidelity.

In order to see the force of these remarks, one has only to look at the face of a person in the evening in a room lighted up by a single candle, and watch the changes in the appearance of the face when moving the candle, keeping it above the face, or at the side, or in front, or below. Unfortunately most photographers have no idea of all this, and have a fixed light—usually a skylight, which is indeed the worst to bring out any face to advantage; or they place every customer so as to face the light, and take his picture in front from the side where the light comes from; the result is a flat picture, without character, and having only a faint resemblance. There are many galleries where the lights can not be so managed as to give the kind of light needed for some countenances, and it is in such galleries that certain kinds of faces cannot be taken satisfactorily.

Most of the leading photographers have commenced to see the great advantage of being able to obtain the light also from the side, and even from below, and to be able to screen the top light with proper curtains; hence the really fine artistic pictures obtained nowadays by those photographers who, being artists themselves, are foremost in this beautiful art.

The Blast Furnace.

Engineers have at different times directed their attention to the obtaining of a metal which shall be so resistant of the action of partially molten iron as to prevent those accidents which now and again prove painfully disastrous in the working of blast furnaces. The smelting process should go gradually on, the iron steadily exuding, as it were, from the stone as the blast heat operates upon it. Sometimes the partially smelted materials hang, or "pocket," at a little distance above the tuyeres, and after a time come down with a rush. There is risk that during the fall particles of molten iron and cinder may impinge upon the tuyeres, burn them through, and allow the water to escape into the furnace, with the result that the heated mass coming down upon the water so escaped, an explosion ensues. By an accident of this class four furnace men were killed at the Hot Holes furnace, near Wolverhampton, not long since. The tuyere in this case was one of seven, and was made of a brand of boiler plate iron known in the locality for its excellence. With this iron the tuyeres are constructed by the blacksmith of the firm; and if, after doing duty in the furnace, they are found to have become worn they are not wholly cast aside, but are "nosed" with the same class of material. This tuyere had been nosed, and it had been at work some twelve hours before the explosion. Furnace managers tell us—and it was so contended at the inquest in the case—that it is impossible to prevent pocketing and the lodging of portions of incandescent stuff on one or other of the tuyeres. Assisted by the engineers they have, therefore, turned their attention to the obtaining of a material which shall not be eaten through by the hot metal. As we all know, mixed metal, bell metal, and copper have each been in their turn tried, and Mr. Hickman has tried them, with the result that he finds nothing safer than really good boiler-plate iron. If other people's experience has been different to this, we hope that for the benefit of those who have been less successful they will make it known.—*The Engineer.*

Keeping Piano-Keys White.—It is said that piano-keys will not turn yellow if exposed in a light room. Never close an instrument with ivory keys. Throw a sheet over when sweeping and dusting. Wet a soft cloth in alcohol and rub off all dirt, then expose as much as possible to the sunshine. If they are very yellow it will take a few weeks to restore the original whiteness. To facilitate the process, re-wet with alcohol once or twice, though they will whiten without in time.

Bees' Eyes.—The lenses of bees' eyes are not adjustable; and, though they can see accurately to great distances, they seem blind to objects close by. Bees dart down to the door of their hives with a precision which is generally unerring; but if, from any cause, they miss the opening, they are obliged to rise in the air in order to take another observation.—*Popular Science Monthly.*

Salt.—*Hall's Journal of Health* thus sums up some of the many uses of salt: "It will cure sick headache, make cream freeze, make the butter come, take ink stains out of cloth of any kind, kill worms, kill worms, make the ground cool; so it is more congenial to celery, cabbage, etc. It will ease the itching pain caused by irritating skin diseases, like hives, itch, etc. It will produce vomiting or stop it, as you like; and many other things too numerous to mention. All pure salt will do this to a certain degree, but sea salt is the most effectual in its action." Salt is a most remarkable and highly useful substance; but we think that our contemporary will find, on practical trial, that the article will not do all that is above claimed. For example, salt will not make cream freeze, it will not take ink stains out of cloth, and probably will not do more than one or two of the other things above mentioned.

Pencils have lately appeared, the writing of which is capable of being copied, more or less perfectly, in the press. They are said to be made of a mixture of graphite, kaolin, and blue violet aniline. The graphite is used in the form of a thick paste, the kaolin in a finely pulverized state, and the aniline in the form of a very concentrated aqueous solution. The whole when well mixed is molded under the press with cylinders about four inches long, and of the required diameter. Gum arabic may be substituted for the kaolin.

A Dangerous Poison.—A dangerous poison has recently been discovered to exist in the bamboo cane. The cavity at each joint contains a quantity of small black fibrous matter, covered with an almost imperceptible coating of tissues, which conceals the poison. If swallowed, the filaments do not pass into the stomach, but remain in the throat, producing violent inflammation, and finally death. Juvenile smokers of the cane ought, therefore, to be careful.

Handsome ornaments can be made by mounting fern leaves on glass. The leaves must first be dyed or colored. They are then arranged on the mirror according to fancy. A butterfly or two may be added. Then a sheet of clear glass of the same size is placed on top, and the two sheets secured together at the edges and placed in a frame.

It is not generally known that the Treasury Department employs two learned and skillful chemists, one of whom is constantly engaged in fabricating indelible inks, while the other devotes his talents to washing out the inks, and, thus far, chemistry has devised no ink which chemistry cannot efface.

Good Health.

Fat Men of Sparta.

Fat is not a sign of health. We like to see portly men, and some there are who can wear their two hundred and thirty pounds of bone and tissue handsomely. Yet you would not select such men for endurance, nor for the chase.

The ancient Spartans understood this thing. They paid as much attention to the rearing of men as our best stock-breeders of to-day pay to the rearing of fine horses. They took charge of the firmness and looseness of men's flesh, and regulated the degree of fatness to which it was lawful, in a free State, for any citizen to extend his body. Those who dared too grow too fat or too soft for military campaigning in the service of Sparta were soundly whipped, and if they would not, of their own accord, reduce their flesh, they were taken in hand by trainers, who, with spur and lash and corresponding diet, soon brought them to the required standard.

In one particular instance, that of Nauclis, the son of Polybus, the offender was brought before the Ephori, and a congregation of the chief men of Sparta, at which his unlawful fatness was publicly exposed in the market-place, and he was threatened with perpetual banishment if he did not bring his body within the regular Spartan compass, and give up his culpable mode of living, which was declared to be more worthy of an Ionian than a son of Lacedemon.

The Effect of Close Confinement.—In 1865, a young English actor named Walter Hastings, at a club meeting, made the remark that close confinement was not a very terrible punishment, upon which Lord S. offered him £10,000 if he would try it ten years. He accepted the offer, and retired from the stage to a dark cell fifteen by ten. He was allowed plenty of food, light, books, and writing materials. He has emerged from his prison, and is spending his hard earned coin in Paris, intending to return to the stage. He began his fool-hardy experiment at twenty-five, but left his dungeon looking like a man of three score.

"Milk, after it has been yielded by the animal, may suffer contamination at a later stage," says T. A. Franklin. A case is on record where the milking was performed by persons recovering from scarlatina, and the disease thus conveyed by the milk to children who drank it. Milk rapidly absorbs numerous offensive odors, is established beyond a doubt.

The Cerebral Arteries in Old Age.

A not uncommon condition of the arteries of the brain, especially at its base, is those far advanced in years, is the displacement in places of the middle coat by lime particles, which, of course, renders them easily torn. So far as known, this condition is incurable, as well as unpreventable. It is one of the changes of structure incident to very old age. The only measure that can be relied upon to prevent a rupture under such conditions is to be cautious about distending them with the blood. This is, in fact, the great fundamental principle of prevention, when the vessels of the brain are weak from any cause.

To effect this, certain regulations in eating and drinking are far better preventives than any medicine, or even occasional bleedings. The latter method is particularly unsafe. After bleeding from the arm, new blood is often made more rapidly than under other circumstances, and so may become, before a person is well aware of it, very abundant, with a dangerous pressure on the weak vessels. The subject of such a practice is very apt to rely on the abstraction of blood for safety, and take no care otherwise of himself. Besides, he has no accurate means of knowing when the pressure of the blood is becoming dangerously great. The periodical bleeding from piles is a very different matter. They often act as a safety-valve to the high pressure from within, and regulate themselves on mechanical principles. Full-blooded persons, past middle life, and with a predisposition to apoplexy, should never try to remove such a safety-valve.

As soon as old age puts a decided check on the amount of daily exercise, it is time to put a decided check on the food consumed. If the supply of new matter is greater than the waste of the old, an accumulation of surplus blood must be the result. The principle is an important one, yet it is little known and less practiced. Men well past middle life, who do not exercise half as much as in their younger years, often eat as highly nutritious food as they ever did. Such a course is very dangerous. The tension on the vascular system must not be increased, but diminished, if the risk of an apoplectic stroke would be avoided.—*Popular Science Monthly.*

Do Alcoholic Liquors Supply Bodily Heat?

Dr. Richardson, F. R. S., recently proved by careful and accurate experiments that alcohol lowers the temperature of the body, and increases the action of the heart, which is thus jaded and worn out before its time. "There was," Dr. Edward Smith said (at the British Association meeting at Bradford), "a certain sensation of heat in the stomach and in the skin, but there was no actual increase of heat; the increased quantity of blood sent into the blood vessels on the surface of the body gave more heat to those parts of the body, but the store of heat in the body was diminished." It is this heightened circulation and the propelling of the blood in larger quantities to the surface of the body, which gives the agreeable sensation of heat after a dram or other alcoholic dose; the sensation is real, but the cause of it is very different from that usually supposed. * * * We do not deny the pleasant sensations and apparent benefit which may be derived from alcohol, especially by those who have become accustomed to its use; but we maintain that these are delusive and dangerous, that they are not legitimately obtained, but procured at the expense of real and lasting evil. * * * You may say you have often felt better for a dose of alcohol; but your feeling deceives you, or rather, you draw an erroneous conclusion from it (as we have already shown in reference to the heat-giving power), and it is the province of science to correct this false impression.—*Smith's Prize Essay.*

The Blood Cure.—The practice which has recently come rapidly and widely in vogue of taking for consumption and some other diseases drafts of warm blood, the moment when extracted from the calf or ox, has gone into considerable disuse of late, on account of distaste, inconvenience and other reasons. Dr. De Pascale, of Nice, has successfully adopted a substitute in the form of dry powdered blood. The blood of the animal, after being dried in a water bath, is reduced to a very fine powder and grated through a sieve, and it can thus be taken for any length of time without repugnance, being almost tasteless; can be taken as any common powder, mixed with soups, milk, marmalade or chocolate, or inclosed in a wafer. Dr. Pascale has given it in some cases mixed with a little pepsin. The quantity of the powder he varies according to the patient's age, sex, state of health and digestive power; in general beginning with thirty grains, increasing as circumstances may dictate.

An Unhealthy House.—A dark house is always an ill-aired house, always a dirty house. Want of life stops growth and promotes scrofula, rickets, etc., among children. People lose their health in a dark house, and if they get ill, they cannot get well again in it. Three, out of many instances of negligence and ignorance in managing the health of houses, I will here mention as specimens. First, that the female head in charge of any building does not think it necessary to visit every hole and corner of it every day. Second, that it is not considered necessary to air, to sun and clean rooms while occupied. Third, that one window is considered enough to air a room.—*Florence Nightingale.*

Domestic Economy.

Recipes for Making Buckwheat Cakes.

One quart of buckwheat flour, a small teacupful of Indian meal, one and a half teaspoonfuls salt, four tablespoonfuls good lively yeast; mix with milk and tepid water enough to make it the consistency of muffin batter; then beat well for fifteen minutes, and set in a warm place to raise over night. In the morning the batter may be sour; if so, dissolve a teaspoonful of soda in a little warm water and stir in; if the cakes are not sweet add more saleratus; do not beat the batter; add a tablespoonful of molasses to brown the cakes—the milk does not always brown them sufficiently. Bake on a well heated griddle that is perfectly clean; a soapstone griddle needs no greasing; an iron griddle should be greased with a piece of rind of ham or fat salt pork on a fork. Butter and silver-drips syrup are best to eat with buckwheat cakes; maple syrup is also good.

Another.—Let the buckwheat be of the hulled sort, and fresh. Put into a two-quart pitcher one and a half pints of tepid water; add four tablespoonfuls of baker's or as much "compressed" yeast as will make one loaf of bread—other kinds in proportion—with a little salt. Then stir in buckwheat enough to make a thick batter; cover the pitcher and set away to rise over night, after beating thoroughly. In the morning add three tablespoons of molasses, and a quarter of a tablespoonful of soda, dissolved in about three tablespoons of milk. Beat all well together, and pour the cakes from the pitcher upon a well heated griddle.

Still Another.—Take one cupful of flour, two of buckwheat flour, and one of yeast; one tablespoonful of sugar, and salt according to taste. Mix with enough water to make a stiff batter, and set to rise over night. In the morning add water in sufficient quantity to make the batter run when poured on the griddle.

Recipe for Preserving Meat.

The following paper was recently read before the New York farmers' club: "There is no good reason why farmers and their families should eat so much salt pork, leaving all the fresh meat to the inhabitants of cities and villages, when the following method will keep meat fresh for weeks even in the warmest weather. I have tried it for years. As soon as the animal heat is out of the meat, slice it up ready for cooking. Prepare a large jar by scalding well with hot salt and water. Mix salt and pulverized saltpetre. Cover the bottom of the jar with a sprinkle of salt and pepper. Put down a layer of meat, sprinkle with salt and pepper the same as if it was just going to the table, and continue in this manner until the jar is full. Fold a cloth or towel and wet it in strong salt and water in which a little of the saltpetre is dissolved. Press the cloth closely over the meat and set it in a cool place. Be sure and press the cloth in tightly as each layer is removed, and your meat will keep for months. It is a good plan to let the meat lie over night, after it is sliced before packing. Then drain off all the blood that oozes from it. It will be necessary to change the cloth occasionally, or take it off and wash it first in cold water, then scald in salt and water as at first. In this way farmers can have fresh meat all the year round. I have kept beef that was killed the 12th of February till the 21st of June. Then I packed a large jar of veal in the same way during the dog-days, and it kept six weeks. This recipe alone is worth the price of any newspaper in the land."

To Make Boiled Custard.—Take a pint and a half of milk, twelve drops of almond flavoring, a bit of stick cinnamon, three ounces of loaf sugar. Beat up the eggs with their whites in a half pint of the milk. Rub two of the lumps of sugar on the rind of the lemon till they are quite yellow; then put in the whole of the sugar, the pint of milk and the cinnamon into a sauce-pan. Let the ingredients boil for five minutes; then throw the whole out to cool for a short time; then beat all up together with the beaten eggs; return it to the saucepan for a few minutes, stirring over a very slow fire till it thickens; then strain it through a fine tin strainer into a jug; put the almond flavoring into another jug, and keep pouring the custard out from one jug to the other till it is cold. If it should be inclined to turn to curd, which it will do if boiled too rapidly or over too fierce a fire, keep pouring it through the strainer into the jug; when cold pour it carefully into glasses. Over the top of the custards may be grated some very fine nutmeg, or some blanched almonds cut up into fine shavings. The above quantities will fill from twelve to fourteen custard glasses, according to the size of the glass.

Fried Cauliflower.—Pick out all the green leaves from a cauliflower and cut off the stalk close. Put it head downward into a saucepan full of boiling, salted water. Do not overboil it. Drain it on a sieve, pick it out into small sprigs, and place them in a deep dish with plenty of vinegar, whole pepper, salt and a few cloves. When they have laid about an hour in this, drain them, dip them in batter, and fry in hot lard to a golden color.

MINING AND SCIENTIFIC PRESS.

W. B. EWER.....SENIOR EDITOR.

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THE ORIGINAL ARTICLES in this paper are mostly set in solid type, giving in our columns one-third more reading than is contained in ordinary leaded matter.

San Francisco:

Saturday Morning, Dec. 18, 1875.

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CHARLES G. MEYER was found drowned in the bay this week. Deceased was one of the oldest mining experts and assayers on the Pacific coast. He came to California in 1849, on the first overland stage, and has been engaged in most of the principal mining explorations of the coast. He was well known in Virginia City and Washoe, and had been through all the mining districts of the Pacific coast, Mexico, and Central and South America. Recently he was in the employ of Senators Stewart and Jones, at Panamint. Deceased was 47 years of age, and unmarried. He was a native of Germany, where his parents reside. From the fact that he has lately seemed down-hearted, it is surmised that he committed suicide.

V FLUMES.—A correspondent asks how the V flumes, so frequently spoken of as being used in the mountains for transporting lumber, are made. Briefly, a V flume, for transporting lumber, is usually made by placing two thirty-inch boards together, in the shape of a V. Where water is scarce a ten-inch board is fastened in the bottom.

TESTS with a new explosive are being made at Nevada City, California, and it is stated that the tests are very satisfactory. A manufactory will be started in that town.

WHEN the Defiance furnace started up recently, in Coso district, a salute of 75 guns was fired, and the population all felt joyful.

OVER 25,000 bushels of charcoal were on hand when the Defiance furnace started up last week in Coso district, Inyo county.

TRENOR W. PARK, of Emma mine fame, has sued the New York *Tribune* for libel.

THE Europa mine, on the Comstock, has secured its United States patent.

Government Tests of Iron and Steel.

The need of accurate rules and formulas for the calculation of the strength of iron, steel and other metals as they are used in this country, has long been felt by engineers, architects, manufacturers and mechanics. No comprehensive series of tests have ever been made in the United States from which such formulas could be deduced.

The English, French, German and Swedish Governments have had their metals tested with more or less care, and the formulas used most generally in this country are those deducted from the experiments made by the British commission appointed to investigate the application of iron to railway structures.

These experiments were made over a quarter of a century ago upon metals differing from ours in many of their characteristics. Small samples were tested and rules established for the calculation of the strength of large pieces in actual use, by the assumption of analogies that may or may not hold. Since these rules were made so many new processes have been invented and employed in the manufacture of steel and iron, and the modes of working them and the forms in which they are employed have changed so much, that the rules applied in calculating the strength of the metals as they are now used, are at best but very rough approximations.

From the inaccuracy of these rules and our want of the precise knowledge which a thorough set of tests should afford, we are in danger, on the one hand, of making the parts of our structures too weak, involving, as in the case of bridges, a fearful risk of life, and on the other hand we are compelled to use excessive quantities of material to guard against the accidents that might result from our want of knowledge of the strength of our materials to resist the various strains to which they are subjected.

So varied and multiplied are the uses of iron and steel by the civilized nations, that their consumption affords a fair criterion of the enlightenment of a people. And every citizen becomes directly interested in the correct use of these invaluable materials.

No individual, company or State can undertake such a set of tests as our country requires—so vast is its extent and so varied and extensive are its deposits of the materials required for the production of iron and steel. There is no inquiry our Government could undertake, which, in its relation to the useful industries of the country, could prove more valuable and important than an exhaustive investigation of the qualities of our iron, steel and other metals. And such an investigation is indispensable, if we would acquaint ourselves and the world with the superior qualities of the iron and steel we produce, and learn for ourselves and teach others their correct use.

Appreciating the value and importance of a thorough set of tests of American metals, Congress, at its last session, appropriated $75,000 for the purpose of inaugurating them. A board has been appointed by the President to make the tests, consisting of Col. T. T. S. Laidley, U. S. Ordnance; General Q. A. Gillmore, U. S. Engineers; L. A. Beardslee, U. S. N.; David Smith, U. S. N.; General Wm. Sooy Smith, C. E.; A. L. Holley, C. E.; Prof. R. S. Thurston.

The board has contracted for a testing machine, which, it is thought, will be the most perfect one ever made for the purpose, but costing almost the entire sum of the appropriation made.

The board has appointed special committees to prosecute the various lines of investigation which it has laid out, the experiments have been commenced, and the aid of the scientific and practical men of the country has been asked by the board to make its investigations as thorough and useful as possible. Appropriations will have to be made by Congress from time to time to meet the expenses incurred by the board, and the attention of the entire country is asked to this most important work in the hope that it will meet with universal approval and such influential support that Congress will not hesitate to provide the means to carry forward to completion the work so well begun.

WOOD AT EUREKA.—The *Sentinel* thinks there is a probability that the completion of the Eureka and Palisade railroad will cheapen the cost of wood at that end of the line. There is a well wooded section down about Garden pass, and we understand that the railroad, in connection with other parties, intend starting a wood yard in this town. If so, we may rely on a material reduction in the price of fuel.

AT the Mill City, Nevada, foundry, over 6,000 pounds of shoes and dies were cast last week, for John C. Fall, of Unionville. The *Silver State* says, that a large crane for the purpose of raising heavy castings has been erected, and the foundry improved generally.

THE Reno *Journal* says, the news from the quicksilver mines continues favorable. Sinking is being vigorously prosecuted, and the ore grows better as depth is obtained.

THE Committee on Patents in Congress this session is composed of Wadleigh, (chairman), Windom, Dawes, Johnston and Kernen.

Steam Pumps at the Recent Mechanics' Institute Exhibition.

The committee appointed to examine articles exhibited and competing for premiums at the late Mechanics' fair in classes 6, 6a and 7, have submitted their report. These classes comprised hydraulic motors, pumps of all kinds, windmills and horse-powers. The amount of labor that fell to the lot of this committee is their excuse for the delay in presenting their report. They give the report of the articles exhibited in the usual way, making a separate report of the pumps tested. The special report of the competitive trial will soon be made public, when we shall publish such parts as are of general interest. For the present we extract from the general report of the committee all that relates to the steam pumps, showing what awards were made, as follows:

Catalogue No. 171. Bucket and plunger steam pump, exhibited by Parke & Lacy, and built by the Valley machine works. This, so far as we can judge, ought to be a very serviceable pump. It is well built, easy of access and tasteful in appearance. It deserves honorable mention.

No. 990. Prull's steam pump, exhibited by the Pacific iron works. In this pump the steam is applied directly to the water without any moving parts. It would be very suitable in a place where simplicity is more important than efficiency. It is neat in appearance.

No. 991. Centrifugal pump, exhibited by Parke & Lacy, the only pump of the class exhibited. This pump has a good reputation and the hand pump attached for priming is a very important improvement. We would recommend a diploma.

Nos. 992, 995 and 996. This is a fine display of pumps, both steam and hand, exhibited and manufactured by W. T. Garratt, of this city. One of the steam pumps will be noticed in our report on pump tests. The fine workmanship and substantial finish which characterized this exhibit deserve our commendation, and we would recommend a silver medal.

No. 997. Quicksilver pump, exhibited by Martin P. Boss, a new device for the purpose of pumping or distributing quicksilver to the reservoir pans in a quartz mill, and is proving itself of great value where it has been applied, reflecting credit on the inventor. We would recommend a silver medal.

No. 998. This is an exhibit of the various styles of Cameron pumps by Neylan & Young, one fitted with the Stoddart condenser, which is very simple and effective. These pumps are well known and enjoy a good reputation. We would recommend a diploma for the condenser.

No. 999. Pulsometer and Eureka pump, exhibited by Gillins & Sanford. We failed to discover any merit in this exhibit.

No. 1,000. Sluthour force and lift pump, exhibited by J. M. Keeler & Co. These are pumps of peculiar construction. The bucket simply oscillates on its axis in a cylinder. They are very simple; have six large valve openings; good for dirty water. There are many situations where these pumps would be very effective and give a high per cent. of duty for the force applied. We recommend a diploma.

No. 1005. Knowles' steam pump. Exhibited by A. L. Fish & Co. This pump is well and favorably known all over America. One of these pumps will be thoroughly described in the report on pump tests. We were much pleased with the double ram force pump for very high pressure. It is an excellent piece of work and well adapted for very heavy work. We recommend a diploma.

No. 1007. The Sau Francisco steam pump. Patented by W. C. Wilcox, and exhibited and manufactured by W. C. Wilcox & Co. This pump will be fully noticed in the report of pump tests and for reasons therein set forth we recommend a gold medal.

No. 1008. The Blake steam pumps. Exhibited by H. P. Gregory. This is an excellent exhibit of the various styles of this well known pump. A full description of this pump will also be given in the report on pump tests, and for reasons therein set forth we recommend a silver medal. Signed,

G. W. DICKIE.
J. S. DETRICK.

THE Humboldt mill and mining company, whose works were closed a part of the time for repairs, shipped from Winnemucca during the month of November $20,000 in bullion. The treasure shipments for the year 1875 from this place were as follows: Coin, $161,746; currency, $42,310.20; bullion, $89,694.30; dust, $1,448.

A FIRE, arising from the refuse coal cast away at the chutes near the wharf at Sehome (W. T.) has not been extinguished during the past fifteen years or more. On dark nights it burns brightly and serves as a beacon light for mariners entering Bellingham Bay.

THE French geographical society has elected Gen. A. A. Humphreys, Chief of Engineers, United States Army, a corresponding member.

ALL the mines at Seattle are in operation at present, and coal is being delivered lively.

THE coal mines of Wyoming are worked by Chinamen.

Notices of Recent Patents.

Among the patents recently obtained through Dewey & Co.'s SCIENTIFIC PRESS American and Foreign Patent Agency, the following are worthy of mention:

PHOTOGRAPHIC EYE REST.—S. M. Williams, Virginia City, Nevada. In taking photographic and similar pictures, one of the most difficult things to be done is to preserve a natural expression to the eyes, and this difficulty arises from the fixed stare with which the person is obliged to look at some object while the picture is being taken. Mr. Williams' invention is a device for fixing the attention of a person who is sitting for a photographic or other picture, where it is necessary to look in one direction for a considerable time, and it consists of a stand or frame which has within it a moving picture or panorama. This panorama is made to pass over a limited opening, so that the sitter will have the eyes rested by a succession of new objects without being obliged to move his eyes from the spot. By this means a photographic eye rest is provided which by its motion will relieve the eye and give a better expression to the sitter.

IMPROVED GANG PLOW.—Frank A. Hill, San Leandro, Alameda county. This invention relates to certain improvements on the Eureka gang plow, patented Sept. 9th, 1869, by the same party. The present improvements relate, first, to an arrangement by which the pole can be shifted to either side, so as to give the plows more or less land as desired, and also, to provide for giving it any degree of elevation desired. This he accomplishes by attaching the pole to a journaled plate, so that its forward end can raise and lower freely, while its rear end is supported in a slot in an adjustable box, which can be shifted on the axle, thus permitting the pole to be directed to either side, or up or down, as desired. The second part relates to a device for elevating the plows out of the ground, so as to carry them high enough above the surface of the ground to avoid ordinary obstacles, such as stumps, rocks, etc., over which the plow may pass. This is accomplished in a very effectual and simple manner: the forward end of the plow beams are curved downward so that the attachment of the pole to their forward ends will be somewhat lower than the axle, thus causing the draft to keep the plows in the ground, a feature which will be appreciated by those accustomed to using the old style plow, which has a continual tendency to ride out of the ground. Mr. Hill also attaches a roller by flexible arms, so that it will roll upon the ground directly in front of the plows and thus break down any standing weeds or stubble, so that it will be completely turned over to the bottom of the furrows.

This plow is now being made by Baker & Hamilton, of San Francisco, in their factory, at San Leandro.

AUTOMATIC ROTARY CARBURETER.—Thos. A. Stombs, San Francisco, Cal. This invention relates to certain novelties in the construction of rotary carbureters, consisting principally in the use of an automatic rotary driver, in connection with a rotary air forcing mechanism, the fans of said driver being of peculiar construction. It also consists in the use of a very effective system of carbureting sheets within the air cylinder and an automatically operating check valve to regulate the supply of liquid in the machine. This device being entirely automatic, needs but little attention and is quite economical.

SLOTTED FRAMING SQUARE.—John H. McInnes, San Francisco. This invention relates to an improved tool for carpenters' use, which the inventor calls a slotted framing square. It consists in the combination of a square, having its sides slotted with an independent adjustable arm, which is also provided with a scale, and can be set to any point upon the two arms of the square. This tool is valuable for laying out stairs, giving the length of stringer or carriage, and serving also as a pitch board and pattern. It also gives the length and the head and foot cuts for any given angle of brace bridging, hip, common or false rafter, and at the same time indicates the length in feet and inches. It can be used in place of the ordinary trammel for laying out an ellipse, and it may also serve as a mortice and tenor gauge when desired.

GUARD STRAP FOR SHAFTS AND STRAP COUPLING.—James Weatherhead, San Jose, Santa Clara Co., Cal. It frequently happens when a person is driving a horse in a buggy or other vehicle, to which a horse is harnessed between two shafts, that one or both of the reins will get under or around the forward end of the shafts so as to prevent them from serving to hold or guide the horse, and thus many accidents to life and limb have occurred. This invention consists in providing a guard or fender, which will prevent the reins from getting thus entangled; and also in an improved strap fastening, by which the ends of the straps can be cheaply and conveniently attached to the ends of the shafts.

THE San Juan *Times* says that Thomas Findley's liabilities will approximate $300,000, and that his assets will not exceed $70,000.

Mining Company Investigations.

The era of investigations still continues, and the internal developments in the Woodville mine seem to have stirred up the stockholders of several other companies. The long-threatened suit on behalf of the stockholders of the Woodville Consolidated mining company has at last been commenced, and we understand that it is in the hands of persons who will push it with vigor and determination until they have vindicated their rights and exposed a tissue of what, it is alleged, are the most disgraceful frauds that have ever disgraced Californian enterprise. The suit has been brought by Marion J. McDonald against the Woodville Consolidated S. M. Co., John W. Pearson, Andrew Baird, Henry N. Chauncy, Wm. J. Smith and Edward Curtis. The document is very lengthy, comprising some eight pages of closely printed matter, embracing a history of the grievences of the stockholders who have been agitating the subject for the past few months. Pearson is charged with having realized by his transactions the sum of about $602,000, irrespective of what may be due by him to the company from the many assessments when a fair account is taken between himself as treasurer and the company. Plaintiff asserts that the present Directors (named as defendants) are acting in the interests of the Justice silver mining company, and will not take any measures toward compelling Pearson to account for the many acts of fraud allegod.

The mill transaction is explained thus: Pearson had a mill built for $13,000, and for which he charged the company $40,000. He caused the company to enter into a contract for the building of the mill, with Berry & Westfall, as contractors; but in reality he himself derived the profit of $27,000.

The levying of the assessment of November 4th, 1875, is next set forth in the complaint, and it is declared illegal. Plaintiff alleges that Pearson's 60,000 shares of stock were credited as having paid the assessment; that the certificate is marked "assessment paid," when in fact no such payment has been made.

And the plaintiff further says that within twenty days past he is informed and believes, and therefore charges the said Pearson, acting with the three Directors, and they acting under his direction, entered in to a corrupt agreement to procure and sell to certain person or persons representing and controlling a mining company called the Justice silver mining company 60,001 shares of the Woodville Consolidated silver mining company, at and for a price or sum of $8 per share in gold coin * * * the object of such purchase being to acquire the said Woodville mine for the said Justice company. Under these circumstances the compliant demands judgment, and prays as follows: That Pearson be compelled to account for his management of the affairs of the Woodville Consolidated, and that he refund the moneys alleged to have been tortnously and frsudulently acquirsd. Second, That an injunction issue restraining defendants or their agents from attempting to collect the assessment levied on November 4th, 1875, and from levying or attempting to levy another assessment. Third, That a receiver be appointed to take charge of the mine and properties of the corporation.

Another investigation is on the tapis with regard to the Succor mine. A circular about this mine is being circulated as "something in the interest of the stockholders." It makes the following representation of the company's affairs: The estimate of the president of the mine for a shaft of 500 feet, the sum of $500,000. The mine is composed of a 15-stamp mill, capacity of 25 tons each 24 hours; at $9 a ton, 26 days' work in the month, the receipts are $5,750. Expenses of 10 men, 90 cords of wood, water, wear and tear of material—total, $2,040, leaves a net profit per month of $3,710. In forty-eight months the net profit is $178,080. For the receipts of assessments in four years, $342,800. Several invoices of hullion, $18,000. Estimates of the receipts, $538,880. Expenses, for a shaft of 550 feet deep, the first 250 feet by contract, the sum is, at $75 per foot, timber, $17,500; by the company, 200 feet at $100 per foot, $20,000; 400 feet of drift at $25 per foot, $10,000; unexpected expenses, $30,000; in case of error, double the expenses, $77,500, which will give as the grand total of these expenses, $155,000; therefore, there must remain in pocket, or in safes, the sum of $403,880, and the publishers of the circular want to know where it is.

The Baltimore Consolidated stockholders are not easy either, for one of them writes to the *Chronicle*, and asks the management the following questions: First, Why have you not made an annual statement of the assessments collected and of the money spent in developing the mine during the last year previous to the annual election? Second, How have you spent the $300,000 collected during the year just past, while you have worked only eighteen men in the mine? Third, Is half of the expense of sinking the shaft charged to the American Flat mining company? Fourth, Has the American Flat company a half interest in the Baltimore shaft? Fifth, Have you purchased new and expensive machinery during the last year? Sixth, What was the amount of the indebtedness of the mine at the commencement of the year?

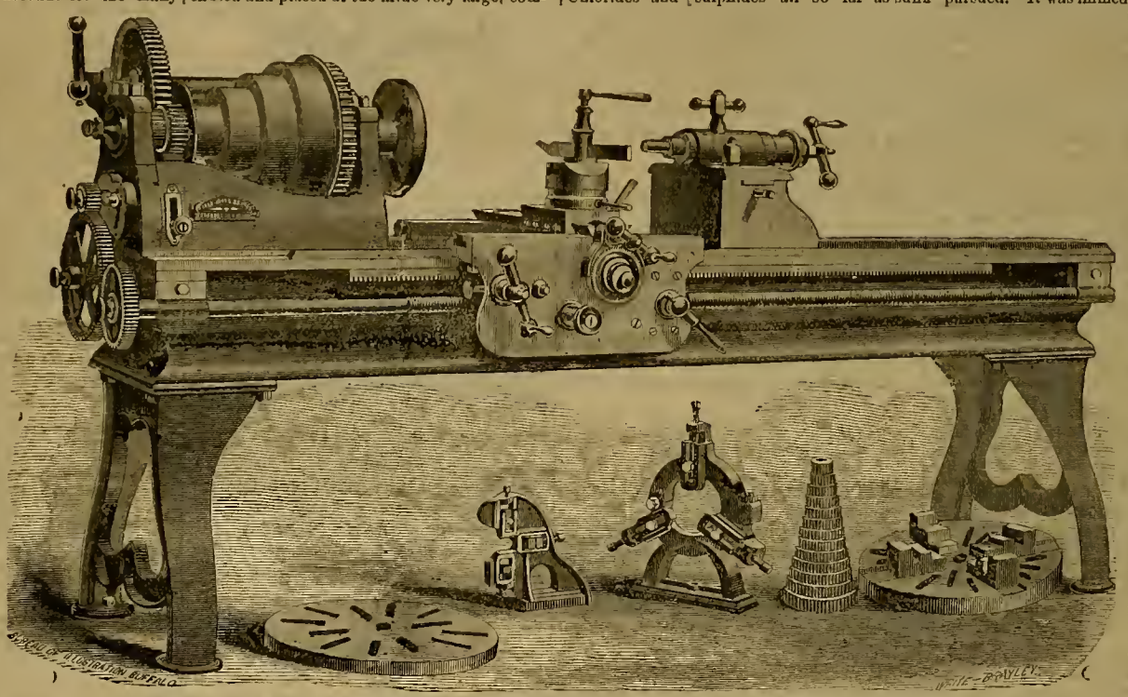
Mr. A. K. Grim, President of the company, says "Stockholder" should have inquired at the office, but nevertheless answers the above questions as follows: First—An annual statement was made, but I suppose "Stockholder" did not attend the annual meeting to hear it read. Second—It is not true that we have worked only eighteen men; the number has averaged seventy-six, and what was not expended for labor went for buildings, new machinery and the purchase of the shaft. Third—No part of the expense of sinking the shaft is charged to or paid by the American Flat mining company. Fourth—The American Flat mining company has no interest in the Baltimore shaft; it had at one time, but the interest was purchased by this company. Fifth—The company has purchased and placed at the mine very large, complete and expensive machinery during the last year; this accounts for a large portion of the moneys received during the past year, which, by the way, was $192,000, instead of $300,000. Sixth—The amount of the indebtedness at the beginning of the year was, in round numbers, $47,000. If "Stockholder," or any other stockholder, wishes further information, he or they will please call at the company's office, where they will have free access to the books, and will meet with prompt attention from a polite secretary.

We must confess that we are glad to see stockholders taking an active interest in their companies outside of stock transactions. It must result in benefit to all honest managements, and purify the moral atmosphere of other mining companies than those investigated. Keep it up.

In addition to the above, we see that the stockholders, representing 25,000 shares of the Gila silver mining company, have called a meeting to take measures to investigate the present management of the mine.

Machinists' Tools.

We illustrate on this page a twenty inch swing lathe, with an eight foot bed, such as is made by the Kidd iron works, Rochester, N. Y. The tools made by these works are of the latest patterns and very heavy. The spindles are very large and made of steel; the lead screws are also of steel and cut so as to make a perfect screw. The cones are extra large in diameter and broad in the face, the bearings long, the ways in the beds large, and the boxes are made of the best materials to prevent friction. The carriages are fitted so as to bore, turn and square with perfect accuracy. The lathes are furnished with Gleason's patent tool post, by which the tool can be elevated or lowered without loosening; it is also perfectly solid, and has the advantage of adjusting the tool without the double saddle, thereby enabling the machinist to swing a larger diameter over the carriage than by the old plan. The racks are all cut, and those on small lathes are of steel; the small apron gears are also of steel. In screw cutting it is necessary to change but one gear with each lead. The gears are nicely set and run without noise. The lathe shown has twenty inch swing and weighs 2,500 pounds. The bearings are 2¾ by 4½ inches, and the cone pulleys 12 inches in diameter by 2¾ face. The lead screws and rack are of steel.



TWENTY INCH SWING LATHES, MADE BY KIDD IRON WORKS.

Montana Mining Notes.

During the past year some very rich developments in silver have been made in Deer Lodge county, Montana, and mining interests there are looking up. A correspondent writes us that the operation of the Congressional law has stimulated prospecting, and at Butte City, where a year ago the population was confined to about forty men engaged in placer mining, there are now about 500 men engaged in sinking on leads in all directions. They have copper ores there which are now being worked at a depth of 125 feet, the ore being black oxide, assaying from 38 to 50¼ per cent. This is sacked and sent to Baltimore for reduction, being bought by parties in the business at very low figures from the miners, on the dumps, merely at copper rates, although the ore carries about forty ounces of silver to the ton. The silver ores are principally argentiferous galena. Chlorides and sulphides all so far as sunk are very free from base metals. A lot from two different lodes was lately worked at a mill about 100 miles from Butte City, and without roasting, worked by wet crushing, yielded, one lot $205 and the other $258 per ton. The leads are not very large as a rule, averaging from eighteen inches to six feet; they exist in a solid granite formation. All carry more or less gold, in some instances as high as $188 to the ton. Two mills are now in course of erection, one a private mill and one custom. The private mill will be ready for work about the New Year, the other not so soon. Every one there is well satisfied that they have a rich and lasting camp, and the town is steadily improving.

In this connection it may be well to mention an item to which the Helena *Independent* gives publicity. It states that it is whispered that several of the surveys in Colorado, Arizona and New Mexico, recently undertaken ostensibly for scientific purposes, are, in reality, designed to further the objects of a great land steal in the Territories where gold and silver is known to exist, Montana being included.

The *Independent* says: It has leaked out here that a big effort will be made, as soon as Congress meets, by a ring of land grabbers, to get hold of the most valuable mineral lands in Montana, Arizona and New Mexico. It is even broadly intimated that Hayden's and Jenney's surveys, ostensibly undertaken for scientific purposes, were in fact designed to further the purposes of the robbers.

Without pretending to know anything of the matter, we think it hardly probable that this is so. There are plenty of mines to be had all over the country; but capital is needed to work them. A gigantic scheme of the kind mentioned would be of little use. They couldn't take up mineral or agricultural land, and if they did they would have to give it up. We look upon the rumor as sensational.

The prizes awarded to exhibitors at the late Mechanics' Institute Fair, will be given to the owners, at the Mechanics' Institute, on Saturday evening, at 8 o'clock.

Our Home Industries.

Wire Drawing.

The undoubted value of every species of wire, its adaptability to hundreds of mechanical pursuits, has made its manufacture an essential and necessary adjunct of trade. The manufactnrs has been carried on in different ages on widely different plans; first, gold was beaten into thin plates and the wire cut out, then by hammering, until in the fourteenth century wire was drawn by hand. In a later century, in England, machinery augmented the manufacture and enabled the business to assume greater proportions. In this country wire drawing became an industry of more than secondary importance about the opening of the present century. The process of manufacture is carried on according to very simple plans, and yet in the prosecution of this work there is required a thorough knowledge of detail, an understanding of the business determined from years of practical application. Draw plates are made suitable for drawing wire of any required size. Copper, steel, iron, brass and zinc follow in the order of their ductility.

In this city, in common with those of the East, the manufacture of wire forms a valuable as well as interesting pursuit. It had its origin here in 1866, when Mr. J. Gray began the manufacture on similar plans as elsewhere pursued. It was immediately established as a permanent and necessary industry. The development of this business, however, was reserved for the Pacific wire and wire rope manufacturing company, an organized stock company of some five years' growth. The present prosperous condition of the trade augurs its future advancement and certifies to the exemplary manner in which the numerous duties have been discharged. Mr. J. B. Stetson, of the firm of Osgood & Stetson, is president, Mr. J. B. Bering acting in capacity of secretary, and Mr. J. Gray, founder of the business in this city, superintends the mechanical departments at the works on Brannan street. Mr. A. S. Hallidie is agent for the company.

The wire rods are imported from England in coils or bundles of about 150 feet in length, which weigh usually from eighteen to thirty pounds. There is a singular feature in connection with this trade, and that is the superiority of the American wire coils over the English brand and the general employment of the English wire on the score of economy, the cheapness of the latter affording better auspices for successful manufacture.

The Pacific wire company's manufacture consists of various sizes and kinds of wire, among which we may name annealed and bright market wire, baling, fencing, telegraph, coppered spring, homogeneous spring, pail, bale, charcoal, stone wire, etc. The productive daily capacity is one and a half tons, some sixteen men finding employment at wages of $2.75 and $3 per day. The rods of iron, steel, etc., are first pointed and drawn through the dies or plates some four or five times, every operation reducing the rod in size and necessarily adding to its length. It is then in fit condition to be annealed, and subjected to an acid bath to remove the scale or dirt, when it is transferred to tubs to be washed and secure a coating made from a composition of rye meal and flour, a process which enables the operators to draw the wire with a greater degree of celerity. Two long benches, which contain the necessary winders, plates, etc., range the sides of the buildings, the working machinery running the entire length of the building under the benches and communicating with the fixtures above. According to the required size of the wire is the annealing process carried on, the wire being subjected to the annealing ovens, which are capable in the aggregate of holding 6,000 pounds, sometimes as many as three and four times. The manufactured article ranges in size from three-eighths or one-half inch wire to that of a capillary-like nature.

The Vulcan company's coal mines, Santa Cruz county, about nine miles from the railroad at Watsonville, are being rapidly developed. They are said to have a vein of coal seven feet wide, and expect to ship coal by next June.

The Geddes & Buhard mine difficulties have been settled. The Eureka *Sentinel* says the furnace has been started up again and active operations have been resumed.

The Sumner Mine.

From an article on the Tulare mines we make the following extracts concerning the Sumner mine in Kern county: It appears that a new interest is now being awakened in the great mineral wealth of this county. The Snmner mining company is now doing a great deal of work. There are now in their employ 170 men. The eighty-stamp mill, which is the largest and most complete on the coast, is in constant operation, crushing from 100 to 120 tons per day. The mine is situated ahout three-fourths of a mile above the mill, and from the general appearance of the machinery, including the pump, hoisting works, etc, it is in every way first-class. By the kindness of the foreman we were conducted through the mine and shown the whole works. We entered the first level through a tunnel of about 300 yards in length, through which the ore is taken out, and the mine drained of the water. This is called the eighty-foot level, it heing eighty feet below the hoisting works.

A great quantity of ore has been taken from this level. From this point we descended eighty feet in the hoisting works to the 160-foot level. This level has been worked at a distance of 500 feet on the other side, embracing an entire length alonq the body of the ore of 1,000 feet, and msasuros wherever cut through from thirty to forty feet in thickuess; although the paying rock in some places appeara to run in strips or veius, and then again it widens out to the entire thickness. A depth of 200 feet has been reached, and the prospects continue to get better. The east casing of the quartz vein is clay, which is said to be a good indication of the depth of the rock. From the present prospects the rock of this mine is almost inex haustihle. At the mouth of the tunnel before spoken of is a large dump where the car from the mine is unloadod, and a chute from this opeus into a car that rnns to the mill. The road from the dump to the mill is laid with small iron railing, and the grade is sufficient so that the car runs with its own momentum, and is drawn hack by horse-power so that the coat of carrying the rock to the mill does not exceed $5 to the 100 tons. The rock enters the hnge dump at the mill, where it is deposited above the level of the building, and at an opening at the hottom of the dump the rock is taken out and passes through a rock breaker and then drops into a car which passes along the line of eighty stamps, and deposited into a hopper provided for each five stamps. From here it is thrown into the mortar hy a self-feeder, to he ground into powder. The whole works from the mine until the gold is extracted appear to he constructed on the most simple and economical plan. The quartz mill is run hy water, which appears to be very abundant at all seasons of the year. There is one difficulty attending the work in the mine, aud that is the great amount of watsr. It requires a pump with an eighteen inch pipe, making fifteen strokes per minnte, working continuously night and dsy, to keep the water out of the shaft. Several other shafts and tnnuela are being run on the same lead, and the erection of other mills and works are contemplated soon. Considerable work is heing done and the prospects are highly flattering on what are known as the Bull Run claims, five miles farther np the river.

THE PAYMASTER MINE.—This is one of a series of six mines owned hy the Martin White company, in Ward district, in this county. The company is composed almost entirely of San Francisco capitalists, who are doing the moat scientific miniug that has ever been done in that district. In this mine their ledge is from twenty-five to thirty feet in width, most of which is high grade ore, and we are informed that they uow have on their dump over 2,000 tons. The main shaft is down 165 feet, from which a great amount of drifting has heeu done. It is the intention of the company to thoroughly prospect the mine before either building a mill or furnace, for the reason that some of it is base, and some of it free milling ore. As soon as they arrive at a conclusion, which will he some time this winter, they in tend building two 30-ton furnacos or a large mill, which they propose to have ruuning as early in the spring as possible. The company have been shipping some of their ore to San Francisco, the proceeds from which has more than paid all the expenses of the mine. We do not know of any mining property in White Pine county that has so bright a future before it as the Martin White miniug company. There are a nnmher of other mines adjoining those of this company that are considered very valuable. Set Ward district down as a first-class mining camp in another year.—*Reese River Reveille.*

NEW FURNACE.—The new patent furnace of John Stonehar is nearly completed and will he ready for operation as soon as thoroughly dried. Its construction has been superintended by Mr. Creal, the patentee, who entertains the utmost confidence iu ita complete success. The result is of the greatest importance to the interests of this district, for if it will perform all that is claimed for it by the inveutor, it will entirely revolutionize the system of smelting in this viciuity, aud cause to he worked with profit a large number of mines producing low grade ore, which cauuot he worked at the present rates of reduction.—*Eureka Sentinel.*

NEW MINING DISTRICT.—Mr. C. H. Wheeler, superintendent of the Mohave silver mining company, and Mr. L. B. Cook, formerly of Bear valley, arrived in this city from the new city of Mohave. Mr. Wheeler reports the new mine as being very extensive, and containing rich gray carhonate ore in large quantities. He informs us that he has just received the plans for the furnace—sixty ton. There are already ahout one hnndred tons of ore out on the dump. Roads are being made, the miners having heen put to work on the roads to complete them before the machinery arrives, some of it being already shipped. The furnace will likely be sending in hullion in ninety daya. We are likely to have, from all acconnts, ono of the largeat and best base metal mines in the State. It has heen erroneously asserted tbat Messrs. Wessel, Whitlach and Irwin, mining experts who left here a few days since, visited this district. They visited Ord district but did have time to go and see the bonauza of the outh.—*San Bernardino Times.*

TO FILE A SQUARE CORNER.—The proper way to commence is, to do tho edges first, and he sure you form a straight line, both on the edge and the edgea or corners of the edge, on the oval or flat portion. This gives a starting point, and you will be able to go ahead without any trouble. If you commence in the right manner to file a piece of iron, the proper ways to finish your task will generally suggest themselves to you as yon go along, if you properly heed your work and try to do it well. Don't work toward the corner; if you do, the moro you file the less like a corner will it become. Work the reverse—from the corner. There is no difference, let it ho a dash, dash-rail, seat-rail, seat-handle, and angular hody loop, or what not, having a corner or angle, the same rule applies to all.—*Ex.*

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NOTICE.—All persons who wish to contribute money to the assistance of the sufferers by the late fire in Virginia City, will please make out their checks in the name of GEO. S. DODGE, Treasurer, and leave the same at Rooms 12 or 17, Hayward's Building, California street. Those sending cash will please forward to the same name and destination.

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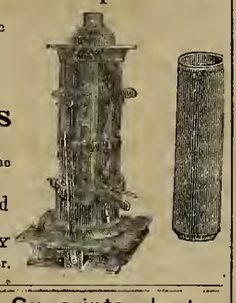

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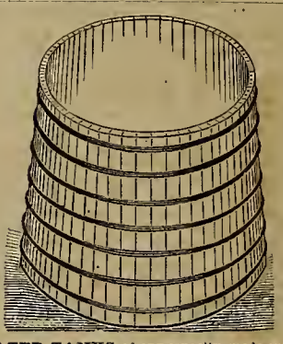

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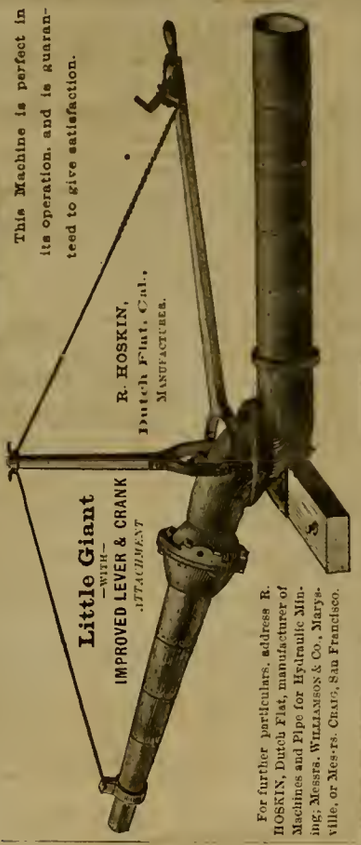

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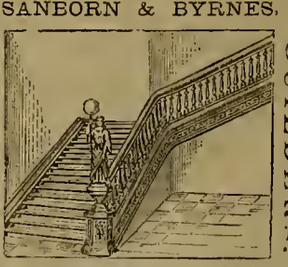

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(Continued from Page 389.)

than ever, with an increased force of hands.

New York Consolidated.—Work goes ahead prosperously, as usual, at tha 800-ft level, the cross-cut progressing well and water not interfering. The material met with is of the most flattering and encoursging nature and a good paying ore vein is evidently not far off.

Kossuth.—The shaft is down 85 ft below the 500-ft level, and the sinking, which has been stopped in order to make some improvements in the machinery, will he resumed iu a very few days. An air shaft has been completed from the surface to the 200-ft level, at a point 600 ft south of the shaft, and a winze is now down 20 ft below the 200-ft level, at the point where the air shaft is sunk, which will connect with the south drift on the 350-ft level, and then he continued downward to ventilate the 500-ft level. The main sonth drift on the 200-ft level has been run south 1,300 ft from the Dayton company's line, the entire distance in fine quartz, and a good part in low grade ore. The west drift, on the 500-ft level, has reached the east wall of the ledge and must now soou cut the ore vein. Considerable trouble has been caused by the strong flow of water for some time past, but is now easily handled by the pumps, so that work can soon be again vigorously prosecuted on the 500-ft level.

Belcher.—Daily yield, 450 tons of ore. The ore breasts on the 1500-ft level are looking splendid and affording the usual amount of good ore. The proapecting drifts on the 1300 and 1400-ft levels are all in quartz of a fine character. The ore vein in the east ledge, on the 1200-ft level, is widening and opening out much hetter than haa ever been expected.

Globe Consolidaten.—Work at the 3d atation ia confined to driving the drifts on the course of the vein. In the aouth drift the ledge is 16 ft wide, the rock assaying from $7 to $15 per ton. The ledge running southwest ia in fine ledge msterial, giving an average of $20.50 per ton, with every indication of running into a paying chimney of ore. All that is wanted ia good pumping machinery for sinking deeper, in order to make the Globe first claas property, as the indioations and location are the most flattering. No change in the adit level in the south drift.

Chollar-Potosi.—Daily yield, 65 tons of ore, the assay value of which is $26 per ton. The main drift on the 1250-ft level is steadily advancing to the southward, the face in hard porphyry.

Leo.—Still driving ahead, and prospecting the ledge from the hottom of the winze 225 ft below the main tnnnel. The cross-cut is in 26 ft, hut has not yet reached the foot-wall; the face is still in favorable vein matter. The south drift is in 15 ft, also in a very promising character of ledge material.

Crown Point.—The nsual amount of ore is heing extracted and milled, the ore hreasts ahowing hut little change dnring the week. The main sonth prospecting drift, which ia being rnn west of the ora vein on the 1600-ft level, is being steadily pressed ahead to connect with the aouth winze, whioh is heing snnk below the 1500 ft level for air purposes. No cross-cutting of any consequence can he done on this level until this air connectiou is completed, as it is too hot for men to stand it to work even a very few feet away from the main drift. The south winze from the 1500-ft level, which is being sunk on an incline, is down a depth of 60 ft perpendioular, the hottom in good ore. The main esst drift on the 1700-ft level is being steadily advanced for the purpose of tspping and draining the ledge.

West Comstock.—This mine liea west of the Chollar and Bullion, and has been qnietly and systematically worked for aome time past, with what success may be jndged from the fact that the company have just declared a dividend of fifty cents per share, payable on the 21st. There are 1,500 feet in the mine, it pays its way and ia expected to prospect the heart of Mount Davidson, where no company has prospected yet. The company have disposed of 40,000 shares of their stock for a working capital, realizing $350,000; placing them on a very good financial basis, and out of the way of assesaments.

Oriqinal Gold Hill.—Daily yield. 25 tons per day from the south ore body. There are now about 600 tons of ore in the dump, and as soon aa milling facilities will jnstify, the amonut of ore extracted will he largely inoreased, there being plenty of it in the mine, The north drift is now being pushed ahead toward another good ore body known to exist in that direction.

Florida.—Owing to the ewelling of the ground, crushing in the timbers, and the amount of water met with, the main west drift at the 400-ft level haa not progressed quite ao fast as could he wished. Some splendid streaka of quartz, clay and other vein matter are now being passed through, and the indications are that the main ore vein ia not far distant.

Imperial-Empire.—Daily yield 50 tons of ore. Thia ore is extracted from the ore breasts on the 1930-ft level. The ore is not of quite so favorable a character as for some time past, the rich portions heing in streaks and spots, and the general average value lower.

Sierra Nevada.—The main west drift on the 1000-ft level is steadily advancing, the face in ledge material of a very favorable character.

Overman.—The main south drift on the 900-ft level is steadily advancing, the face in soft ledge material.

South Comstock.—The ledge material in the face of the cross-cut shows improvement, as it advances toward the main west ore veiu, which will he reached shortly, when hetter and more important developments are anticipated.

Succor.—The main north drift on the 550-ft level is steadily advancing. The cross-cut from the drift is in much softer material, interspersed with sesms of lively looking quartz.

North Cons. Virginia.—Sinking the shaft is going steadily ahead, the hottom in good fair sinking ground. Tha material in the bottom is porphyry, interspersed with seams of very favorable looking quartz.

Europa.—Sinking the main shaft is making splendid progress. It is now down 450 ft.

Gibbs.—This is an old '59 location, lying in Comstock canon, jnst east of Gold Hill, between the Europa and Sullivan mines. A tunnel was run into it by the first locators, in a northwesterly direction, following the west wall of the ledge abont 300 ft. At an eligihle point they attempted to cross-cut through the ledge, hut as soon as they got fairly through the west wall they tapped a heavy flow of water and had working grounds, which obliged them to quit work. Subseqnently a little work was done on it at times, as the ledge nssayed well wherever it could be prospected, hnt with the general decline of mining interests in this section, no aystematic development of the mine has been effected, nntil now it is getting into the hands of men of means and ahility, to open and work it properly, bringing out its true merits.

Prospect.—Main tunnel driving ahead in hard porphyry. It will soon pass through this into another ledge known to be a short distance ahead. The new hoisting works are about completed and will start into operation very shortly. The hoisting worka are excellent, and the huilding one of the hest in this section. The Prospect has a prosperous future before it.

West Belcher.—The tunnel is heing energetically pushed ahead toward the main ore body, which it will intersect in a few days.

Leviathan.—Face of the main north drift, at the 420-ft level, continnes in low grade ore. This will he followed for a while longer to ascertain the value of things in that direction, before any extensive development of the alrcady defined vein of good ore heretofore described.

Sullivan.—Tunnel still running in splendid looking vein matter, and nearly completed to a connection with the shaft. Water has been struck this week, and still more may he anticipated until the connection is made.

Dayton.—The new pump is lowered into position, ready to atart np. Everything in and about the mine is in fine working condition.

Cosmopolitan.—Low grade ore is met with at the varions prospecting points. The face of the main north drift, however, seems to be improving, giving better assays.

Nevada.—Drifting north in the middle of the ledge, toward the main ore chimney. Material in face of drift low grade ore with streaks of porphyry and olay.

Gould & Cuary.—Still pumping water from the 1700 ft level. The water will soon he sufficiently reduced to ngain resume work in that portion of the mine.

Silver Hill.—There is bnt little doing in the mine at present, except the sinking of the main incline, which is progressing at a favorahle rate.

Baltimore and American Flat.—Sinking the shaft ia making the usual favorable progress.

Savage—Still draining the water from the 2200-ft level preparatory to resuming the sinking of the main incline and south winze.

Caledonia.—Sinking the main shaft is making splendid progress, the rock in the hottom working much softer.

Best and Belcher.—Nothing yet doing on the 1700-ft level. The water is gradnally lessening so that work can be resumed at all points.

New Incorporations.

The following companies have filed certificates of incorporation in the County Clerk's Office at San Francisco.

New Albany M. Co.—Dec. 10. Location: Tuolumne county, California. Directors—Michael Castle, Fred. A. Benjamin, Judah Baker, Jr., I. Gratz Steinhart and John Stalker. Capital stock, $3,000,000.

Mariposa M. Co.—Dec. 10. Location—Spanish Belt mining district, Nye county, Nevada. Directors: M. San Pedro, Geo. F. Maynard, T. L. Kimball, Peter Van Felt and Murray Davis. Capital stock, $5,000,000.

Crœsus G. M. Co.—Dec. 10. Location: Amador county. Directors—W. Seawell, B. R. Zantzinger, J. M. Seawell, A. B. Paul snd M. M. Cuthbert. Capital stock, $5,000,000.

Loretta M. Co.—Dec. 11. Object: To do generally a mining and smelting business in the State of California. Directors—P. Reddy, G. H. Willard, W. G. Hughes, Jno. Wilson and Jno. A. Treaner. Capital stock, $10,000,000.

Ayres & Hopkins S. M. Co.—Dec. 14. Location: Eagle and Washoe mining districts, Ormsby county, Nevada. Directors—Joshua Q. Ayres, Henry Lacy, Geo. L. Woods, P. D. Barnhart and Wirt Hopkins. Capital stock, $10,000,000.

Ayres Cons. S. M. Co.—Dec. 14. Location: Eagle and Washoe mining districts, Ormsby county, Nevada. Directors—Joshua Q. Ayres, Henry Lacy, Geo. L. Woods, Wirt Hopkins and O. P. Willis. Capital stock, $10,000,000.

San Francisco Petroleum Co.—Dec. 15. Object: To contract and carry on the general business of prospecting for petroleum, naphtha, asphaltum and other mineral substances, containing or producing oil, and to extract, refine, reduce and work the same for market. To acquire all such roads, railroads, wharves, landings, etc., as may be needed. Directors—J. H. Mahoney, R. C. McPherson, Henry Abbott, Robert C. Page and Grove Adams. Capital stock, $10,000,000.

Valentine Patent Shingle Machine and Manufacturing Co.—Dec. 16. Object: Manufacturing and selling shingles, and also the Valentine machine for making shingles. Directors—W. P. Valentine, Edwin R. Ferris, J. F. Greenman, James E. Perkins and David O. Ferris. Capital stock, $5,000,000, in 50,000 shares of $100 each.

The Leopard mine shipped last week $4,200; the Justice $3,452; the Prussian $4,067.

General News Items.

Another China line of steamers is proposed.

Worth, the Parisian "man milliner," has failed.

More developments of the "crooked whisky business" in St. Louis are expected.

They are talking of onttings down the number of notaries.

An explosion of the steam heater at the Lick house in this city seriously scalded six men.

Our new Chief of Police, Ellis, has hegun his raid on the hoodlum element.

During the past eleven months our population has incressed 62,300.

Juan B. Alvarado, Governor of California from 1836 to 1842, is on a visit to this city.

The new woolen mill will be in operation at Vallejo in the course of a month.

E. W. Maslin has beeu appointed private secretary to Governor Irwin.

The Japanese man of war has arrived in our harbor, manned by Japanese.

They want the President of the United States to hold office for six years instead of four.

The talk is now of a Pacific coast Centennial celebration on a grand scale. A committee has heen appointed to initiate tha movement.

Indianapolis stands the best chance for the new mint. Where the hullion is coming from is not stated.

A State inspector of steam boilers is talked of, a hill now being before the Legislature creating the office.

The hill to prohihit a change of text books in the public schools passed both houses of the Legislature.

Our new Chief of Police is doing good work in clearing the corners of loungers and hoodlums.

Ex-Senator Nye has so far recovered his faculties as to he removed from the insane asylum.

Alameda is the second county in the State in the amount of its taxable property—$38,841,625.

The steamer *Los Angeles* was all right after all. She broke her machinery and was eight days under sail. Was taken in tow by the English gunboat *Rocket*, 20 miles from Victoria.

The courts have decided that the Panama railroad company have no right to establish a line of steamers from New York to Aspinwall, and from Aspinwall to San Francisco.

The Chinese factions in Virginia City have been having some pretty warm fights lately. Two wagon loads of shotguns were brought to Chinatown recently.

At Salt Lake, Utah, the jury in the case of George Reynolds, indicted for polygamy, under the act of Congress, found a verdict of guilty. Thia was regarded as a test case.

The "biography fiend" seems to have made a pretty good haul in this city writing up "Representative Men," and a good many gentlemen anxious for notoriety have had to pay well for it.

The "St. Louis land swindle" assumes large proportions. The estimates are that deeds to over 12,000,000 acres of land have heen forged and disposed of, at a total valuation of from $25,000,000 to $30,000,000. Mississippi and Arkansas seem to he the principal States that have suffered.

A. H. Southwick's turbine windmill and pumps were recommended a diploma at the Mechanics' Institute fair. The committee says: These windmills are gaining a wide reputation. They are very efficient motors and their design enables them to he treated architecturally, a point of great importance when they are used in private gardens.

The Sutro tunnel in November was advanced toward the Comstock lode 335 feet. This is an average of a fraction over eloven feet per day, and is not quite up to the average of last summer, hut some of the rock met with was unusually hard.

Fifty tons of iron ore from the mine near Latrobe has been sent down to San Francisco, to he shipped on the *Young America* for Baltimore, where it is to be used in the manufacture of Bessemer steel.

Denver sent East last week $23,170 in silver bricks — $1,609 from Golden, $2,570 from Georgetown, and $17,000 from Black Hawk. Shipments from the last place are made once a week.

The Mining Committee of Congress this session is composed of Sargent, (chairman), Hitchcock, Cragin, Howe, Hamilton, Dawes, Mitchell, Ransom, Kelley and Caperton.

Five thousand men have been thrown ont of employment hy the shutting down of some forty collieries in the vicinity of Pottsville, Penn.

Lester Coates was killed by a cave in the Williams claim, Prospect mountain, on the 7th inst.

The Belcher air shaft will connect in a few days with the npraise from the 1400-ft level.

They have a ghost in the North Star mine, at Austin.

Woodward's Gardens embraces an Aquarium, Museum, Art Gallery, Conservatories, Tropical Houses, Menagerie, Seal Ponds and Skating Rink.

Patents & Inventions.

A Weekly List of U. S. Patents Issued to Pacific Coast Inventors.

From Official Reports for the Mining and Scientific Press, Dewey & Co., Publishers and U. S. and Foreign Patent Agents.]

By Special Dispatch, Dated Washington, D. C., Dec. 21st, 1875.

For Week Ending December 7th, 1875.*

Gas Mixing Machine.—Lonis Lauszweert, S. F., Cal.

Thill Couplings.—Thomas McCaffery, S. F., Cal.

Combined Twine Cutter, Letter Opener and Stamp Moistener.—John Ettal, Sacramento, Cal.

Photographic Eye Rest.—Sylvester M. Williams, S. F., Cal.

Reissues.

Knitted Bags for Packages of Compressed Vegetable Substances.—James D. Culp, Gilroy, Cal.

Hydraulic Jacks.—Eneas M. Dudgeon, S. F., Cal.

Trademark.

Threshing Machines.—Knapp, Burrill & Co., Portland, Oregon.

*The patents are not ready for delivery by the Patent Office until some 14 days after the date of Issue.

Note.—Copies of U. S. and Foreign Patents furnished by Dewey & Co., in the shortest time possible (by telegraph or otherwise) at the lowest rates. All patent business for Pacific coast inventors transacted with perfect security and in the shortest possible time.

Industrial Items.

The passenger cars for the railroad from Santa Monica to Los Angeles have arrived.

The railroad fare from Elko to Eureka has been reduced to $10.50.

Ordinary building lumber can now be had in Eureka for $65 per thousand.

Work upon the Denver and Rio Grande railroad is progressing rapidly.

The Los Angeles and Independence railroad will more than pay expenses during the first month of its running.

A wrought iron bridge is to be constructed across the Santa Rosa creek. A Topeka (Kansas) firm are the contractors.

The new water works for Virginia City will not be completed before June, 1876. The cost will be $130,000.

A cargo of ship spars are being delivered at Olympia for shipment direct to Newburyport, Massachusetts.

Steel rails are being put down on all the sharp curves of the Central Pacific railroad on the division between Carlin and Winnemucca.

The main canal to the Central California colony in Fresno county is completed, with the exception of one culvert yet to he completed.

The North Pacific railroad will he completed to Russian river by January 1st, if inclement weather does not forefend.

A telegraph cable is proposed from Vancouver island across the Gulf of Georgia to the mainland, by way of Burrard inlet and Nanaimo.

The work of fitting out cruisers and generally strengthening the navy is reported actively but quietly progressing at the Brooklyn navy yards.

Large supplies of lumber continue to arrive at Virginia City. The snow is not yet deep enough in the hills to prevent the lumberers from working.

The People's ice company at Truckee has a storage capacity of 15,000 tons. It has also two reservoirs which are filled with water from the mountain springs. One of these reservoirs covers an area of ten acres.

Duncan's mill, at the month of Russian river, closed down on the 8th inst. for the season. They have had a successful run of eleven months, during which time they have lost hut six days, two of them legal holidays. They have ont 7,000,000 feet of lumber, and have shipped 6,000,000, and have at their shipping point 1,000,000 feet.

Renew Your Subscriptions.—With encouraging rains, good mining prospects, a rapidly increasing population, public improvements and new manufacturing and industrial enterprises springing up throughout the coast, we believe the ensning year will he one of snch progress and importance that no snbscriber of the Press can afford to miss the record of events and discoveries which will be reported in the successive issues of this journal.

The world does not contain a medicine that will cure a distressing and dangerous cough or cold as rapidly and as certainly as Hale's Honey of Horehound and Tar.

Pike's Toothache Drops cure in one minute.

Sacramento, May 29th, 1875.

Messrs. Dewey & Co.—*Gentlemen:*

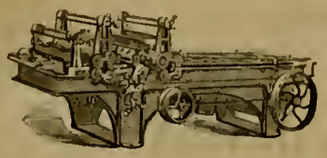
Yours of the 27th inst. is received. The patent came duly to hand yesterday, by express. Please accept thanks for your promptness in obtaining the same.

Very respectfully, Duncan Beaumont.

California Planers and Matchers, and Wood Working Machinery of all Kinds

California Planer and Matcher

Is gotten up from new patterns specially for this Coast. It has Cast Steel Slotted Cylinder Head, running in patent self-oiling boxes; will plane 24 inch wide and *six inch thick*, and tongue and groove 14 inch wide. Will make rustic and stick gutters, or heavy mouldings, etc., and is the best job machine ever built. ☞We have always on hand these machines with or without under cutter head, also, a large assortment of Planing Mill Machinery.



SMITH'S PATENT POWER MORTISERS, WITH LATE IMPORTANT IMPROVEMENTS.

Mortiser.

Smith's Celebrated Molders.

We have four sizes of these Machines always on hand—"B," "C," "D" and "E,"—to work either three or four sides. Have slotted heads and all other improvements, and may be seen in any mill on the Coast. ☞*Prices reduced* to 75 per cent. less than Eastern list. We have also, a large stock of all kinds of Planing Mill Machinery, such as Molders, Matchers, Tenoners, Band and Jig Saws, etc. Send for our new Illustrated Catalogue. TREADWELL & CO,

Smith's Celebrated Moulders.

Patent
Band and Jig Saw

TREADWELL & CO., - - - MACHINERY DEPOT: Market, Head of Front Street, - - - - San Francisco.

Mining and Other Companies.

Lake Mining Company—Location of

principal place of business, San Francisco, California. Location of mine and works, Quicksilver Mining District, Napa County, California.

NOTICE.—There are delinquent upon the following described stock, on account of assessment (No. 4) levied on the third day of November, 1875, the several amounts set opposite the names of the respective shareholders, as follows:

Names.	No. Certificate.	No. Shares.	Amount.
J H Goodman	25	2	$40 00
J H Goodman	31	10	200 00
P Christianson	35	10	200 00
James Lefferts	*unknown	8	160 00

*All the Company's records having been burned.

And in accordance with law, and an order of the Board of Directors, made on the third day of November, 1875, so many shares of each parcel of such stock as may be necessary, will be sold at public auction, at the office of the Company, No. 19 First street, San Francisco, Cal., on Monday, the twenty-seventh day of December, 1875, at the hour of 3 o'clock P. M., of said day, to pay the delinquent assessment thereon, together with cost of advertising and expenses of sale.

R. F. KNOX, Secretary.

Office, 10 and 21 First street, San Francisco, Cal.

Mariposa Land and Mining Company of

California. Location of principal place of business, San Francisco, Cal. Location of works, Mariposa County, Cal.

Notice is hereby given, that at a meeting of the Board of Directors, held on the thirteenth day of November, 1875 an assessment, (No. 2) of one dollar per share was levied upon the capital stock of the corporation, payable immediately, in United States currency, to the Secretary, at the office of the company, room 33, Nevada Block, No. 309 Montgomery street, San Francisco, Cal., or to the Assistant Secretary, at the office, No. 9 Nassau street, New York City, N. Y.

Any stock upon which this assessment shall remain unpaid on the thirty-first day of December, 1875, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Tuesday, the first day of February, 1876, to pay the delinquent assessment, together with costs of advertising and expenses of sale. By order of the Board of Directors.

LEANDER LEAVITT, Secretary.

Office, Room 33, Nevada Block, No. 309 Montgomery Street, San Francisco, California.

Owyhee Water and Gravel Mining Com-

pany. Location of principal place of business, San Francisco, Cal. Location of mines, Elko County, Nev.

NOTICE.—There are delinquent upon the following described stock, on account of assessment, (No. 1) levied on the first day of November, 1875, the several amounts set opposite the names of the respective shareholders, as follows:

Names.	No. Certificate.	No. Shares.	Amount.
M A Baldwin	37	100	$30 00
M A Baldwin	43	7400	2220 00
B Lande, trustee	3	10000	3000 00
B Lande, trustee	54	50	15 00
B Lande, trustee	60	12000	3600 00
O H Lagrange, trustee	39	100	30 00
T H Mayne	21	1000	300 00
J W Penu, trustee	36	100	30 00
J W Penu, trustee	40	19900	5970 00
J W Penu, trustee	42	2500	750 00
H H Pearson	44	100	30 00

And in accordance with law, and an order of the Board of Trustees made on the first day of November, 1875, so many shares of each parcel of such stock as may be necessary, will be sold at public auction, on the fifteenth day of January, 1876, at the hour of 2 o'clock, P. M., of said day, to pay said delinquent assessment thereon, together with costs of advertising and expenses of sale. JOHN E. McDONALD, Secretary.

Office, No. 405 California street, San Francisco, Cal.

Pauper Mining Company.—Location of

principal place of business, San Francisco, California. Location of works, Owyhee county, Idaho Territory.

NOTICE.—There are delinquent upon the following described stock, on account of Assessment No. 6, levied on the 9th day of November, 1875, the several amounts set opposite the names of the respective shareholders as follows:

Names.	No. Certificate.	No. Shares.	Am't.
W F Bogart, Trustee	2	100	$20 00
W F Bogart, Trustee	7	150	30 00
W F Bogart, Trustee	8	100	20 00
W F Bogart, Trustee	9	100	20 00
W F Bogart, Trustee	10	100	20 00
Crocker & Gurnett, Trustees	11	25	5 00
Crocker & Gurnett, Trustees	12	25	5 00
Crocker & Gurnett, Trustees	13	25	5 00
G A Coursen, Trustee	14	500	100 00
G A Coursen, Trustee	15	500	100 00
G A Coursen, Trustee	16	100	20 00
G A Coursen, Trustee	17	100	20 00
G A Coursen, Trustee	18	100	20 00
G A Coursen, Trustee	19	100	20 00
G A Coursen, Trustee	20	100	20 00
O P Gordon, Trustee	35	100	20 00
Jonas Lincoln, Trustee	55	50	10 00
W F Bogart, Trustee	62	100	20 00
W F Bogart, Trustee	63	100	20 00
W F Bogart, Trustee	64	100	20 00
W F Bogart, Trustee	65	300	60 00
W F Bogart, Trustee	66	750	150 00
W F Bogart, Trustee	67	150	30 00
W F Bogart, Trustee	68	150	30 00
W F Bogart, Trustee	69	150	30 00
W F Bogart, Trustee	70	225	45 00
W F Bogart, Trustee	71	75	15 00
W F Bogart, Trustee	80	25	5 00
W F Bogart, Trustee	81	25	5 00
W F Bogart, Trustee	82	25	5 00
W F Bogart, Trustee	87	50	10 00
W F Bogart, Trustee	88	50	10 00
W F Bogart, Trustee	89	50	10 00
O H Bogart, Trustee	90	300	60 00
O H Bogart, Trustee	91	1000	200 00
O H Bogart, Trustee	92	1000	200 00
O H Bogart, Trustee	93	1000	200 00
O H Bogart, Trustee	94	300	60 00
O H Bogart, Trustee	96	5	1 00
S E Holcombe	97	5	1 00
D L McDonald	98	5	1 00
A P Muncar	90	5	1 00
Cope, Ubler & Co, Trustees	101	25	5 00
Cope, Uhler & Co, Trustees	102	500	100 00
Cope, Uhler & Co, Trustees	103	500	100 00
Cope, Uhler & Co, Trustees	104	500	100 00
Cope, Ubler & Co, Trustees	105	100	20 00
Cope, Uhler & Co, Trustees	106	100	20 00
Cope, Uhler & Co, Trustees	108	100	20 00
J H Williams	110	30	6 00
D Witdor	111	30	6 00
J N Hill, Trustee	119	100	20 00
Parker & Fry, Trustees	124	50	10 00
Parker & Fry, Trustees	125	50	10 00
Parker & Fry, Trustees	126	50	10 00
Parker & Fry, Trustees	127	50	10 00
G H Purdy, Trustee	135	100	20 00
G H Purdy, Trustee	137	50	10 00
H W Howell, Trustee	140	75	15 00
C E Eckord, Trustee	141	150	30 00
N O Efford, Trustee	149	25	5 00
N O Efford, Trustee	150	25	5 00
N O Efford, Trustee	151	25	5 00
W F Bogart, Trustee	155	100	20 00
W F Bogart, Trustee	156	50	10 00
W F Bogart, Trustee	159	100	20 00
W F Bogart, Trustee	160	50	10 00
Saml Marks, Trustee	167	30	6 00
Saml Marks, Trustee	168	30	6 00
W F Bogart, Trustee	172	50	10 00
W F Bogart, Trustee	173	50	10 00
W F Bogart, Trustee	174	50	10 00
W F Bogart, Trustee	177	100	20 00
H H Noble & Co, Trustees	180	50	10 00
H H Noble & Co, Trustees	181	50	10 00
H H Noble & Co, Trustees	182	50	10 00
H H Noble & Co, Trustees	183	50	10 00
H H Noble & Co, Trustees	184	50	10 00
H H Noble & Co, Trustees	185	50	10 00
H H Noble & Co, Trustees	186	100	20 00
H H Noble & Co, Trustees	187	100	20 00
H H Noble & Co, Trustees	188	100	20 00
H H Noble & Co, Trustees	189	100	20 00
H H Noble & Co, Trustees	190	100	20 00
H H Noble & Co, Trustees	191	100	20 00
C A Schmitt, Trustee	192	100	20 00
C A Schmitt, Trustee	193	100	20 00
C A Schmitt, Trustee	197	100	20 00
C A Schmitt, Trustee	198	100	20 00
C A Schmitt, Trustee	202	50	10 00
C A Schmitt, Trustee	203	50	10 00
H P Wood, Trustee	222	100	20 00
H P Wood, Trustee	223	100	20 00
H P Wood, Trustee	224	100	20 00
A Tence, Trustee	227	75	15 00
O H Bogart, Trustee	228	100	20 00
1 Case, Trustee	229	5	1 00
W Turnbull & Co, Trustees	233	100	20 00
W Turnbull & Co, Trustees	235	100	20 00
W Turnbull & Co, Trustees	236	100	20 00
W Turnbull & Co, Trustees	244	100	20 00
W Turnbull & Co, Trustees	245	100	20 00
W Turnbull & Co, Trustees	247	100	20 00
W Wilkinson, Trustee	248	500	100 00
S E Holcombe, Trustee	249	500	100 00
E Breeze, Trustee	250	200	40 00
E Breeze, Trustee	251	200	40 00
E Breeze, Trustee	252	100	20 00
W F Bogart, Trustee	253	100	20 00
W F Bogart, Trustee	254	100	20 00
W F Bogart, Trustee	256	100	20 00
W F Bogart, Trustee	258	100	20 00
W E Norwood, Trustee	267	100	20 00
Jonas Lincoln, Trustee	269	50	10 00
W L Duncan, Trustee	270	50	10 00
W L Duncan, Trustee	271	50	10 00
W L Duncan, Trustee	272	50	10 00
W L Duncan, Trustee	273	50	10 00
W L Duncan, Trustee	274	20	4 00
W L Duncan, Trustee	275	20	4 00
M Moritz, Trustee	276	10	2 00
M Moritz, Trustee	277	10	2 00
M Moritz, Trustee	278	10	2 00
M Morttz, Trustee	279	10	2 00
M Moritz, Trustee	285	10	2 00
M Moritz, Trustee	287	25	5 00
M Morttz, Trustee	288	25	5 00
M Moritz, Trustee	289	50	10 00
M Moritz, Trustee	290	50	10 00
M Moritz, Trustee	291	50	10 00
O P Gordon, Trustee	292	25	5 00
C P Gordon, Trustee	293	50	10 00
Hitl & Kilgour, Trustees	294	25	5 00
Wm Maxford, Trustee	297	60	12 00
Wm Maxford, Trustee	298	60	12 00
M Morttz, Trustee	299	50	10 00
M Moritz, Trustee	300	50	10 00
M Moritz, Trustee	302	100	20 00
O A Schmitt, Trustee	303	50	10 00
C A Schmitt, Trustee	304	50	10 00
J D Parker, Trustee	305	100	20 00
J D Parker, Trustee	306	100	20 00
W F Bogart, Trustee	307	200	40 00
E Purdy, Trustee	308	50	10 00
J E Purdy, Trustee	309	25	5 00
W F Bogart, Trustee	310	100	20 00
W F Bogart, Trustee	311	100	20 00
W F Bogart, Trustee	312	100	20 00
W F Bogart, Trustee	313	50	10 00
W F Bogart, Trustee	314	40	8 00
W S Lyons, Trustee	315	50	10 00
W S Lyons, Trustee	317	20	4 00
W F Bogart, Trustee	318	150	30 00
Ernest Ancela, Trustee	322	150	30 00
W Turnhull & Co, Trustees	325	75	15 00
W Turnhull & Co, Trustees	326	25	5 00
Hale, Page & Wilson, Trustees	327	150	30 00
C P Gordon, Trustee	328	120	24 00
W F Bogart, Trustee	333	100	20 00
W F Bogart, Trustee	334	100	20 00
W F Bogart, Trustee	335	100	20 00
Chas Athearn, Trustee	336	100	20 00
Chas Athearn, Trustee	337	100	20 00
Chas Athearn, Trustee	338	100	20 00
S E Holcombe, Trustee	339	100	20 00
S E Holcombe, Trustee	340	100	20 00
S E Holcombe, Trustee	341	100	20 00
S E Holcombe, Trustee	342	30	6 00
Riotte & Beyea, Trustees	343	100	20 00
Riotto & Beyea, Trustees	344	100	20 00
Riotto & Beyea, Trustees	345	100	20 00
Riotto & Beyea, Trustees	346	100	20 00
Riotto & Beyea, Trustees	347	100	20 00
Riotto & Beyea, Trustees	348	100	20 00
M Moritz, Trustee	349	20	4 00
M Moritz, Trustee	350	20	4 00
M Moritz, Trustee	351	20	4 00
M Moritz, Trustee	352	20	4 00
M Moritz, Trustee	353	20	4 00
M Moritz, Trustee	354	20	4 00
M Moritz, Trustee	355	20	4 00
M Moritz, Trustee	356	20	4 00
M Mottz, Trustee	357	20	4 00
M Moritz, Trustee	358	20	4 00
M Moritz, Trustee	359	50	10 00
M Moritz, Trustee	360	50	10 00
M Moritz, Trustee	361	50	10 00
M Moritz, Trustee	362	50	10 00
M Moritz, Trustee	363	50	10 00
M Moritz, Trustee	364	50	10 00
M Moritz, Trustee	365	100	20 00
M Moritz, Trustee	366	100	20 00
M Moritz, Trustee	367	100	20 00
M Moritz, Trustee	368	100	20 00
Joseph Jock, Trustee	369	100	20 00
Joseph Jock, Trustee	370	100	20 00
W H Richards, Trustee	371	10	2 00
W H Richerds, Trustee	372	50	10 00
L F Loveland, Trustee	373	105	21 00
A H Webb, Trustee	374	50	10 00
A H Webb, Trustee	375	100	20 00
A H Webb, Trustee	376	100	20 00
A H Webb, Trustee	377	100	20 00
A H Webb, Trustee	378	100	20 00
W F Bogart, Trustee	379	100	20 00
W F Bogart, Trustee	380	100	20 00
W F Bogart, Trustee	381	100	20 00
G W Stanley, Trustee	388	100	20 00
J L Barstow, Trustee	389	100	20 00
J L Barstow, Trustee	390	100	20 00
J L Barstow, Trustee	391	100	20 00
J L Barstow, Trustee	392	100	20 00
J L Barstow, Trustee	393	100	20 00
J L Barstow, Trustee	394	100	20 00
H H Noble & Co, Trustees	396	50	10 00
H H Noble & Co, Trustees	397	50	10 00
W F Bogart, Trustee	398	100	20 00
W F Bogart, Trustee	399	100	20 00
W F Bogart, Trustee	400	100	20 00
Geo R Wells, Trustee	401	100	20 00
Geo R Wells, Trustee	402	100	20 00
Geo R Wells, Trustee	403	100	20 00
Child & Maguire, Trustees	404	20	4 00
Child & Maguire, Trustees	405	20	4 00
Child & Maguire, Trustees	406	20	4 00
W F Bogart, Trustee	408	300	60 00

And in accordance with law, and an order of the Board of Directors, made on the ninth day of November, 1875, so many shares of each parcel of snob stock as may be necessary, will be sold at public auction at the office of the company, room 1, No. 402 Montgomery street, San Francisco, Cal., on Thursday, the sixth day of January, 1876, at the hour of one o'clock, P. M., of such day, to pay delinquent assessments thereon, together with costs of advertising and expenses of sale.

W. F. BOGART, Secretary.

Office, Room 1, No. 402 Montgomery street, San Francisco, California.

Peytona Gold and Silver Mining Com-

pany. Location of works, Virginia District, Storey county, Nevada.

NOTICE.—There are delinquent upon the following described stock, on account of assessment (No. ——) levied on the 23d day of October, 1875, the several amounts set opposite the names of the respective shareholders, as follows:

Names.	No. Certificate.	No. Shares.	Amount.
Jacob Mayer	42	25	125 00
Jacob Mayer	41	10	50 00
Levi Strauss	121	5	25 00
C. V. Hobart	154	5	25 00
Wm. Doolan	105	033	4,665 00
T J Owens	203	15	75 00

And in accordance with law, and an order of the Board of Trustees, made on the 23d day of October, 1875, so many shares of each parcel of said stock as may be necessary, will be sold at public auction, at the office of the Company, room No. 11, 215 Sansome street, San Francisco, on the 18th day of December, 1875, at the hour of 12 o'clock, M., of said day, to pay said delinquent assessment thereon, together with costs of advertising and expenses of the sale.

T. J. OWENS, Secretary.

Office, Room No. 11, 215 Sansome street, San Francisco, Cal.

Pioneer Fluming Company—Location of

principal place of business, San Francisco, Cal. Location of works, Shirt-tail Canon, Placer County, Cal.

Notice is hereby given, that at a meeting of the Board of Directors, held on the thirtieth day of November, 1875, an assessment of five cents ($.05) per share was levied upon the capital stock of the corporation, payable immediately, in United States gold and silver coin, to the Secretary, at 116 Leidesdorff street, San Francisco, Cal.

Any stock upon which this assessment shall remain unpaid on the third day of January, 1876, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Monday, the seventeenth day of January, 1876, to pay the delinquent assessment, together with costs of advertising and expenses of sale.

W. AUG. KNAPP, Secretary.

Office, 116 Leidesdorff street, San Francisco, Cal.

Taylor Mill and Mining Company—Lo-

cation of property, Garden Valley Mining District, Et Dorado County, State of California. Principal place of business, San Francisco, State of California.

Notice is hereby given, that at a meeting of the Board of Directors of said company, held on the ninth day of December, 1875, an assessment of sixty-five cents per share was levied upon the capital stock of the corporation, payable immediately, in United States gold coin, to the Secretary, at the office of the company, 607 Montgomery street, San Francisco, Cal.

Any stock upon which this assessment shall remain unpaid on the nineteenth day of January, 1876, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Wednesday, the ninth day of February, 1876, to pay the delinquent assessment, together with costs of advertising and expenses of sale. SAMUEL S. MURFEY, Secretary.

Office, 607 Montgomery street, San Francisco, Cal.

UNITED STATES

Mineral Land Laws, Revised Statutes,

And Inetructione and Forme Under the Same.

We have just issued a pamphlet containing the general mineral land laws of the United States, with instructions of the Commissioner of the Land Office The contents of this pamphlet comprise all of the Government laws with relation to mineral lands of interest to the mining community, as follows: Mining Statute of May 10th, 1872, with Instructions by the Commissioner of the Land Office; Mintng Statute of July 26th, 1866; Mining Statute of July 9th, 1870 Forms required under Mining Act of May 10th, 1872, as follows: Notice of Location; Request for Survey; Application for Patent; Proof of Posting Notice and Diagram of the Claim; Proof that Plat and Notice remained Posted on Claim during Time of Publication; Registers' Certificate of Posting Notice for Sixty Days; Agreement of Publisher; Proof of Publication; Affidavit of $500 Improvements; Statement and Charge of Fees; Proof of Ownership and Possession in Case of Loss or absence of Mining Records; Affidavit of Citizenship; Certificate that no Suit is Pending; Power of Attorney; Protest and Adverse Claim; Non-Mineral Affidavit; Proof that no Known Veins Exist in a Placer Claim, etc. There is also given the U. S. Coal Land Law and Regulations thereunder. The work comprises thirty pages, and will be sold, post-free, for 50 cents. It should be in the hands of every one having any mining interests. DEWEY & CO.,

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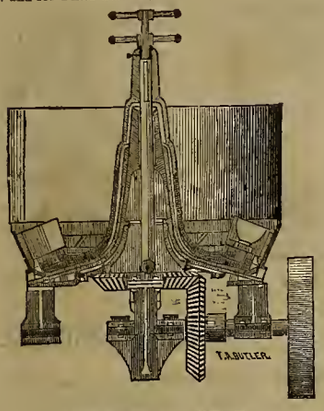

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THE ONLY SAFE BLASTING POWDER IN USE.

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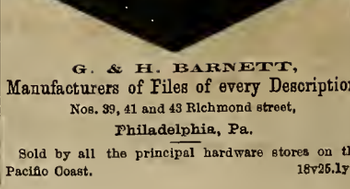

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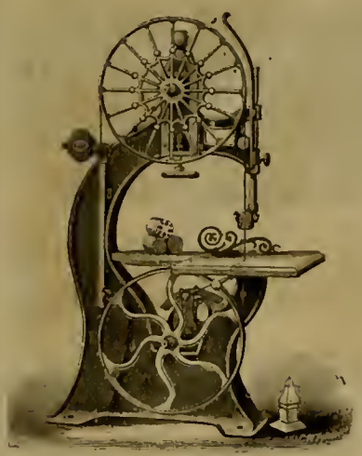

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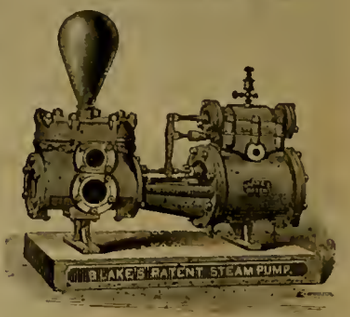

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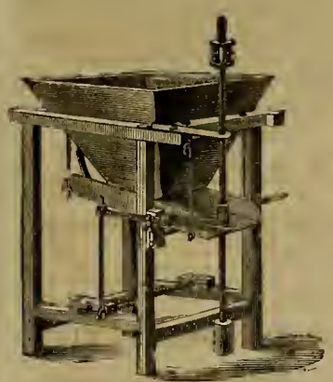

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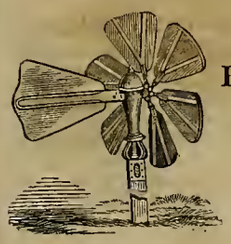

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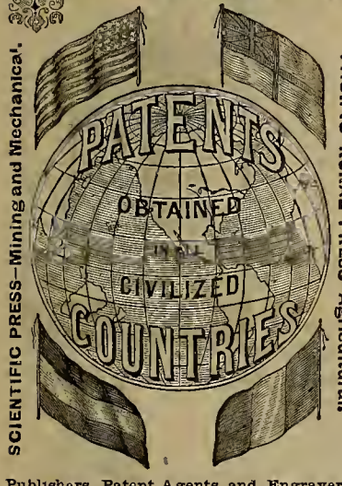

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At a Stated Term of the Circuit Court of the United States of America of the Ninth Judicial Circuit in and for the District of California, held at the court room in the city and county of San Francisco, on Thursday, the 30th day of September, in the year of our Lord one thousand eight hundred and seventy-five. Present—The Honorable Lorenzo Sawyer, Judge.

Nicholas Seibert, complainant, vs. Wm. T. Garratt, defendant—In equity.

DECREE.

This cause came in to be heard at the February Term, A. D. 1875, of this Court and was argued by counsel and thereupon upon consideration thereof, it was ordered, adjudged and decreed, as follows, viz: That defendant, William T. Garratt, was not the first or original inventor, or discoverer of the improvement or discovery claimed by him, in and by those certain reissued letters patent of the United States, number five thousand three hundred and twenty-eight (No. 5328), for an alleged new and useful improvement in lubricators, issued to said defendant, William T. Garratt, on the 18th day of March, A. D. 1873, and is not entitled to a patent therefor, and that said reissued letters patent, number five thousand three hundred and twenty-eight (No. 5328) are declared void and the same are hereby vacated and set aside by reason of their interference with those certain letters patent of the United States, number one hundred and eleven thousand eight hundred and eighty-one (No. 111,881) for a new and useful improvement in lubricators, issued to complainant, Nicholas Seibert, on the fourteenth (14th) day of February, A. D. 1871.

It was also further ordered, adjudged and decreed that complainant do have and recover of and from defendant his costs and expenses to be taxed herein.

(Signed) LORENZO SAWYER,
Circuit Judge.

The above decree has reference to "Seibert's Eureka Lubricator" for oiling the valves and cylinders of steam engines.

It has a glass gauge and condensing pipe, or reservoir, with a regulating feed valve, and works as follows: As the water of condensation is admitted, under the oil, just so fast the oil passes out at the top through a pipe into the steam pipe to oil the valves and cylinder.

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MINING AND SCIENTIFIC PRESS.

An Illustrated Journal of Mining, Popular Science and General News.

BY DEWEY & CO., Patent Solicitors.

SAN FRANCISCO, SATURDAY, DECEMBER 25, 1875.

VOLUME XXXI Number 26.

Apparatus for Producing a Blast or Vacuum in Laboratories.

No laboratory is complete without some appliance by means of which a strong and continuous blast of air can be produced. Since the introduction of "Bunsen's filter pump," the chemist can hardly dispense with some form of apparatus to produce a partial vacuum. In most laboratories different and distinct apparatus is used for each purpose, more or less complicated according to the means or requirements of the chemist.

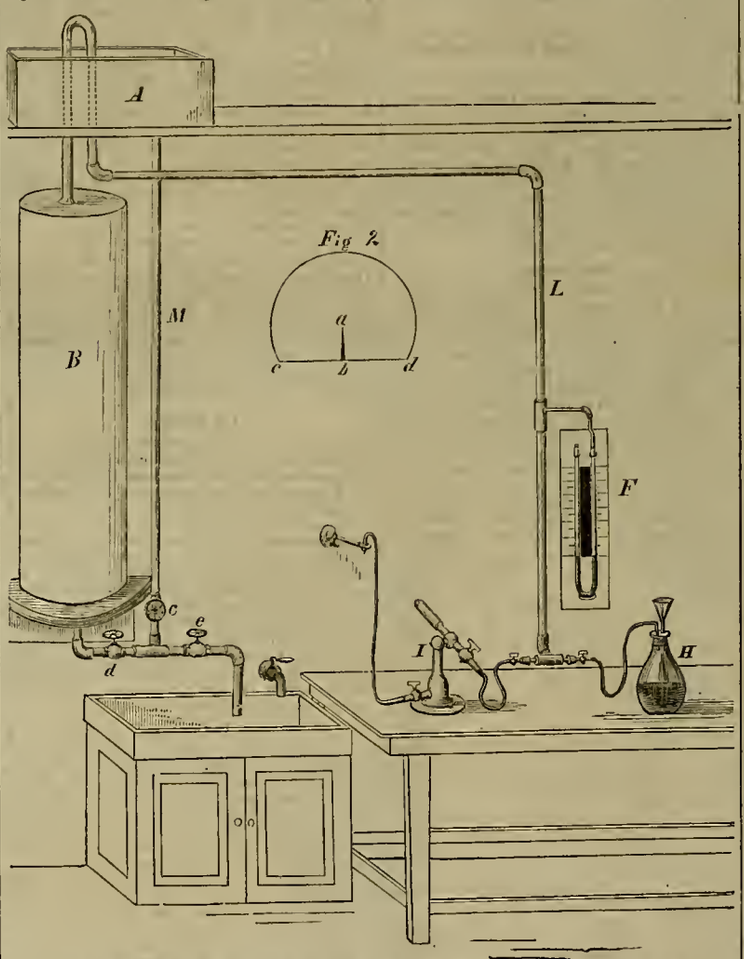
The apparatus contrived by Mr. Henry G. Hanks, of this city, and which he is using successfully in his laboratory, will produce either a blast or vacuum at will; the details are well shown in the engraving.

The tank, *A*, may be placed in any convenient position at about ten feet above the bottom of the galvanized iron cylinder, *B*, into which water can freely flow through the half-inch iron pipe, *M*. The tank is supplied with water by a ball cock not shown in the engraving. The diameter of the cylinder is ten inches, and its hight between five and six feet.

When it is required to produce a blast of air, the globe valves, *C* and *D*, are opened, and *E* closed. As the water enters the cylinder from below and rises gradually, the air is compressed and the rising mercury in the left hand portion of the U tube manometer, *F*, indicates the amount of pressure. When the mercury has risen one inch, the pillow cock is opened, allowing the compressed air to pass into the blast blow-pipe, *I*, the gas from the burner having previously been lighted. A powerful blue flame is produced, suitable for the requirements of the chemist's laboratory, or for soldering at the work table of the mechanic. The tube, *L*, must be carried above the tank, as shown in the engraving, to prevent the passage of water into the air tubes; as the pressure increases in the cylinder, the air must be graduated by turning the pillow cock. There will soon be a point reached, where the resistance of the compressed air will balance the weight of the water, when the mercury will rise no higher; with this Mr. Hanks can, when there is a pressure of nearly five inches of mercury, so control the air as to produce a clear blue pencil of flame three inches long, exactly suited for blow-pipe work, or for showing the colored flames characteristic of certain elements and salts. In an instant this can be changed to a roaring intensely hot flame from five to ten inches long, suited for bending large glass tubes, or for maintaining a white heat in a platinum crucible when fusions or incinerations are desired. The decomposition of chromic iron, or fusion of silicates with alkaline carbonates are easily made with this apparatus. To reverse this apparatus and to produce a partial vacuum, it is only necessary to allow the cylinder to partially fill with water and then to close the globe valve, *C*, the valve, *E*, being closed while the cylinder is filling. The compressed air is then allowed to escape, which will bring the mercury level in the U tube. The globe valve, *E*, is then opened and the water allowed to run into the sink; the mercury will now be seen to rise in the right hand manometer tube. When the mercury indicates one inch, the apparatus is in the proper condition to exhaust the air in the Bunsen filter bottle, *H*, by means of which the operations of filtering and washing the precipitates may be greatly accelerated.

The apparatus may also be used as an asperator, often of great use in the laboratory. The following example is given for those who are not familiar with such appliances:

Let it be required to dry some substance at the temperature of boiling water and to determine the amount of moisture removed. A glass tube is prepared of about half an inch internal diameter and about six inches long. Into each end is fitted a good cork, through each of which a small glass tube passes, and is allowed to project outward an inch or more. A weighed portion of the substance to be dried is carefully introduced into the tube by removing one of the corks, which is then replaced and the tube and contents weighed on a delicate balance. The tube is then connected with the apparatus by disconnecting the filter bottle, *H*, and slipping the end of the rubber tube over the glass tube projecting from one of the corks. The other end of the glass tube is then connected (also by means of rubber tubes) with two U tubes, one of which—the outer one—is filled with fragments of pumice stone previously soaked in concentrated sulphuric acid. The other U tube is placed in a beaker of water, which is heated to boiling by a gas-burner or spirit lamp. The pillow cock, connecting with the apparatus, is thus opened, and the air is drawn through, first the tube containing the pumice stone, any moisture being retained by the sulphuric acid; thence through the tube which is surrounded by boiling water, where its temperature is raised to



DEVICE FOR PRODUCING BLAST OR VACUUM IN LABORATORIES.

that of the water; thence passing hot and dry over the powdered substance, from which it soon removes the last trace of moisture. When this is known to be the case the glass tube is disconnected and weighed; the loss is the moisture.

As many persons are not familiar with Bunsen's filter apparatus, we will describe that portion which Mr. Hanks uses, and which is shown in *Fig.* 1, *H*. It will first be necessary to find a glass funnel, the sides of which form an angle of 60°. This can only be done by making a pattern and selecting by trial from a quantity of funnels. The pattern is made by drawing a circle of any convenient size and then dividing the circumference into six equal parts, drawing lines from the points to the center; this will divide the circle into six sections, each of which forms an angle of 60°; one of these cut from thick pasteboard will form the pattern required.

Having found a funnel of the proper shape, which should have a rather long neck, make a filter of thick writing paper. This is done by folding the paper twice and then cutting off the corners, so that when unfolded it will be a circle with two folds through the center at right angles with each other; upon being refolded and placed in the funnel properly it can be made to fit the sides closely, forming a perfect hollow cone.

A mixture of plaster of paris and water, rather thick, may then be prepared and poured into the paper filter while still in the funnel. When the plaster has *set* it may be removed and dried at a temperature below that of boiling water. If a piece of platinum foil, of exactly the size and shape of Fig. 2, is cut out with a pair of scissors, not forgetting to cut through from *b* to *a* at the same time, there will be no difficulty in bending it on the point of the plaster cast, into a small hollow platinum cone. This is to be placed in the funnel to support the points of future filters which would otherwise be broken by the pressure of the atmosphere.

It will be necessary to select a rather wide mouthed bottle, shown in *H*, Fig. 1. The funnel must fit tightly the perforated India rubber cork, the neck being allowed to enter the bottle some distance. The glass tube connecting with the apparatus does not extend below the under surface of the cork.

Before using, the bottle must be perfectly clean. The cylinder, *B*, having been allowed to fill or partly fill, the cock, *C*, is then closed. *D* and *E* being left open. Pour the substance to be filtered into a clean paper filter, placed in the funnel and supported by the platinum cone.

When the mercury indicates one inch, open the pillow cock and the filtration will proceed rapidly, the last drop passing through as quickly as the first. If the filtrate is to be saved, the cock may be removed, when all has passed through and the liquid poured from the bottle. If the filter contains a precipitate to be washed, distilled water may be poured into the funnel again and again until all soluble matter is removed.

Where there is no gas, the blowing apparatus may connect with a movable blow pipe and the flame may be produced by burning alcohol, oil, coal oil or a mixture of turpentine and alcohol.

In localities remote from business centers, where it might be difficult to procure the sheet iron cylinder, two tight barrels may be substituted for the tank and cylinder, so that a few iron pipes and fittings only are required to construct the apparatus, which will be found very useful and almost indispensable in the laboratories of mining companies. One of the great advantages of Mr. Hanks' apparatus is its economy in the use of water; the ordinary operations for what it is required may be conducted with the expenditure of only a few buckets of that fluid.

Academy of Sciences.

A regular semi-monthly meeting of the California Academy of Sciences was held on Monday evening last, Vice-President Edwards in the Chair. A number of donations to the museum were received.

Mr. Edwards read a paper on the *Darlingtonia Californica*, a species of pitcher plant found in many places on this coast, and notably among the foothills of the Sierra Nevada and around Mount Shasta. It is found in mountain meadows and around bogs, often at an altitude of 5,000 feet above the sea. Mr. Edwards exhibited a number of specimens of the plant.

Vice-President Gibbons spoke of this plant, and its reputed property of digesting like animals, and thought most scientific men were now agreed that it has been demonstrated that the leaves do not possess actual digestive powers. For one, he does not believe they do, but thinks they reduce their food to a state of manure, which is then absorbed by its leaves, instead, as in other plants, by its roots. Some species of this plant, formerly used in the treatment of cases of small-pox, have been proven to have no such potency as was ascribed to them, and the practice is now obsolete.

The following ticket was presented by the Nominating Committee and adopted by the academy as the regular nomination for the ensuing year: President, Prof. Geo. Davidson; Vice-President, Harry Edwards; Second Vice-President, H. W. Harkness, M. D.; Corresponding Secretary, Theodore A. Blake; Recording Secretary, Charles G. Yale, of the MINING AND SCIENTIFIC PRESS; Treasurer, Edward F. Hall, Jr.; Librarian, Wm. J. Fisher; Director of Museum, W. G. W. Harford. Trustees: General David D. Colton, Robert E. C. Stearns, Wm. Ashburner, Thomas P. Madden, Col. George E. Gray, Ralph C. Harrison, General John F. Miller. The draft of a memorial to the California Legislature, published elsewhere, asking for appropriations for the continuance of the State geological survey, was presented by Mr. Scupham and ordered transmitted to the Secretary of State at Sacramento.

The following members were then chosen to act on election day as Judges of Election: Charles D. Gibbee and J. T. Lowry; and as Inspectors, Captain Richard S. Floyd and Samual Hubbard.

ALASKA, with its area of 570,000 square miles, will, if annexed to Washington Territory, make a very respectable sized county—about as large as Oregon, California, Arizona and New Mexico combined. With this addition, the Territory of Washington will have an area of 640,000 square miles.

THE Pico oil springs at San Fernando, down 70 feet, has struck flowing oil, and is yielding 30 barrels of oil a day.

McCloud River Salmon Fishery.

Work Done by U. S. Fish Commission Under Superintendence of Deputy Commissioner L. Stone.

[By Herman Dwinelle, late Assistant at the Fishery.]

Part Second.

Work is begun usually about the 15th of July. The first thing done is to erect the large tent for a workshop and hatching cover. This is 100 feet by 30, and is supported by a strong frame and wired to the ground.

It is erected on a gravel plat covered in winter by the river, and everything has to be removed in the fall before the rains begin. As soon as the tent is set up the work of placing cribs in the river, to support the fish harrier, is begun. These are made of logs pinned together, forming a strong, triangular box six or seven feet in hight, two feet of which is to project above the water. A bottom is put to them and they are swung into place, broadside up stream, and held by a rope till filled with stones which keep them firmly in place. These cribs are four in number, and are placed in a rapid just below the tent and have to be renewed every year, as the freshets sweep them away every winter.

After this is done, the old racks of poles that are to stop the fish are overhauled and large timbers being placed from crib to crib, they are placed against them and held in place by stones at the bottom. These reach about a foot above water, and above them are placed frames made of poles with willows woven between, to prevent the fish from leaping over the barrier.

On the tent end of the barrier is an undershot wheel, with buckets for raising water for the hatching troughs. It is twelve feet in diameter and raises 6,000 gallons per hour.

The barrier is usually closed about August 15th, when the great run begins and the fish collect in large numbers in a large pool below, whence they are taken with the seine.

After the barrier is done, the receiving box at the wheel and the flume are put up. The flume is a foot square, about 100 feet long, and carries the water into the filtering tanks. These are two large boxes about four feet by seven by three deep, and have six flannel screens placed obliquely in them to catch the impurities from the water. From them the water passes into the distributing trough, running parallel to them. At right angles to this are placed the rows of hatching troughs, eight in number.

The Hatching Troughs

Are oblong boxes one foot wide, eight inches deep and sixteen feet long, made of sugar pine. These are placed in eight rows, five in a row. They are about five feet above the ground at the upper end and each box has a fall of one and one-half inches, and there is about four inches fall from box to box to aerate the water.

They each contain seven trays made of wire gauze fastened on two wooden frames at top and bottom. Between each tray a dam is put to obtain a circulation of water. These are made of two pieces of one-half inch board about six inches wide and slide in pieces nailed to the sides of the boxes. The first piece is pushed down to the bottom and fastened so that the water is forced to flow over it; the second is placed about one and one-half inches from it about an inch from the bottom, so that the water is forced to flow under it and come up through the eggs placed in the trays to get over the next dam.

All the boxes, troughs and flumes are coated on the inside with asphaltum, which gives them a smooth finish and stops all leaking. It is prepared by putting lumps of crude asphaltum into a kettle, pouring in enough coal tar to fill the interstices and boiling till, when applied with a brush, it will harden quickly.

The Trays

Occupied by the eggs till shipped are two feet long by one wide and seven inches deep, and fit in the troughs as tightly as is consistent with their free working.

The trays for hatching eggs at the fishery were this year made on a new plan by Mr. Woodbury.

The Seining

Ground where the salmon are caught is about 200 yards below the tent. There the river is about fifty yards wide, deep and still, more than is usual; and the fish being stopped by the harrier, collect there and are easily taken from it by the seine.

The seine is about 150 feet long, with four inch mesh, and was made at the fishery this summer. It is drawn by two or three white men, assisted by eight or ten Indians, usually three times a day in the hight of the season, and oftener when the fish become scarce, and at the last five or six times during the night.

As soon as the seine is brought to shore the fish are taken out and each one tried by passing the hand down the belly, and all that are hard or unripe are thrown back into the river, and the ripe ones—those in which the eggs and milt are mature—are put separately into two "corrals" or large boxes (made of pickets) placed in the river, where they are kept till spawned.

It has been till this year the practice to keep all the fish that were nearly ripe in the "corrals" and let them ripen; but it has been found that a large per cent. of the eggs taken from such fish were dead at spawning, and that with the abundance of fish that can be obtained from the river each a course is unwise.

The top of the corral is covered with boards to prevent the fish from leaping out; these boards are fastened with scantling placed across them, whose ends are keyed down. This is necessary, as the salmon in their endeavor to escape, knock off in a night boards that are only spiked down. Their strength in this respect is very great; and were it not for the enfeebled condition in which they are at spawning time, it would be almost impossible to confine them.

The Sacramento Salmon.

After leaving salt water, eat nothing; and although those that pass the fishery in the spring and early summer are in fair condition, by the time of the greatest fall run, beginning about August 15th, the fish are in a most pitiable state, and when the spawning begins about the fishery—they spawn earlier up the river—they are black, thin and covered with a white fungus, and so weak that the mere act of spawning kills them; and not one in one thousand of this ran ever get back to the sea. They die by millions, male and female; and by the time the run is over, October 10th, the clear, cold water of the McCloud river emits an odor that can be smelt for a mile, and the decayed bodies of the salmon are continually floating down it or catching on the rocks. The river does not become drinkable again till the first freshet clears it of this filth. The flesh of the salmon in the fall is white, the fish has no fat and is slimy and coarse. About October 1st a small run comes up from the sea, whose flesh is pink, but these are few in number and soon gone; most of them probably get back to the sea and do not die as the others.

This fact of the destb of the spawners furnishes fish culturists with a problem that has not as yet been solved.

It is said, and has been proved, that salmon always return to their native river to spawn as soon as they are old enough, and consequently as soon as the fish hatched in the McCloud are old enough to spawn, they should return, spawn there and then die; none could reach a very great age, yet a great part of the fish caught are of several years' growth, some being very old, and must have spawned before. They have either spawned in other rivers, or remained several years in the sea.

The Season.

The first ripe salmon are taken about August 26th, and by September 1st the season is fairly begun. The numbers in each haul is small at first and few are ripe, but by September 9th or 10th the season is at its highest, and 500 or 600 are taken at once, of which, often, 200 are ripe. The largest haul this year, made just after dark, was estimated at 1,500, which, allowing 25 pounds as the average, made about 18 tons. From the 10th to the 20th the number of fish taken decreases, though a greater per cent. are ripe; by October 1st the season is over, and by the 10th the river is empty.

The following table shows the result of this year's spawning; only the females spawned are taken account of. Twice as many males were used as females:

Date.	Fem'les.	Eggs.
August 31	14	84,000
September 2	61	221,000
" 3	50	207,500
" 4	101	495 500
" 5	140	666,000
" 6	56	192,500
" 7	142	595,000
" 8	120	572,000
" 9	117	600,000
" 10	116	545,000
" 11	207	895,500
" 12	...	.....
" 13	138	611,500
" 14	70	304,000
" 15	74	331,500
" 16	103	351,500
" 17	88	320,000
" 18	25	109,500
" 19	2	7,500
" 20	49	133,000
" 21	48	179,500
" 22	26	84,000
" 23	13	56,000
" 24	.....	.....
" 25	17	59,000
" 26	.....	.....
" 27	13	50,000
Total	1,738	7,805,000
Unaccounted	4	15,900
Total	1,792	7,822,900

The Spawning

Is done on top of the corrals, from which the fish are taken as fast as wanted, in scoop-nets. The work is done by two white men, each assisted by an Indian to hold the tail of the fish; five or six others are employed to catch the fish from the corrals, etc.

In spawning, the females, which average about twenty-five pounds, are held by passing the left hand through the gills. This is necessary on account of the great weight and strength of the California salmon, and is the only way in which they can be held. The eggs are pressed out by holding the fish firmly against the left leg, and passing the hand down the belly till all the eggs are out.

The Eggs

Of this salmon average about five-sixteenths of an inch in diameter and are of a bright salmon color. The average number taken from each fish this year was 4,360. As the fish have to be held by the gills and as any injury to those organs is fatal, and as they would all die any way even if not caught, they are killed and given to the Indians.

The eggs are received in a dry tin pan placed on the floor, the milt is put on them as soon as possible and the two are then carefully stirred with the hand. This dry impregnation—invented by M. Wasski, a Russian, and introduced into this country in 1871—is of the greatest importance, as by the old method of mixing the milt and eggs in water not more than fifty per cent. were usually impregnated, but with the dry method, with sufficient care, all may be.

The manipulation of the males is a working some labor, as they often weigh as high of forty pounds, and have teeth half an inch long and very sharp.

As soon as the eggs have received the milt they are taken by a white man, put in the shade and allowed to stand for about two minutes for the eggs to absorb the spermatozoa. This absorption commences as soon as the eggs are pressed out and continues for ten minutes with diminishing force; after which time they cannot be impregnated.

After standing two minutes the eggs are covered with water and left to stand half an hour for the germ to set. They are then put into large tin pails, about 30,000 in a pail, and washed clean, and then sent up to the tent to be put into the troughs.

At the time of spawning, and probably for an hour or so after, the eggs are tough and not liable to injury and can be handled with great rapidity, but after that they become extremely sensitive and while in the troughs have to be handled with the greatest care, as any sharp jar kills them.

The Tent.

The eggs being taken taken to the tent are there received, measured and put into troughs. They are measured out in a dipper (its contents have been previously counted, a pint holding about 1,600) and poured into the trays in the troughs, 30,000 being put in a tray. There they remain for eighteen days, being every morning stirred up by raising and lowering the tray gently, (all the manipulation has to be done with the greatest care) and all the dead ones (all such are white) are picked out with tin nippers. Seven or eight Indians, mostly females, are employed in picking over the eggs, and do it well.

When the eggs are eighteen days old the eyes of the young fish are plainly visible and then they are tough and can be packed and sent away without danger.

One of the greatest annoyances experienced at this fishery is the impurity of the water. There is in it a fungus that cannot be stopped by the flannel screens or any other means that has as yet been tried. This deposits on the eggs, and unless they are stirred up frequently will in time suffocate them; yet from the constant care that is given them the eggs are kept in better condition than is usual and the mortality is, very small this year about four per cent.

The Packing

Begins when the first eggs are about twenty-one days old. It has to be done with great rapidity, and during the operation the tent presents a scene of great activity—about fourteen persons being then employed.

The work is begun in the afternoon. The eggs are carried in the trays to the upper end of the tent and emptied into a wash tub, where they are thoroughly washed by a stream of water; by which means, also, almost all of those not impregnated are killed.

They are measured out by one man, by dipperfuls, into the spawning pans, and by another handed to four or five Indians (squaws,) who pick out the dead ones. They are then handed to the person engaged in packing them, and by him spread in the boxes.

The Boxes

Are made two feet square by six inches deep, and while being packed are placed in another box filled with water up to the rims on which the eggs are to rest. In the bottom of the box is first a thick layer of moss—the moss used here is all brought forty miles, from Sbasta butte, and is of the finest quality—over this is spread a piece of mosquito netting, to facilitate the unpacking, and on this the eggs are spread from the pans (these are square) by moving them rapidly along over the moss. Here another Indian is employed in picking out *all* dead eggs. Over the eggs on the rims another piece of netting is placed, and then more moss, netting and eggs, and so on till eight layers are in, equal to 40,000. There are three boxes, side by side, packing at once, and the spreader passes from one to the other while the Indians are preparing for a new layer. When each box is full it is left under a stream of water till the time for packing it in the crate.

The Crates

Are two and a half feet by two feet, and are made of half-inch strips, nailed to one and a half-inch corner pieces. In the bottom is put about three inches of straw or fern—the common brake of the hills was used this year—and the box of eggs is placed on it, and then a frame three inches high and open at one side (to form a receptacle between the boxes for ice) is adjusted and the second box placed on top of that, and the whole packed tightly with fern, and the cover nailed on.

The packing is done in an afternoon and morning, and at noon the crates are placed on wagons and hauled to the railroad, at Redding, where they are put on the cars, filled with ice and the whole wet with ice water. The packing is done with great rapidity; as many as eighteen crates, containing 1,410,000 eggs, having been packed at one time this year. All the eggs sent away (6,000,000) were packed and shipped within two weeks. Such is the great superiority of this method of packing over the old method, in glass jars, so tedious and unsatisfactory. The loss by this new method is very small, about four per cent., if they are carefully cared for till they reach their destination, and kept as near freezing as possible.

After the eggs reach the hatching houses, in the East, they are put in troughs and hatched out in about two weeks.

All the carpenter work is done by the employees at the fishery.

The Hatching on the McCloud.

Last year arrangements were made with Commissioner Stone by the State Commissioners, by which 1,000,000 eggs were to be hatched and put into the McCloud, at $1 per thousand, but owing to the largeness of the Eastern shipments, only 850,000 were put in. This year 2,000,000 were ordered, but only 1,850,000 could be furnished, and of these 480,000 were sent to the Truckee and Kern rivers. Those sent to the latter were all killed by the alkali in the water, and it will be impossible to get salmon to grow in it. The lot for the Truckee turned out very well.

The eggs, as stated above, are hatched in trays, from which they pass into the troughs below. Thence they are taken and put into empty troughs, where they are left till they have absorbed the umbilical sac—(when they are about sixty-six days old)—when they are put into the river and left to shift for themselves.

The progress of development of a salmon (*Corogonus Palœa*) egg, translated from the French of Vogt, may be found as an appendix to Commissioner Stone's admirable book on "Domesticated Trout." The time of development of the salmon eggs in the troughs is about as follows: Time till eye spots show, eighteen days; till hatching, thirty-six days; till absorption of sac, sixty-six days. The temperature is 45° to 50° F.

Private Hatching Works.

It often happens that private parties wish to collect eggs in small quantities to replenish a pond or stream, but are deterred from so doing by the expense of building a hatching house, supposing that to be the only method of obtaining them. But it is the opinion of Commissioner Stone and Mr. Woodbury, that all the apparatus used here for salmon can be used with equal success for trout, being a vast improvement on the old systems; and for any one wishing to batch but a few thousand and to expend but little money, a very simple apparatus is available—Mr. Seth Green's shad boxes. These are made by taking a small box, about two feet square by one deep, knocking out the bottom and tacking over it a piece of wire gauze, varying in size according to the size of the eggs—about eight wires to the inch for salmon eggs. This box to be anchored in a stream of clear flowing water, the current is not to be strong enough to disturb the eggs, with the side up stream the lowest. About 50,000 salmon eggs can be put in a box the size of the above. It must have a cover of some black cloth to exclude *all* light.

These boxes have been used to a considerable extent at the fishery, and have been found to work as well, if properly taken care of, to prepare the eggs for shipment, as the troughs, but to require more care.

The eggs could also be hatched in them in small quantities, and as fast as hatched transferred to a "corral" or raceway in the stream in the shade, where they could stay till the sac is gone. Large numbers could not thus be handled, but for collecting eggs in moderate quantities nothing can excel them.

In handling eggs it must be remembered that sunlight is always deadly to them, and any jar, except when they are first taken, and after the eye spots show, is sure to kill numbers.—*Herman Dwinelle in Rural Press.*

Note.—In the table in the first part instead of "eggs hatched," read, "eggs taken."

Influence of Season on the Skin.—Donhoff calls attention to the fact that the obvious difference between the fur of animals in summer and in winter is associated with an equally striking difference in the texture and thickness of their skins. Thus, for example, the average weight of an ox hide in winter is seventy pounds; in summer fifty-five pounds; the hair in winter weighs about two pounds; in summer one pound, leaving about fourteen pounds, to be accounted for by the proper substance of the skin. These differences are quite as decided in foetal animals as in adults. Calves born in winter have a longer and thicker coat than those born in summer; moreover, there is a difference of more than a pound in the average weight of their skins after the hair has been removed. Similar facts may be observed in the case of goats and lambs. That these differences are not to be ascribed to any corresponding change in the diet and regimen of the parent animals is proved by the fact that they are equally manifest in the young of individuals kept under cover and on the same food all the year round.

The Hale & Norcross main shaft is being retimbered and is already finished to a depth of 475 feet.

The Georgetown (Col.) *Miner* calls for a national school of mines.

Scientific Progress

The Production of Phosphorus.

Phosphorus affords a remarkable instance of an article, well known for at least two centuries, but which, until quite recently, possessed but little importance beyond its mere curiosity. The progress of science and mechanical invention, however, during the last thirty years, has given it large commercial importance and made it an almost indispensable requisite in every civilized household. Prof. J. L. Smith remarked in a recent lecture that one of the largest manufacturers of the article, when he was a young man and a student of chemistry, knew it only by a small roll two inches long, which was kept in the laboratory where he studied, more as a curiosity than anything else. This same man now draws it out by machinery, in a rope or cord, many miles in length, and sends it off by tons to all parts of the world.

The improvements made in the manner of its production may be inferred from the fact that in its first use in the manufacture of lucifer matches, it was sold at the rate of $20 per pound; while the price now does not exceed one dollar for the same quantity. This economy in its production has been brought about through the aid of science in the improvement of chemical processes, whereby cheap material can be used in its manufacture.

There are now some fifteen phosphorus factories in the world—one-half of which number is in Germany. The total quantity produced is something over 250 tons annually—about one-half of which is consumed in the manufacture of matches.

One of the most remarkable discoveries in the chemistry of phosphorus was that made about fifteen years ago by Schotter, in producing what is known as amorphous phosphorus. It is only by this wonderful change in its character, by which its inflammability is so reduced as to allow of its being handled with impunity, that its use has become so general and safe in the art of match making.

New Method of Preparing Vermillion.—Recently much attention has been given to the study of this interesting and beautiful compound of sulphur and mercury, the methods of preparing it, and the effects of light and of metals, especially copper and brass, upon the color. Among other interesting results of these studies is the discovery of a new and convenient method for its preparation in the wet way. O. Hansamann has published the following method: A solution of corrosive sublimate is poured into an excess of dilute ammonia, forming a white precipitate of ammonia-mercuric chloride. This precipitate forms flakes which settle to the bottom, and the supernatant liquor contains chloride of ammonium and the excess of ammonia. The precipitate is stirred up with this liquor, and enough of a concentrated solution of hyposulphite of soda is added to dissolve the precipitate, and a little more. On warming the solution in a capsule vermillion at once begins to separate; the heating is continued until a thin pasty mass is obtained. Vermillion produced at a temperature of 120 deg. to 140 deg. Fahr. is of a lighter color than that produced at 200 deg. or 212 deg. The most beautiful pigment was formed at 160 deg. to 175 deg.

Water as a Support of Animal Life.—The first great necessity for the support of animal life is water, for without it the others would be useless. The importance of water will be at once perceived when we remember that seventy-five per cent. of the blood and of the fleshy covering of the body is composed of it, and that from the body in the course of the day about five pounds and a half of water is excreted by the lungs, the skin and the kidneys. It is taken into the body both separately and in combination with other foods, there being, in fact, no food, however solid, which does not contain a certain proportion of it, and of many it forms the largest part. Many succulent vegetables contain eighty to ninety per cent.; potatoes, seventy-five per cent.; new milk, eighty-eight per cent.; and beer, ale, skim milk, etc., ninety per cent. The duties water has to perform in the body are mainly two: it serves to dissolve the food, and enable the nutritive parts of it to be carried into the circulation; and on the other hand, it dissolves out the worn materials and conveys them out of the body. In addition to these functions, by its evaporation from the surface of the body and the air passages it helps to regulate its temperature.—*Cassell's Popular Educator.*

The Transit of Venus.—There is reason to believe that the combined results of the transit of Venus, as observed by all nations, will enable astronomers to determine the distance of the earth from the sun, with no greater probable error than two hundred thousand miles. Before the transit, it was said that at least a year must elapse before any final determination of the sun's distance could be arrived at; it now seems probable that this period of waiting, while the calculations are being made, will extend over many years, and continue, for a verification, until the next transit, seven years hence.

A New Application of the Spectroscope.

There is apparently no limit to the achievements of that marvelous instrument, the spectroscope. It can compel suns and stars to yield up the secrets of their physical and chemical constitution, and can detect a minute adulteration in a phial of medicine. It can analyze rays of light too faint to be discerned except with the aid of the most powerful telescopes, and coming from distances so vast that it has taken years for them to reach our earth; and it can compel a grain of salt dissolved in a hogshead of water to declare its presence by luminous characters that cannot be misinterprated. One of its latest applications has probably been the means of settling a disputed question which it would have been difficult, if not absolutely impossible, to determine conclusively any other way: Do insectivorous plants really digest the insects they entrap?

Darwin has endeavored to prove that they do, but notwithstanding the array of facts he has presented in his recent book on the subject, he has failed to convince certain botanists, who still maintain that the dead insects undergo decomposition, but are not actually assimilated by the leaves. Professor Morren has recently advocated this view with much learning and ability, after a careful investigation of all the phenomena.

It occurred to Mr. J. W. Clark, of England, that the spectroscope might be employed in the examination of this matter. He therefore obtained a number of insectivorous plants, and fed the leaves with the bodies of freshly killed flies soaked in citrate of lithium. He took all necessary precautions to prevent the solution from being carried mechanically to other parts of the plant. After an interval of about forty-eight hours, various portions of the plant were reduced to ashes and tested for lithium with the spectroscope. The colored lines characteristic of that metal at once flashed forth, proving that the products of digestion, after absorption by the leaves, do enter the leaf-stalk, and are thence distributed to other parts of the plant.

If the experiments made by Mr. Clark, and reported by him in full in the London *Journal of Botany* for September, were conducted as carefully as he represents, the results obtained admit of no different interpretation. Other investigators will of course repeat his experiments, and his conclusions will soon be confirmed or contradicted. If the spectroscope has not already put an end to the dispute, we may be sure that it will soon do so.—*Journal of Chemistry.*

Electricity and Life.

Electricity, about which so little is really known, the wonderful possibilities of which have scarcely begun to be developed, has been lifted, by scientific investigation, high above the region of charlatanism, and placed upon the list of positive remedial agents. Why the electrical current, when passed from the nerve-centers along the various branches, is competent to reduce irritation and allay pain, we can only conjecture. The fact exists, however, and the sufferer is more nearly interested in the fact than in the cause. No phenomena are more closely investigated than the electrical, and none are the subjects of wider discussion. The question, "Is Electricity Life?" has been answered affirmatively by many of the leading scientific minds of Europe; and the researches of the most eminent electricians substantiate the fact that a current, precisely akin to that generated by the decomposition of metals, exists in our muscles and nerves; and, further, that in disease this electrical force is essentially diminished.

The unavoidable conclusion from this state of things is, therefore, that electricity is not only life, but life at its best; life, vigorous and unimpaired; and that this energetic, vigorous life, can only be maintained by supplying whatever of electrical force has been displaced or exhausted by incorrect habits of life, by exposure or exhaustion.

The one problem to be solved is this: Shall this subtle fluid, so potent for good if wisely employed, be applied through the poles of the battery, as an electrical "shock," so called, or shall we seek the benefit desired, through the continuous current, by wearing upon the portion to be revitalized such a combination of metals as shall insure a constant though mild electrical action?

The truth is, each method has its specific place—a fact well understood by many medical men. That the simple form—the primary, induced not by the positive decomposition of metals, but rather moist contact—possesses certain advantages, we are convinced; that it is unsafe in unskillful hands is a fact established. The advantages rest in the fact that the current never ceases so long as the appliance is worn; and therefore that the result is cumulative rather than interrupted and spasmodic, and that no unpleasant sensations attend its use. —*Exchange.*

Gas from Cork.—It is said that recent experiments, made in Bordeaux, France, have proved that cork is capable of furnishing illuminating gas of good quality. It is economical and satisfactory. The authorities of Bordeaux have definitely decided to use this material in lighting the city. The fragments of cork, principally waste left after cutting bottle stoppers, are distilled in a close retort. The flame is white and more brilliant than that of coal gas, while the blue zone is much smaller, and the density considerably greater.

Mechanical Progress.

Great Guns—The Old and New.

The contest between great guns and heavy armor plates still continues to excite the liveliest interest among rival nations, and the mechanic and engineer finds ample scope for the exercise of his genius, in keeping up the excitement. Germany and England, in particular, seem to be vieing with each other in this contest.

The English are rejoicing over their new 80-ton gun, while at the same time they are seeking to obtain one of the famous Krupp guns from Germany, with the view of instituting a comparative trial between the two. The steady old German, however, refuses to gratify Johnny Bull's whim; so those two giant powers are going on, each in his own way, and each confident in the superiority of his guns.

Outsiders, however, who are looking out upon this rivalry in an unprejudiced manner, are becoming convinced that whatever may be the power of the English gun, Herr Krupp has fully proven, by actual practice, at his shooting grounds at Visheck, that his 28 and 30 centimeter guns are able to penetrate, readily, 16-inch armor plates. He has, moreover, laid before the German Admiralty plans for constructing guns of 40 and 46 centimeters, before which even the 24-inch plates of the *Inflexible*, probably the heaviest which can be made practicable, would be utterly powerless for protection. Of course, such guns could never be placed on ship-board. Their only use would be for coast defences.

This experiments, thus far, go to show that the limit of resistance in iron-clad is nearly reached, while there appears to be no limit to the use and power of cannon. Forges may be made to glow with mountains of incandescent metal, which nothing but the lack of pecuniary means can hinder from being wrought into guns of larger and still larger calibre.

In this connection it may be interesting to call to mind the fact, that even in these monster undertakings we have only another instance of history repeating itself. Four centuries ago, as is well known, the Turks erected a battery of guns against Scutari, the largest of which was capable of throwing a stone shot thirty-two inches in diameter, and weighing 1,640 pounds, whereas the projectile of the English eighty-ton gun weighs only 1,250 pounds. These enormous guns, moreover, were of practical service, for 2,534 rounds were fired from them in thirty days.

Again, at the castle of Asia, on the Dardenelles, there still exists a battery of bronze cannons, some of which have a bore twenty-eight inches in diameter. When the British admiral, Sir John Duckworth, forced the passage of the Straits, in March, 1807, one of his ships was struck by a huge stone bullet, thrown from one of these guns, and it is said that the missile made so large a hole in the side of the vessel that the captain, when he looked over the side to see the extent of the injury, was surprised to see two of his sailors thrust their heads through the aperture at the same instant.

The great gun of Beejapore, with a calibre of twenty-eight inches, is another instance of what gun founders could accomplish more than three centuries ago. This weapon was last discharged, it is said, during the eighteenth century, on the occasion of a visit from the rajah of Sattara. The shot weighed more than 1,000 pounds. The Tzar Pooshkar, or great gun of Moscow, has a bore thirty-five inches in diameter, but has never been fired with shotted charges.

Immense Wire Ropes.—Commodore Shufelot has ordered the proper authorities of the Boston navy yard to make several five-inch steel wire hawsers. These will probably be the largest wire ropes ever made. The Navy Department has use for immense hawsers to tow monitors and vessels in distress. They are put on board the men-of-war for use when required. The usual appliance is a twelve-inch hemp rope, but it swells when wet and gets very heavy by absorption of water. The steel wire hawsers will be seven inches less in diameter, much lighter, non-absorbent, more pliable and durable, and in every respect better. This is a curious and, in fact, wonderful advance in the application of steel and iron to commercial uses. A hemp hawser twelve inches thick is a wonderful thing in itself, but a steel wire hawser five inches in thickness better answering the same purpose, is something fruitful of thought to the student in shipbuilding and rigging.—*N. Y. Bulletin.*

Reversing the Order. — England is not entirely satisfied with her iron and iron-clad ships. Of the former she has lost several lately, which has induced her, for the passenger and mercantile trade, to try a new style of marine architecture. That is, instead of iron-plating her ships on the outside, she now puts the iron inside. The *Boadicea*, a ship of this kind, has just been launched. Her merits over the old style are yet to be proved, but if she serves the purpose, there will be a complete revolution wrought in English ship-building hereafter.

What May Not the Future Accomplish?

Sir J. Hawkshaw, in a lecture before the British Association, gives the following hint to those seeking new inventions and discoveries.

The marvelous progress of the last two generations should make every one cautious of predicting the future. Of engineering works it may be said that their practicability or impracticability is often determined by other elements than the inherent difficulty in the works themselves. Greater works than any yet achieved remain to be accomplished—not, perhaps, yet awhile. Society may not yet require them; the world could not at present afford to pay for them. The progress of engineering works, if we consider it, and the expenditure upon them, has already in our time been prodigious. One hundred and sixty thousand miles of railway alone, put into figures at £20,000 per mile, amounts to £3,200,000,000 sterling; add 400,000 miles of telegraph at £100 per mile, and £100,000,000 more for sea canals, docks, harbors, water and sanitary works constructed in the same period, and we get the enormous sum of £3,340,000,000 sterling expended in one generation and a half on what may undoubtedly be called useful works. The wealth of nations may be impaired by expenditures on luxuries and war; it cannot be diminished by expenditures on works like these. As to the future, we know we cannot create a force; we can, and no doubt shall, greatly improve the application of those with which we are acquainted. What are called inventions can do no more than this, yet how much every day is being done by new machines and instruments! The telescope extended our vision of distant worlds. The spectroscope has far outstripped that instrument by extending our powers of analysis to regions as remote. Postal deliveries were and are great and able organizations, but what are they to the telegraph? Need we try to extend our vision into futurity further? Our present knowledge, compared to what is unknown even in physics, is infinitessimal. We may never discover a new force—yet who can tell?

Machinery Run Without Lubricant.

Practical mechanics and scientific men have always found a promising field for their inventive genius in devising improved methods of lubricating machinery. We have patent oil cups, patent compounds, patent bearings, and patent anti-friction metals, all warranted to save a large percentage of the cost of lubrication. A few years ago it would have been as feasible for a locomotive to run without steam as to run without oil; now we have the heaviest as well as the lightest machinery running regularly from January to December, without a drop of oil, and without heating or wearing more than it would if lubricants and ordinary bearings were used.

Metaline is the invention of Dr. Stuart Gwynn, a gentleman of wide scientific reputation. The Gwynn centrifugal pump, and the bank note paper used by the United States Government are among his other inventions. The Doctor has labored for a considerable time in supplying "trial bearings" both in this country and Europe.

We shall watch the further progress of this valuable metal with interest. Subjoined are a few references to machinery fitted with metaline in 1870, which is still running, never having been oiled, and showing no signs of wear. Todd & Rafferty Co., Patterson, N. J., a large slotting machine; Isaman Steamship Co., cross-head gibs of 40-horse power engine, run night and day; ferry boat *Newport Belle*, Cincinnati, crank brasses, cross head brasses and gibs; drawbridges on Central railroad of N. J.; Tiffany & Co., N. Y., lathe; John B. Payne, Chard, England, crank pin brasses of 120 horse engine and braces of spindles that make 1,200 revolutions per minute; Adams Express Co., N. Y., crank pin brasses of engine and a Woodward steam pump. A number of the most prominent manufacturers in the United States are now adopting it with complete faith in its efficiency. Some of these we shall refer to in the future.—*American Manufacturer.*

A scientist of Amsterdam reports that he has found in liquid carbonic acid a material that will be of immense service as a substitute for steam in furnishing power for engines; and the idea is considered by some other noted scientists. In this case, as in many others, the practical value of the discovery may not be finally determined till after the lapse of years. The hot air engine and the gas engine were offered to the public as great improvements on the steam engine, and were used in many industrial establishments, but have gone out of favor. Perhaps the carbonic acid engine will not attain even such poor success as they did. The electrical engine has long been promised, but has not yet passed beyond the stage of plaything or curiosity. The introduction of a power superior to steam would make an epoch in history.

Large Sheet of Plate Glass.—The largest polished plate ever exhibited was the work of the Thames plate glass company, measuring nineteen feet five inches long, and ten feet three inches wide. This plate was exhibited at the World's Expositions in London and Paris.

Sales at S. F. Stock Exchange.

FRIDAY, A.M., DEC. 17.

130 Alpha.....17
995 Best & Belcher..59@60½
50 ...do.....b 30..60¾
20 ...do.....b 5..6
1135 Belcher.....33¾@32½
50 Buckeye.....1¼
50 Bull-n.....4
350 Con. 2¾
290 Chollar.....92@89
20 ...do.....b 5..92
450 Con Virginia.....38@39
10 ...do.....b 30..37½
10 ...do.....b 30..41
1160 California.....70@71
515 C Point.....31@31½
180 Candelaria.....20
55 Caledonia.....22
40 Dayton.....46@4½
360 Exchequer.....11@11½
10 Empire M.....
1150 Gould & Curry.....20@21
2 0 ...do.....b 30..21
200 ...do.....b 5..20¾@21
245 Hale & Norcross..44@45
700 Imperial.....58@54
3085 Justice.....26@26¾
465 Julia.....15@14¾
110 Kentuck.....14@14¼
870 Lady Bryan.....10..2
300 ...do.....b 30..20
485 Mexican.....19½@19¾
1775 Ophir.....48½@47¾
100 ...do.....b..48
200 Overman.....5@5⅞
465 Savage.....15¾@16
375 S Nevada.....20@20¼
100 Succor.....8½
50 Sil Hill.....
10 Seg Belcher.....86
210 Union.....84@85
170 Utah.....16¾@17
380 Yellow Jacket...98@101

AFTERNOON SESSION.

265 Alps.....1¾@1¼
190 Advance.....5
405 Andes.....3½@3⅝
325 Alta.....3
865 Amazon.....1¾@1¼
200 ...do.....b 5..1¾
50 Eureka Con.....15⅝
425 Europa.....1¼@1⅜
100 ...do.....b 5..1¼
560 Gila.....27⅜@3
100 Golden Chariot.....25c
1380 Hussey.....1¾@1¾
90 Jefferson.....4¾
1720 Justice.....26@27½
100 ...do.....b 5..26½@27½
495 Kossuth.....3¾@3⅞
700 ...do.....b 30..3¾
450 Leopard.....12@12½
150 Lady Wash.....27⅜@3
3705 Leviathan.....27⅜@28
300 ...do.....b 5..28
200 ...do.....b 30..28½
20 Meadow Valley.....3
600 Mansfield.....1¾@1⅞
500 ...do.....b 10..1⅞
150 Mides.....7
375 Maryland.....50c
450 Morning Star.....4¾@4¾
225 Monumental.....1¾
50 No Belle.....28
550 New Coso.....2 dil ⅜
280 New York.....2¾@2
100 Niagara.....50c
1000 Occidental.....25c
500 Orig G Hill.....23@23¾
50 Prussian.....1¾
50 Pioche.....
200 Panther.....
20 Prospect.....4¾
50 ...do.....b 5..5
90 Ray & Ely.....18¾@18
50 Rye Patch.....
690 Rock Island.....3½@3⅝
545 Woodville.....3@3¼
100 Wells Fargo.....25c
30 W Belcher.....2½

SATURDAY, A.M., DEC. 18.

100 Alpha.....18
158 Alta.....3@3⅛
105 Baltimore Con.....3@3¼
260 Belcher.....
465 Best & Bel.....59¾@59⅝
120 Bullion.....44@44½
260 Chollar.....88@90
1150 Crown Point.....30@31
250 Con Virginia.....395@398
5 ...do.....s 5..396
180 ...do.....b 10..400
907 California.....69½@71
50 ...do.....s 5..70
45 ...do.....s 5..70@70½
30 Caledonia.....21@21½
10 Confidence.....19¾
80 Dayton.....4½
95 Exchequer.....11
35 Eureka Con.....16
930 Gould & Curry.....20¾@21
300 Hale & Nor.....46@47
1610 Imperial.....58@59
1715 Just ce.....27¼@27¾
50 ...do.....b 5..27½
385 Julia.....15@14¾
140 Kentuck.....14@13¾
140 Kossuth.....3⅞@4
1970 Lady Bryan.....2¼@2⅜
50 Lady Wash.....2⅝
215 Mex.....19½@19
35 Meadow Valley.....2@3¼
100 Mint.....45c
280 New York.....2¼@2⅜
1040 Ophir.....48@48½
30 ...do.....s 5..48¾
100 ...do.....b 30..49
100 ...do.....b 5..48¾
295 Overman.....57¾@58
50 ...do.....b 5..58½
50 ...do.....b 30..59
365 Occidental.....3⅝
210 Rock Island.....3⅝@3⅞
70 Ray & Ely.....19
920 Savage.....14¾@15½
760 Sierra Nevada..20½@20¾
100 ...do.....b 30..21¾
25 Seg Belcher.....
70 Silver Hill.....7½@7¾
225 Utah.....17¼
200 Union Con.....9@9⅝
10 Woodville.....3¾
140 Yellow Jacket.....98@99

MONDAY, A.M., DEC. 20.

65 Alpha.....17½
15 Alta.....3¾
10 Andes.....3¾
465 Best & Belcher.58½@58¾
420 Belcher.....32¾@33
285 Buckeye.....3¾@3⅜
20 Baltimore Con.....2¾
105 Crown Point.....30¾
125 Con Virginia.....398@399½
70 ...do.....b 5..400
160 ...do.....b 5..402
625 California.....70¼@71
50 ...do.....b 5..71
50 ...do.....b 90..72
40 Confidence.....27
30 Chollar.....87½@88
130 Caledonia.....21½@22
200 Dayton.....4¾
100 Empire Mill.....5¼
50 Exchequer.....10½@10¾
50 Europa.....1¾
465 Gould & Curry.....20¼@20⅝
210 Hale & Nor.....46@45
210 Imperial.....58¾@59
2275 Justice.....26½@25
50 ...do.....b 5..25¾
705 Julia.....15¾@14¾
250 ...do.....b 5..15¾
160 Kentuck.....13¾
2680 Lady Bryan.....2¼@2½
175 Lady Wash.....2⅞@2
1200 Leviathan.....2½@25
275 Mexican.....19¾@19
250 Mides.....7
200 New York.....2¼@2⅜
190 Overman.....58@59
885 Oppir.....48½@48¾
50 ...do.....b 5..48¾
60 C G Hill.....3
1455 Sierra Nevada.....20@20½
530 Savage.....14½@14¾
170 Succor.....75c
290 Silver Hill.....8@8¼
105 Union Con.....9
110 Utah.....16¾@17
100 Wells-Fargo.....25c
475 Yellow Jacket..100@102½

AFTERNOON SESSION.

135 Alps.....1
170 Advance.....5¼
330 Alta.....3
705 Amazon.....1¾@1¾
220 Best & Belcher.....58@57
180 Belcher.....32½@32⅝
50 ...do.....b 5..32¾
100 Con Virginia.393½@392½
920 California.....69@68¾
110 Crown Point.....30
160 Eureka Con.....15¾
150 ...do.....b 5..16
405 Gila.....3@3⅛
40 Golden Chariot.....350
190 Gould & Curry.....19¾
280 Leopard.....12½@12⅝
50 Meadow Valley.....2¾
8800 Monumental.....1¾
90 Mexican.....19@19½
50 Northern Belle.....20
500 New Coso.....1⅝
380 Ophir.....48¼@47¾
30 ...do.....e 30..48
80 Overman.....5⅞
1830 Justice.....24¾@24⅝

MINING SUMMARY.

THE following is mostly condensed from journals published in the interior, in proximity to the mines mentioned.

California.

ALPINE.

ADVANCE.—Alpine *Chronicle*, Dec. 18: Work on this mine is being pushed vigorously. Since the erection of the building over the shaft, preparatory to placing the steam hoisting works in position, the working force in the shaft has been increased, and the timbering keeps pace with the sinking. The shaft is of three compartments of 4x4½ ft each in the clear, the timbers being 10x10, and partitions 8 inches. They are in ledge matter which bears considerable sulphurets, working easily, and is of a most promising character. The developments made on this property and the elements of which the management of the company are composed, is considered a sufficient assurance of the successful outcome of the enterprise.

AMADOR.

KENNEDY MINE.—Amador *Ledger*, Dec. 18: This mine has been shut down. Both mill and mine are entirely idle, with the exception of the pumping works, which have to be kept going constantly to keep the lower levels free from water. Amid the many rumors afloat concerning the mine, it is difficult to ascertain the real cause of the stoppage of work. There is plenty of low grade ore in sight, which, however, cannot be worked profitably with present milling facilities. The stamps are light, and are not equal to crushing more than twenty-five or thirty tons a day. Heavier stamps will doubtless be put in when the mine is set in motion again, and everything fixed up for putting through a much larger quantity of rock per diem. It is not probable that operations will be resumed before the opening of spring.

HINCKLEY MINE.—The two men engaged on this mine are pushing work as fast as their facilities will allow. We understand that they have been successful in striking a body of rich ore. The ore in this mine has been found in pockets rather than in a definite ledge, and it is thought that one of these detached bodies has now been uncovered. Trouble is being experienced on account of the increased flow of water. A whim will shortly be erected for the purpose of keeping the water within reasonable limits.

BUTTE.

MINING ITEMS.—Oroville *Mercury*, Dec. 17: Every few days some of the honest miners living in the vicinity of Wyandotte, put in an appearance at the bank of Rideout, Smith & Co., to dispose of their enrplus dust. As yet there is a lack of water to carry on the mines with a full head. The water soon runs down and another storm has to be waited for to replenish the small reservoirs. As soon as the Forbestown ditch gets under way this difficulty will be obviated, and mining will go along as in winters past.

FROM Enterprise come good reports. The prospect for a good winter's work was never better. Some new claims have been opened up which look as though they would pay well. At least excellent prospects have been obtained in almost every case. The old claims still show as good results as in previous years. The Electric quartz mine is now all prepared to go to work on very good rock, and much is looked for by those who are best acquainted with the rock.

CALAVERAS.

CLEAN-UP AT THE SAN BRUNO.—Calaveras *Chronicle*, Dec. 18: A crushing of two hundred and fifty tons of quartz, from the San Bruno mine at Mosquito, has recently been made at Garland's mill. The rock yielded an average of $16 per ton, aggregating $4,000. Considering that the quartz was put under the stamps as it came from the shaft, without being assorted, the yield is certainly a good one, fully sustaining the San Bruno's reputation of being among the very best mines in the county.

WEST POINT DISTRICT.—As the shaft of the Cheeno gains in depth the quality of the ore improves. The shaft is evidently about to perforate a heavy ore chute which is dipping towards it from the north. The management of the mine is under the supervision of Mr. Baker, a thorough practical superintendent. The Mina Rica main incline is 280 ft in depth; good ore in bottom. Running levels at 266 ft deep. In the north level the fissure is 5 ft wide, and so easily excavated that one miner makes 4½ ft of headway in 11 hours. The south level is approaching a dike which contaitntes the north boundary for the richest ore chute in the mine. The running of levels accumulates 10 tons of ore per 24 hours on the dump, exclusive of keeping the Enterprise mill steadily crushing. Champion taking out the usual rich ore.

GRAVEL MINING.—Work has now been commenced in nearly all the gravel mines in this vicinity. At Duryea's, in Chile gulch, the "bottoming" operations are still in progress. The gravel in a depression in the bedrock that cannot be got at handily with the hydraulic, is being carried into dump-boxes and washed. The cars, laden with gravel, are drawn by horses. A tunnel is also being run into the bank and preparations made for the resumption of hydraulicing at an early day. Piping goes steadily on in Veith's hydraulic, on Tunnel ridge. Two strings of iron pipe, heading in a "monitor" and leading to different portions of the claim, admit of the continuous use of water. The hand derrick recently put up in the mine works first rate, and is a great help in freeing the "diggings" of boulders. Three hundred inches of water are used and an immense quantity of gravel put through the flume daily. Moser, owner of the Spring Gulch claim, has also resumed washing. His operations are conducted on a large scale, as much as two thousand inches of water being frequently used. Piping is commenced in Cook & Co.'s Sport Hill hydraulic. J. H. Raynor, Esq., a member of the firm, is superintending operations, which are being pushed with unusual vigor. Emerson, proprietor of the Happy Valley hydraulic, has the tunnel nearly finished which will complete the opening of his mine. When ready to commence piping the claim will be one of the best equipped in the county. In Cook & Co.'s Red Hill claim piping was begun some time since. Everything is progressingly favorably.

EL DORADO.

NEW ENTERPRISE IN MINING.—El Dorado *Republican*, Dec. 16: It is a well known fact that there are scores of places in the various branches of the American river where lie untold millions of gold, and it lies there simply because no means could be devised by which the bed of the stream could be worked at these various places. Messrs. Samuel Fleming, of Pleasant Valley, and Captain E. D. Pierce, of Greenwood, have had their heads together on this subject of late, and have hit upon a method that cannot fail to prove successful where the channel is deep. They have located 2,000 feet on the Middle fork, four miles north of Greenwood, part of the location being formerly known as the Old Sardine mine, which so far as it could be prospected proved immensely rich, but as no means could be devised for keeping it free from water, was long since abandoned. The channel here is upwards of forty feet in depth, or rather it is that depth to the bottom of the channel, which is filled with sand and gravel. It is proposed to sink a shaft far enough back from the bank to be secure against overflow or breakage from the channel, to the depth of forty-five feet, and then run a tunnel to and along the bottom of the channel. Messrs. T. K. Young and O. W. Bowles, men of ample means, have taken the contract to open this mine in the manner indicated, and will commence operations without unnecessary delay. All parties interested believe that there are millions in it. The scheme looks decidedly feasible, and we hope the expectations of the projectors may be fully realized.

INYO.

CERRO GORDO.—Inyo *Independent*, Dec. 11: It is reported that Belshaw and Beaudry, (we are not certain that both of these gentlemen are interested) design to put a heavy force to work on the Buena Vista, a large mine but partially developed, and the objective point of the Potosi tunnel, lying to the eastward of the Union. It is also considered settled work generally is soon to start up in the town as in the days of yore, the settlement of the big mining suit removing the only cause that has prevented it before this. No doubt is entertained but the suit is settled, but so far as we know, no positive information has come to hand here yet confirming it, as we learn from Mr. Bennett, one of the counsel and parties in the original suit.

COSO.—Coso *Mining News*, Dec. 11: The Defiance furnace, after running for about three days last week, during which time it produced about eight tons of bullion, was compelled to close down to repair the bottom, which was found to be leaking badly; and also to repair the foundation, which was rendered unsafe by the hot water escaping upon it. During the short preliminary run it made it was satisfactorily demonstrated that the Defiance ores smelted easily, the results showing an average return of $105 in silver and 43 per cent. lead per ton. The fault in the bottom lining seems attributable to the use of an improper kind of clay.

LOOKOUT DISTRICT.—We are informed that parties are now taking ore from the above district to Panamint to have the same worked in the mill there. Since the Surprise Valley company give out their intention to crush custom ores this branch of industry has been stimulated and some of the rich ores from Lookout are to be sent there for reduction. The principal mines are now looking well.

NAPA.

IRON MINE.—St. Helena *Star*, Dec. 17: The San Francisco company, who are prospecting the Iron mountain, at the head of Sulphur Spring creek, have had quite considerable work done, and on Saturday last put in a couple of shots. The ore prospects finely, and should it come up to a certain per cent., on an average, this company propose putting up the requisite works, and will turn out pig iron *ad libitum*. We hope they may have the greatest success in their undertaking, as nothing would help our town more than a well established, properly managed iron mine. That is something to depend on; it is solid.

CALISTOGA MINES.—Work is progressing favorably on the Calistoga silver mine, they having struck a fine vein of ore in the lower tunnel, which looks favorable for striking the main lead. The Calistoga Quicksilver C. M. Co.'s claims, situated near the edge of the valley, about 2½ miles southeast of the town, has the looks of being in a short time one of the leading mines in the State. They have about 360 ft of tunneling on one of the claims and a fine show of metal in each tunnel. Their facilities for working are all that could be desired for a mine; there is no timbering required for the tunnels or shafts, though there is plenty to be had close at hand, the ground being of such a nature that there is no danger of its breaking while tunneling; abundance of water is close at hand. They are now sinking a 100 ft shaft in the center of the lode and are confident of finding the main lead by obtaining that depth.

NEVADA.

RICH AGAIN.—*Foothill Tidings*, Dec. 18: The Carry & Blum claim, over on Rash creek, which turned out several thousand dollars from a pocket nearly a year ago and has not since been much heard from, is again in bonanza. One of the partners, Blum, sold his interest to T. C. Randall, who with Carry has recently opened the portion of the ledge run over before, and they have already taken out from $1,500 to $2,000 in specimens, and we understand the pile of rock now out will give nearly as much more, with pay ore still in sight.

NEW YORK HILL is doing well—keeping the mill running on good rock and sending out gold bricks regularly.

PLACER.

CRATER.—Placer *Herald*, Dec. 18: The new hoisting works of the St. Patrick company, at the Crater mine, are just receiving the finishing touches. The building is completed, and the hoisting engine has been started up. The pumping apparatus is fast being placed in position, when the pumping engine will be put in motion. The rock in the mine continues to look well, and notwithstanding the mill has been kept running day and night since the commencement of the rainy season, the ore dump at the mine is kept piled full. The last clean-up or 16 day's run gave a return of about $14,000, or nearly $1,000 per day.

PLUMAS.

CARRIBOO.—Plumas *National*, Dec. 10: The boys at the old mining camp at Carriboo, on the North fork, are doing finely, and the prospects ahead are first-rate. Hathaway, Drake & Davis recently purchased a claim at that place and are about commencing a tunnel. The indications are that they have one of the best claims in that section.

DUTCH HILL.—The North Fork company's operations are progressing smoothly, and the ground is paying at a rate to satisfy those who have their money invested. The pipe is working nicely this winter, and delivering about 1,000 inches of water at the present time. The tunnel claims are in full blast and paying fully as well as ever. There is no "let up" to Dutch hill, and the old "croakers" and "wise-acres" who predicted a failure are commencing to get over the fence and assert that they "always knew it was a big thing." We wish to see every mining investment in the county pay largely, and are glad to place the North Fork company's success among the certainties.

Nevada.

WASHOE DISTRICT.

CONSOLIDATED VIRGINIA.—Gold Hill *News*, Dec. 16: Both hoisting engines are working to perfection, and the extraction of ore was commenced on Monday last. Upon examination, the shaft was in even better condition than was supposed, and to-day it is the expectation that the extraction of the regular quota of 500 tons of ore per day will be resumed. The works are complete in all their parts, carpenter and blacksmith shops, machine shops and ore dumps; in fact, every department is ready to go into full and complete operation at the same time. In another day the mills will be crushing the rich ore as usual, and the lower levels of the mine will again be yielding up their millions of treasure.

OPHIR.—The new hoisting engine is working splendidly and is kept steadily running, hoisting water from the shaft. The new pumping engine will be ready to start up in a day or two more. The incline hoisting machinery is being repaired, and will be put in good running condition at as early a day as possible. The east ore-house is finished, and the west ore-house for shipping ore by railroad is very nearly complete. In fact, all the buildings and outside works are almost finished. The repairs to the shaft are nearly completed; in fact, everything is approaching a condition that will permit the resumption of ore extraction as before the fire.

LADY WASHINGTON.—About 3 ft per day is the present rate of progress being made in sinking the shaft. Bottom in the same splendid looking ledge matter reported last week, with increase of quartz. No trouble from water, the very efficient pumping arrangements disposing of what comes in without any difficulty. The shaft will be down to the 530-ft level next week, at which point a station is to be opened for a level to explore the mine at that depth.

LEVIATHAN.—Cross-cut No. 4 from the main north drift at the 240-ft level is now being run. It is in good ore, giving excellent assays, and bids fair to show up no extension of the fine ore vein heretofore spoken of at the level. Water does not interfere.

FLORIDA.—The water has subsided considerably, and the machinery being now in good practical trim, nothing interferes with the progress of development. The west drift at the 400-ft level will be pushed forward with the utmost energy and will probably soon cut the main ore vein.

BULLION.—Sinking the main incline is making splendid progress. Driving the main north drift on the 1700-ft level is also making good headway, the face in quartz and ore.

KOSSUTH.—The south drift on the 350-ft level is now in a distance of 240 ft, the face in hard white quartz that assays from $10 to $20 per ton, about one-half silver and the other gold. The winze being sunk below the 200-ft level, 600 ft south of the shaft and 120 ft east of the west wall of the ledge, is down 50 ft, the bottom in quartz that assays this morning $31 per ton. This is a very encouraging prospect and begins to look as if the Kossuth would soon be a paying mine.

CALIFORNIA.—Sinking the C. & C. shaft is making rapid progress. The new battery mill is fast approaching completion. The pan mill is kept steadily running on the Consolidated Virginia tailings. The lower levels of the mine are in fine working condition. The starting up of the Consolidated Virginia hoisting machinery will now soon permit of the resumption of work at all points on the lower levels.

LADY BRYAN.—The main south drift and cross-cut No. 3, on the 380-ft level, are both looking much more favorable for good ore developments soon.

GLOBE CONSOLIDATED.—The ore in the face of the south drift on the east ledge, at the 350-ft level, is showing a decided improvement during the last 3 or 4 days. This drift is advancing further to the southward than any prospecting that has yet been done on that level, and may develop a fine paying body of ore.

BELCHER.—Daily yield, 420 tons of ore. The east ore stopes on the 1500, also those on the 1200-ft level are showing a steady improvement and promise a good yield for many months to come.

LEO.—The cross-cut from the north drift is still in favorable vein material. It is in 34 ft, and now shows signs of approaching the foot wall. The south drift is penetrating ledge matter of a very promising character.

AMAZON & GLASGOW.—The north and south prospecting drifts on the second station level are steadily advancing in the ore vein, the face of both in very favorable quartz and ore.

SIERRA NEVADA.—Sinking the new shaft is making splendid progress, the bottom in good sinking ground.

JULIA.—The shaft is down 1590 ft, the bottom in very favorable ledge matter. The prospects on the 1400 ft level are on the increase, the quartz in the face showing a continued improvement.

CROWN POINT.—Daily yield, 425 tons of ore. No change in any of the ore breasts. The south winze below the 1500-ft level to connect with the main south drift on the 1600 ft level, is making good progress.

SUCCOR.—Sinking the shaft is going steadily forward, although considerable trouble is caused by the strong flow of water at the bottom.

CHOLLAR-POTOSI.—Daily yield, 60 tons of ore. Sinking the combination shaft is making good progress.

SAVAGE.—The pumps are kept steadily running and the water is gradually draining from the lower levels, preparatory to resuming prospecting at all points on the lower levels soon.

MINT.—Sinking the main shaft goes steadily forward. Water does not interfere.

GOULD & CURRY.—The pumps are still doing their utmost to drain the water from the 1700-ft level.

HALE & NORCROSS.—Retimbering the shaft is progressing at the very rapid rate of 20 ft per day, and will be finished in five or six days.

NEW YORK.—Prospecting is going ahead lively at the 400, 600 and 800-ft levels, with very good ore indications at each point. Some little increase of water at the 800-ft level, but the very efficient pumping machinery keeps out the present small flow of water without any effort.

SULLIVAN.—The tunnel has drained the shaft of water completely, and the great width of vein matter developed with good streaks of ore running through it shows very conclusively that rich ore developments will be made at a greater depth. Grading for the new hoisting works progressing finely.

ORIENTAL GOLD HILL.—Ore extraction continues at the rate of 25 tons per day from the south ore body, which amount is being worked at the Hope mill, Silver City. It is excellent looking ore, assays well, and will doubtless make a very satisfactory showing at the clean-up.

IMPERIAL-EMPIRE.—Daily yield, 40 tons of ore. The ore breasts are looking well, and yielding the usual amount of good ore.

JUSTICE.—Nothing new to report of the ore developments at either the 600 or 800-ft levels; work going ahead at both points as usual.

NORTH CARSON.—The fine vein of ore found by the winze from the upper level is showing splendidly, and its full extent is not found as yet. The drift at the lower level is also showing well in its face and giving promise of an ore body soon.

BEST & BELCHER.—Nothing doing on the 1700-ft level, on account of water. The Gould & Curry pumps are steadily draining the water, and it is expected that it will not now be long before everything will be again in running order.

SUTRO TUNNEL.—Two or three streaks of good ore have been passed through during the last few days, and the rock being softer, better progress is made. Total length of tunnel last evening, 11,646 ft.

BUCKEYE.—The bottom of the winze, 100 ft south of the shaft on the 550-ft level, is in very favorable quartz and ore.

In every town and village, persons may be found who have been saved from death from consumption by HALE'S HONEY OF HOREHOUND AND TAR.

Pike's Toothache Drops cure in one minute.

The Sacramento Plow Manufacturing Company.

The cuts on this page illustrate two of the plows made by the Sacramento plow company, an institution now in good order, and kept very busy on its specialty. The company, in addition to the plows, keep on hand cultivators, harrows, etc., and intend building up a larger trade than any other establishment of the kind on the coast. The manufactory is at Sacramento, Nos. 301 and 303 J street. The present establishment, 80 by 160 feet, is found to be inadequate to supply the demand, and another building, 100 by 200 feet, is about to be erected, to be used expressly for the manufacture of this and other agricultural implements. We are told that during the present season orders for the "Iron King" are ahead of the supply. This factory is another of those built up by the progress of California, and we hope it will not be long before the manufacture of other agricultural implements will be carried on on an extensive scale in this State.

Following are some of the points on which the manufacturers rely for the Iron King's becoming popular among the farmers of California: They claim that it runs lighter and works easier for man and beast than any other plow; it turns the furrow better and lifts easier out of the ground. The materials used are all iron and steel except the beam, which is of the best ash. The mold board is of cast steel, and is very thick. The beams are made of wrought iron, and are very strong and high in the throat. The shares are all made from the latest improved patterns, neatly fitted, and are claimed to be stronger than any other in use. They are differently shaped from any other plow, being the result of fifteen years' experience of the inventor. It has Ready's patent center draft, which dispenses entirely with the unnecessary weight of the wheel, thereby lessening the draft, of the plow. The regulating shaft works with ease and precision, and is on the land side of the implement, thus being subject to the control of the right hand of the plowman as he stands on the left side of the plow.

The crook in the forward end of the right hand beam and the manner in which the pole is fastened (not fully shown in our illustration), it will be observed, lessens the draft of the plow. If the beam were straight at the point where the plow goes into the ground a heavy draft is brought upon the wheels, and the harder the plowing the greater the draft. But with this arrangement, which was patented Dec. 3d, 1861, the result is quite the reverse, the draft being up at the point instead of down, and thereby dispensing entirely with the unnecessary weight of the wheels. The saving of power equal to one horse is claimed. The agents in this city are Fleischman, Sichel & Co., 37 Battery street.

Premiums for Skilled Labor.

How often do we see persons enjoying a good degree of success in life who, in all outward exhibitions of natural ability, are rather below mediocrity, while many, to appearance endowed with a far higher order of talent, are not prosperous. Two men equal in native ability are known for exactly opposite conditions of life. Of two laborers, one is always out of employment, the other always in; the whole the result of skill, or want of it, in the pursuit of each. One may, through his own good sense or the advice of friends or wisdom of guardians, have acquired a perfect mastery of his work and he succeeds accordingly, while the other, relying upon his natural tact, is found to fail. Or one may have chosen a pursuit above his ability, and must, therefore, fail, while the other, more modest, seeks a career suited to his powers and succeeds. In every department we find the same contrasts occurring. Those out of employment are the poorest workmen; those who do and have done the least for themselves, are those who have done and are doing the least for their employers. Poor labor is only employed when labor is scarce. The country is overrun with "Jacks"—men of little benefit to themselves or the world, for want, not of talent, but a proper application; a careful patience in an apprenticeship, without which success is hardly possible.

In the great majority of cases the first thirty years of a man's life is of no value beyond the acquisition of a knowledge of himself and the pursuit he is to follow. If he has but one or neither of these at this age, there is still the greater absolute necessity of an immediate application to some pursuit until skill is assured. It is also better to go up than be compelled to come down. It is better to be a successful blacksmith, or carpenter, or bricklayer, than to be an unsuccessful lawyer, doctor, or clergyman. A man below his proper station goes up with grace, while a man above it comes down with a sore head.—*New York Mercantile Journal.*

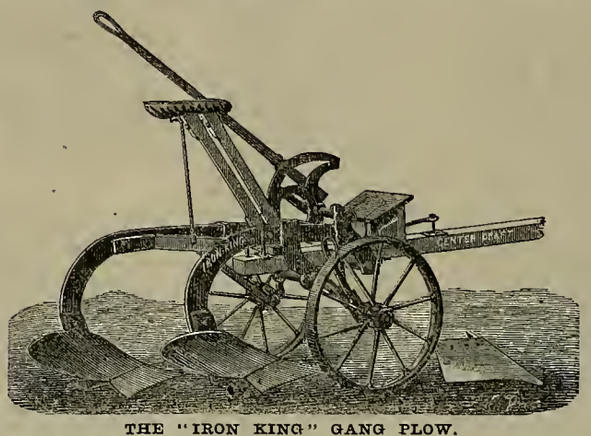
Wild Animals in France.—It is estimated that there are 2,000 wolves in France, which destroy 30,000 sheep a year, beside obliging the farmers to keep 20,000,000 sheep in folds, instead of letting them run in the fields and woods, as in England and America. Wild boars are approaching nearer and nearer to Paris, traces of a herd of about twenty having been observed, a few days back, at Crepy (Oise) a distance of less than forty miles from the capital, a battue was organized, and in two hours fifteen of those animals were killed. The smallest weighed 120 pounds, and the largest 360.

On the Recovery of Silver from Cast Iron Crucibles.

In a recent number of Dingler's *Journal* two Vienna chemists, named Tavorsky and Priwoznik, describe the new methods for obtaining the silver absorbed by cast iron crucibles used in some mints and other establishments for fusing silver and its alloys. A cast iron crucible can be used ten to fifteen times for fusing silver; then the cracks are so considerable that it must be thrown aside. These crucibles were formerly broken up and the bottoms and other portions which contain much silver thrown into the very impure mother liquor from the crystallization of sulphate of copper. This liquor is not easily utilized in any other manner; but on putting in the iron the copper is precipitated, while the iron goes into solution. The cement copper thus prepared, and containing all the silver, along with the graphite silica and other insoluble constituents of the cast iron, is treated in the usual manner for the separation of silver. This process, however, is tedious, and the amount of material to be worked is increased instead of being diminished, for 100 pounds of cast iron yields about 113 pounds of cement copper.

In the Royal-Imperial mint at Vienna, 315 old cast iron crucibles, weighing 115,192 lbs., have been treated in this way, producing 405,574 lbs. of commercial sulphate of iron. The weight of the residue was 23,038 lbs. The poorer portion and the residue from amalgamation, weighing 13,429 lbs., was smelted. Nearly 737 lbs. of silver was obtained, worth 30,143 gulden (about $15,000), from which the percentage of silver in the cast iron is calculated at 0.64 per cent. The amount of silver in a cast iron crucible depends on the richness of the alloy melted in it; those used for rich alloys of course contain more silver than those in which poorer ones are melted. Most of the crucibles worked up so far had been used for the alloy from which the Austrian small change is made, and which contains only 45 to 50 per cent. silver. The results obtained with those in which alloys containing 83.5 per cent. are fused, will, no doubt, be more favorable.

No Time for Long Stories.—Few people nowadays have the leisure or inclination to read long winded editorials, long winded poems, or long winded literary productions of any description. Everybody is exceedingly busy, and if a subject is investigated at all, it must be condensed into the briefest possible limits. The day when histories were written in ten or twenty volumes; when one novel was only a sequel to some other that had preceded it, and so on through an entire catalogue; when editorial paragraphs were elongated to fill one or two columns; and when the ability of ministers or public speakers was measured by the number of hours they could discourse upon any given topic, has happily passed away. The scientific inventions of the present day have quickened life to a wonderful degree. People live longer and accomplish more now in a year than their ancestors did in three or four. Writers of every class, especially writers for the press, should therefore study the art of telegraphic brevity. Make everything as short as possible, consistently with the merits of the subject. Redundancy has gone out of fashion, and "brevity is the soul of wit."



THE "IRON KING" GANG PLOW.

The late director of the mint at Vienna, Von Schrotter, proposed a method for overcoming this difficulty. The crucibles are first broken up and then dissolved in dilute sulphuric acid without heat. To avoid the trouble of evaporating a large quantity of water, in order to crystallize the green vitrol, in the first experiment the sulphuric acid was only moderately diluted, and consequently large quantities of anhydrous protosulphate of iron separated and enveloped the undissolved pieces of iron, protecting them from the action of the acid. As soon, however as the acid was diluted to 20° B., the iron dissolved rapidly. Where chamber acid can be easily obtained it would doubtless be the cheapest. Even with acid of 60° B. it is not expensive, and the latter offers the advantage that the heat generated in diluting it helps the reaction and hastens the solution. The iron is dissolved in wooden vessels lined with lead, 12 to 15 feet long, 6 feet wide and 20 inches deep, with a grating made of lathe, about 8 inches from the bottom, on which the pieces of crucible are placed. As the solution becomes more concentrated, it sinks to the bottom, and the iron is continually brought in contact with fresh acid. If the precaution be taken to cover the vessel tightly the extremely disagreeably smelling gases evolved will not prove a serious disturbance.

SINGLE PLOW MADE BY THE SACRAMENTO PLOW COMPANY.

In from ten to fourteen days the acid becomes saturated and the solution settles and has a concentration of 20° B. By evaporation to 66° B., the green vitriol crystallizes out. The insoluble residue amounts to about 20 per cent. It contains all the silver, silica, graphite, sesquioxide of iron, copper and small quantities of sulphur and phosphorus. The larger pieces of silver are picked out and the smaller are obtained by sifting and amalgamating the residue. Only the old slick and the amalgamation residue, which still contains 1.4 per cent silver, are worked over in the silver works.

This method of recovering silver is much more rapid than that previously in use. It has the advantage that 80 per cent. of iron is removed before proceeding to the recovery of the silver, so that the argentiferous material is reduced to one-fifth its original weight. The experience of those who have employed it in Vienna show that it is thoroughly practicable, and that the green vitriol produced pays for the labor.

A World of Suicides.—Professor Faraday has given it as his opinion that all who die before they are a hundred years old may be justly charged with self-murder; that Providence, having originally intended man to live a century, would allow him to do so if he did not kill himself by eating unwholesome food, allowing himself to be annoyed by trifles, giving license to passion and exposing himself to accident. The French savan, Flourin, advanced the theory that the duration of life is measured by the time of growth. When the bones' epiphysis are united, the body grows no more, and it is at twenty years that this union is effected in man. The natural termination of life is five removes from the several points. Man, being twenty years in growing, lives, or should, five times twenty years; the camel is eight years in growing, and lives five times eight years; the horse is five years in growing, and lives twenty-five years, and so on with other animals.

The Winnemucca foundry, Nevada, has just made a ton and a half of castings for the Humboldt reduction works.

Two of Tulloch's feeders have been put in the mill of the Humboldt mill and mining company.

The Lady Washington shaft will soon reach the 500-ft level.

The Oakville Quicksilver Mine.

Saturday last we paid a visit to this well known mine, and to the courtesy of Superintendent James McQuaid, are indebted for a pleasant call and much interesting information about the mine. The owners are an incorporation known as the "Bella Union quicksilver mining company," a San Francisco company, with 50,000 shares capital stock, par value $100 each; Chas. H. Simpkins, president; A. Halsey, secretary; the Pacific bank, treasurer, and James McQuaid, superintendent. It was formerly the Napa quicksilver mining company, owning the Oakville mine property, but it afterwards bought of Mrs. D. S. Rohlwing the Bella Union mine adjoining, paying her the sum of $15,000, and then incorporated under the new name of Bella Union. The company have 6,000 feet of mining ground, patented, and have plenty of room and rock for years to come. They have two furnaces of the "Luckhardt" pattern, of ten tons capacity each, so that their aggregate capacity is twenty tons per day. Their lode, or vein, is about thirty feet in thickness, and is penetrated by seven different tunnels, some of which enter for a distance of 500 feet. They have a large quantity of ore on hand, and that of a fine appearance. Like other mines, they make "adobes" of the fine ore, but will another season put up a furnace capable of burning this material in the raw, and thus save a cost of manufacture of probably $2,000 to $3,000 a year. The mine, as is well known, was long closed down from litigation with improvident or unfortunate owners, but last July, when everything had been straightened out, recommenced operations under the new owners. It run successfully for about three months, when in October last it was again shut down, and this time from a singular accident. A tunnel run at a long distance from the furnaces, most unexpectedly tapped the water supply of the latter and drew it all off, leaving them like a steamboat high and dry, without anything to run on. Water for a furnace has to be had, for making steam and cooling the condensers, and the result was when this accident happened, all reduction was suspended, and will remain so till the water is pumped back to the furnace, or the furnace removed to the water. This latter would be for a distance of 2,000 feet, and would cost about $10,000. The expense would not, however, be all "dead horse," for it was contemplated at some time or other to remove the furnace anyway, as they are not now in the most advantageous situation with regard to the lode, which further development has shown to lie in a different direction than was at first supposed. It will not, perhaps, be determined to remove the furnaces at once, but rather put in a hydraulic ram to force the water back, which will furnish water enough to supply at least one furnace. The number of men employed now is sixteen, and when engaged in the work of reduction from thirty to forty-five. The men employed now are all Chinamen except three. The mine while in operation was very successful, producing in its 104 days' run 273 flasks of quicksilver, nearly 21,000 pounds. Its product is shipped from Rutherford station to the Pacific bank, treasurer of the company. During the period of this run only one furnace was used; and part of the time inferior ore was run through. The company are getting out a fine stock of ore, and when operations are resumed will doubtless yield a fine return for its labors. The location of the mine is on the mountain side at the west side of Napa valley, about five miles below St. Helena, and at a sufficient elevation to command from its works one of the finest views to be obtained of the beautiful valley it overlooks.—*Register.*

Cleaning Goods By Naphtha.

Naphtha is being used as a cleansing agent for furniture, carpets, clothing, etc., at an establishment recently opened in this city. The process consists simply in placing the article to be cleaned in a bath of hydro-carbon and there leaving it for a couple of hours. Huge vats are used, capable of holding several barrels of naphtha at a time; and in these, sets of furniture or carpet are soaked so as to be entirely submerged in the liquid. No preparation of the goods is necessary, and the naphtha seems to exercise no deleterious effect upon varnish or gilding, upon glued joints, or upon the finest silk or satin fabrics. Dirt and grease are entirely eradicated, the latter sinking to the bottom of the vats, from which it is from time to time removed in the shape of a yellowish mass. Moths are of course totally destroyed.

Several fine sets of furniture were shown us, which had been treated by the naphtha process. They appeared like new so far as the fabrics were concerned, and there was no discernible smell of the fluid. The process is patented. The principal item of expense is the evaporation of the naphtha; but this being allowed for, the cost of cleansing is somewhat less than incurred in the ordinary method followed by clothes-scouring establishments. It may be added that naphtha does not act upon linen or cotton, and it is practically available only upon animal fibers.—*Scientific American.*

On the Glenn farm, in Colusa county, there will be in cultivation this year 37,000 acres, of which Isaac Baylis will have 8,000 acres, Geo. Hoag, 7,000; Pike Gupton, 9,000 and Dr. Glenn, 13,000 acres.

Belcher is expected to pay a $3 dividend in January.

Useful Information.

A New Use for Chicken Feathers.

"According to statistics very carefully compiled," says a writer in *La Nature*, "We throw away yearly a quantity of chicken feathers, the intrinsic value of which is equal to the money which we pay out for cotton." A startling statement, but the author considers it true; and he proceeds to explain how the feathers are prepared to make them valuable. The operation is to cut the plume portions of the feathers from the stem by means of ordinary hand scissors. The former are placed in quantities in a coarse bag, which, when full, is closed and subjected to a thorough kneading with the hands.

At the end of five minutes the feathers, it is stated, become disaggregated and felted together, forming a down perfectly homogeneous and of great lightness. It is even lighter than natural eider down, because the latter contains the ribs of the feathers, which give extra weight. The material thus prepared is worth, and readily sells in Paris, for about $2 a pound. About 1.6 Troy ounces of this down can be obtained from the feathers of an ordinary sized pullet; and this, on the above valuation, is worth about twenty cents.

It is suggested that, through the winter, children might collect all the feathers about a farm, and cut the ribs out, as we have stated. By the spring time a large quantity of down would be prepared, which could be disposed of to upholsterers or employed for domestic uses. Goose feathers may be treated in a similar manner, and thus two-thirds of the product of the bird utilized, instead of only about one-fifth, as is at present the case.

The chicken down is said to form a beautiful cloth when woven. For about a square yard of the material, a pound and a half of down is required. The fabric is said to be almost indestructible, as, in place of fraying out at folds it only seems to felt the tighter. It takes dye readily, and is thoroughly water-proof. There appears to be a good opportunity here for some ingenious person to invent machines to cut and treat the feathers.

Cracking of Paint.

The cracking of either paint or varnish is generally due to the application of a coat of paint or varnish over one not thoroughly hard. It is also caused, in certain cases, by the springing of that portion of the wood or iron, as on the drop-front of a phaeton-body, or on the rims of the wheels, the side-spars, springs, etc., and this cannot be avoided, for the best of painting, as shown on other parts of the job, is no safeguard against it. Another cause of cracking is the swelling of the wood, occasioned by repeated washings, exposure to storms, or by standing in a damp carriage house. This latter cause is entirely obviated by coating the body all over, inside and out, with permanent wood filling, and if the body is to have moldings nailed on, this coating should be done first, in order to have the wood well preserved under the moldings. A firm in New York, who have shipped a great many carriages for long sea voyages, were exceedingly annoyed and put to great expense by the action of sea dampness on their work, but after coating their bodies with this priming, they experienced no further trouble in this respect.

"Fire-checks" are a species of cracks, very small and running in every direction, forming squares, triangles, and circles, which are sometimes to be seen all over a panel, but which are not generally visible until a fine polish is made with the finishing coats. I proved to my satisfaction, not long ago, that these may be caused by a coat put over a surface not hardened; for in this instance, parts of the job which did not receive that "hurried coat" turned out splendidly. "Crawling" of paint, and, to be brief, almost all the "ills that *paint* is heir to," are caused by bad mixing; and as that point has, I think, been sufficiently explained, I will turn now to the devilries of varnish.—*The Hub.*

CHALK.—Most people looking at this substance would take it to be a sort of hardened white mud. Such is not the case, as the microscope shows that it is nothing but the agglomerations of creatures almost invisible. Bearing this in mind, one is astonished at the power of organic life, which can produce masses that form a rampart to the coast of England. Their minuteness is such that a single visiting card covered with a white layer of chalk contains about 100,000 shells. These are formed of carbonate of lime, and are so small that 10,000,000 are required to weigh a pound, and 150,000,000 to make a cubic foot of the same material.

PRESERVATION OF TIMBER.—A German chemist, Sigismund Beer, has found that by using borax as a solvent, the coagulation of sap was prevented, and that it could be effectually removed by boiling, without injury to the tissues. The wood is rendered thereby closer in grain, and is said to become impervious to decay. Wood so prepared is improved both in color and texture, and is free from the danger inherent to impregnation with creosote or other oils. By not washing out the borax the inflammability is said to be much decreased.

A PINT of mustard seed put in a barrel of cider will preserve it sweet for several months.

The Blow Pipe Flame.

The blow pipe flame consists of two distinct cones, the inner and the outer flames. The inner flame is in great need of oxygen, since the air supplied by the blast only affords sufficient to satisfy the demands of the hydrogen in the gas, or hydro carbon vapor; hence, if an oxide of a metal be placed in this cone it becomes heated to a high temperature, and is induced to part with its oxygen to the needy carbon in the flame; thus the metal becomes reduced. This property of the inner flame has procured for it the name of the reducing flame. In the outer flame the complete combustion of the carbon is determined, for much oxygen mingles with it from the surrounding air with which it is in contact. If a piece of metal be submitted to the action of this flame it is heated to a high temperature, and is thus in a condition to be readily oxidized, which is always effected, save in the case, of course, of the noble metals. This flame is therefore called an oxidizing flame. To illustrate the peculiarity of these two flames, place a particle of lead on a piece of well burnt charcoal; direct upon the metal the blow pipe flame, so that the point of the flame may play upon the metal. The lead will melt, then oxidize, and become a transparent liquid bead. Now move the charcoal further into the flame, so that the head may be enclosed in the inner cone. Here it will soon be deprived of its oxygen, and return to the metallic state. This may be perhaps even more strikingly illustrated by submitting a piece of flint glass to the action of the whole flame; that part of the glass which is heated by the outer cone will remain clear, but that in the reducing cone will become opaque, being covered with a dark metallic luster, the fact being that the lead oxide in the gas is reduced.—*Cassel's Popular Educator.*

NEW USE FOR GYPSUM.—It is said that gypsum, mixed with four per cent. of powdered marshmallow root, will harden in about an hour, and can be sawed or turned, and made into dominoes, dice, etc. With eight per cent. marshmallow the hardness is increased, and allows of its being rolled out into thin plates, and painted or polished.

IRON GUNPOWDER.—A composition sometimes called iron gunpowder is made as follows: A mixture of one part sulphur, two parts iron filings, and three parts niter, will ignite by a glowing taper and burn with brilliant light. After it is cold the residue will probably give a red color, due to the ferrate of potash produced by the oxidation of the iron.

Good Health.

A Plea For Late Suppers.

I discussed the question recently with an able physician, who said to me: "There is nothing more absurd than to pretend it is unhealthy to sleep immediately after the day's last meal. Is not man an animal? Do not animals, without exception, sleep immediately after eating? Do we not feel like sleeping after each day's last meal? and is it not by an effort that we shake off sleep? Evidently the body yearns for sleep. Exercise after every meal is pernicious. Rest is healthful. What rest can compare with sleep, which reposes the mind, the lungs, even the heart? See the peasants. No persons enjoy better health than they do. Supper is the best meal of the day. No sooner have they supped than they go to to bed. Look at the actors. There was Ruhini. He dined at three, went to his dressing room in the Italian opera house, and slept till the theater opened its doors. At midnight he supped heartily and straight to bed he went. He died of sheer old age.

You know Monsieur Thiers' habit? The moment dinner ends he stretches himself out to sleep, and sleeps an hour. The truth is, if you look around you, there will be found that this great majority of men go to sleep immediately after making their best meal, and you certainly never saw anywhere in the world healthier, stronger women than those of the great markets. What is the rule of life? Dinner and to bed. Take another, the very opposite class—astronomers. They keep late hours. Their best meal is taken when the stars say "Good-night." Then they go to sleep. Did you ever hear of an astronomer dying under a hundred? The majority of mechanics and servants go to sleep immediately after their best meal. They are right. They obey nature's voice, which always gives judicious advice.

CARE OF THE EAR.—In his treatise on Physiology, Hinton gives us to understand that the passage of the ear does not require cleaning by us; nature undertakes that task, and in the healthy state fulfils it perfectly. Her means for cleansing the ear is the wax, which dries up into thin scales and peels off and falls away imperceptibly. In health the passage of the ear is never dirty, but an attempt to clean it will infallibly make it so. Washing the ear out with soap and water is bad; it keeps the wax moist when it ought to become dry and scaly, and makes it absorb dust. But the most hurtful thing is the introduction of the corner of a towel screwed up and twisted around. This proceeding irritates the passage and presses down the wax and flakes of skin upon the membrane of the tympanum, producing pain, inflammation, and deafness. The washing should only extend to the outer surface, as far as the fingers can reach.

Treatment of Erysipelas.

A Berlin medical journal reports a new mode of treating erysipelas, since the introduction of which into several of the hospitals at Posen no fatal case has occurred. The affected parts of the skin are gently painted over every three hours with a mixture of one part of carbolic acid and three parts of oil of turpentine; and the same is rubbed somewhat more energetically into the adjacent parts. Compresses dipped in lead ointment are then applied, and lastly, according to the extent of the disease, either an ice-bag is laid upon the part, or the whole limb is wrapped around with cloths dipped in ice cold water, and these must be promptly changed for fresh ones as soon as they become all warm. When adynamic symptoms are present, Hungarian wine is given, and camphor mixture. The bowels should be kept open. The parts rubbed with the mixture become very red and even blistered; but the epidermis soon dries and the skin appears as if tanned. The progress of the disease is arrested in from twenty-four to thirty-six hours, and no relapse occurs.

The Cranberry Cure.

From time to time articles have gone the rounds of the press stating the value of the cranberry cure as applied in erysipelas, and so wonderful have the cures effected seemed, that many are disposed to take the stories with a grain of allowance. But now, says the Sacramento *Herald* of a late date, we have a case in this city, where a remarkable cure has been effected, and the patient is around and able to testify to the wonder of this simple remedy. Judge Cantwell, of the police court, about two weeks ago, was taken with an attack of erysipelas in the left leg and in a short time the disease increased to an alarming extent, running well up into the thigh. The usual poulticing with flax seed, etc., was resorted to, but no relief was had, and the sufferings of the patient increased. Last Thursday, however, a friend suggested to him that he try the cranberry cure, whereupon the Judge got the berries, had them well bruised and applied to the injured limb, and after the poultices had been on but a few hours he expressed himself as experiencing greater relief than at any previous time during his illness. The remedy was continued, and this afternoon the Judge had so far recovered as to be able to leave his room and take a carriage ride, and in a day or two he will be able to resume his official duties. Naturally he has now a strong faith in the curative properties of the cranberry and is loud in the praises thereof.

Blood Cure — Digestible Blood Powder.

The powder obtained by the evaporation of blood is nearly as insoluble in water as sand, and is quite indigestible. The preparations met with in commerce under the name of *extract of blood* are not quite so insoluble, but the absence of hæmoglobin in them (which forms 86 per cent. of the corpuscles) can be easily shown by the spectroscope. Having lately required a large quantity of blood for researches on this liquid, M. Le Bon sought to reduce it to powder without altering its composition and properties, and he believes he has succeeded in doing so by operating (with special apparatus) at low pressure and a temperature not above that of the body. He showed the French Academy a specimen kept eighteen months. You shake the powder in water a few minutes, then filter the solution, and thus obtain a beautiful red liquid having all the properties of defibrinated blood. In pepsine the powder is shown to be perfectly digestible. M. Le Bon points out that this soluble blood, which has parted with four-fifths of the water it contained, is a most nutritious aliment with small volume. It might be associated with farinaceous food, and thus a diet would be provided physiologically complete. Its richness in iron and its tonic properties render it also a valuable therapeutical agent.

HOW TO HAVE SOUND TEETH.—The *Science of Health* says: Mushes, gruels, puddings and soups may be made hygienically. But they should also be eaten hygienically. They must be chewed, not bolted. The nursing infant masticates its mother's milk, for which purpose it takes it slowly, drop by drop. Mastication is for the purpose of insalivation. Unless food is properly insalivated, it cannot be well digested. The teeth are the finest, densest structure of the body, and this means that they are intended for hard work. Eat solid food at every meal; and when you take semi-liquid, or very soft food of any kind, eat very slowly and take a bit of hard bread, crackers, a green apple, or something similar, with it. Then will your stomach please and be pleased, and your teeth, like your eyes and nose, and fingers and toes, will remain to bless and comfort you to the last. If all persons after being weaned, would only chew their food enough, we would hear very little of aching and rotting teeth, and dentists would be nowhere.

A CHOKING SENSATION.—A beggar entered Britton's saloon, No. 12 Greenwich street, New York, and asked for something to eat. A man named McCutcheon offered him a piece of meat, and as he was about to take it, withdrew it and put it in his own mouth, at the same time uttering an anathema against beggars. He had no sooner made the remark than he commenced to choke, and before assistance could be offered he died, having been choked to death by the piece of meat.

Domestic Economy.

Cooking.

There is no more important branch of "preventive medicine" than cooking. Bad cooking may cause a dwindling of the race, ruination of the temper, and deterioration of the morals. Good cooking, on the other hand, is accompanied by national prosperity and domestic bliss. So say the promoters of the national training school of cookery, who are undoubtedly right in the main, and are deserving of all imaginable success. Now, cooking is both an art and a science. For its progress as an art we are not greatly concerned, although our profession would undoubted suffer in pocket should fine art cookery go out of fashion. "Elegant" dishes are generally whited sepulchers, and the fore-runners of blue pills and other disagreeable correctives. The bulk of people live in big cities, and if we were asked to name the most predominating characteristic of our urban population, we should say "dyspepsia." Those who spend their days in dark offices, chambers, or consulting rooms, and keeping their noses everlastingly upon their respective grindstones, seldom know that digestion which should wait on appetite. Hitherto their dinners have not been so skillfully prepared as to demand the least possible effort from a jaded stomach; but let us hope that the national disgrace of indigestibility will no longer dim the brightness of our hospitality, and the number of patent medicines which are sold so largely in this country as aids to digestion will undergo a rapid diminution.—*Ex.*

RIGHT WAY TO BOIL EGGS.—There is an objection to the common way of boiling eggs which people do not understand. It is this: The white, under three minutes' rapid cooking, becomes tough and indigestible, while the yolk is left soft. When properly cooked eggs are done evenly through, like any other food. This result may be attained by putting the eggs into a dish with a cover, as a tin pail, and then pouring upon them boiling water, two quarts or more to a dozen eggs, and cover and set them away from the stove for fifteen minutes. The heat of the water cooks the eggs slowly and evenly and sufficiently, and to a jelly-like consistency, leaving the outer or yolk harder than the white, and the egg tastes as much richer and nicer as a fresh egg, and no person will want to eat them boiled after having tried this method once.

TO WASH SILK.—Among the many ways of washing silk the following will be found equal, perhaps, to the best: Half a pint of gin, four ounces of soft soap, and two ounces of honey, well shaken. Wet a sponge with this mixture, and rub the silk, which should be spread upon a table. Then wash it through two waters, in which put two or three spoonfuls of ox gall, which will brighten the colors and prevent them running. Do not wring the silk, but hang it up to dry, and while damp iron it. The lady who furnishes this recipe says she has washed a green silk dress by it, and it looks as good as new.

AN IMPROVED DUMPLING FOR CHICKEN, STEWS, ETC.—With one quart of sifted flour mix one teaspoonful of salt, two of cream of tartar and one of soda. Pour in sweet milk and stir until the mixture is just thick enough to form into biscuit. Place them upon the largest sized, round baking tin, and set the tin in a steamer over the kettle where the chicken is boiling. Steam about forty minutes. Thicken and season the broth, break the biscuit apart and drop them into the gravy, boil ten minutes and serve. These are said to retain their lightness, not falling as they become cool.

CRANBERRY MARMALADE.—Sweet and sipid apples, and those which are past their prime and need to be cut up on account of decay, made be very acceptable by stewing and mixing with stewed cranberries in the proportions say of one part cranberries to two parts apple. Not quite so much sugar will be required as for the cranberries alone, unless the apples are sour. Strain through a colander, mix evenly, and serve at any meal.

NEWFOAT FISH PUDDING.—Pick cold fish into small bits, removing all the bones. Thicken some boiling milk with flour, and stir the fish into it, season with butter, pepper, and salt. Put into a pudding dish, and spread cracker or bread crumbs thickly over the top, to prevent the milk from scorching. Bake only long enough to brown it nicely. A good breakfast dish, or a side dish for dinner.

STEAMED OYSTERS.—Wash the oysters thoroughly, and place them in a colander, covering with a lid; put enough water into the kettle to get up a good steam. The oysters will soon open, when they are done. I suppose any perforated pan fitting snugly on the kettle would answer in place of a colander. This is the best way to cook oysters.

TO KEEP LEMONS.—Housekeepers know how quickly lemons lose their freshness, and rot. A simple and inexpensive remedy is to place them in a jar filled with water, to be renewed every day or two. By this means the fruit can be kept fresh and sound for several weeks.

MINING AND SCIENTIFIC PRESS.

W. B. EWER.....SENIOR EDITOR.

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SAMPLE COPIES.—Occasionally we send copies of this paper to persons who we believe would be benefited by subscribing for it, or willing to assist us in extending its circulation. We call the attention of such to our prospectus and terms of subscription.

THE ORIGINAL ARTICLES in this paper are mostly set in solid type, giving in our columns one-third more reading than is contained in ordinary loaded matter.

San Francisco:
Saturday Morning, Dec. 25, 1875.

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Mechanics' Institute Fair.

A meeting of the managers of the Mechanics' Institute fair was held Saturday evening, as announced in our last issue, for the purpose of distributing the prizes awarded at the late fair. Those who were not present to obtain their certificates may obtain them from Mr. J. H. Culver, at the Institute. President Hallidie read a report of the receipts and disbursements as follows: Sale of tickets for the Tenth Industrial Exhibition, $84,515.75; sale of privileges, $5,254; sale of catalogues, $288.50. Total, $90,058.25.

Expenditures—Fitting and decorating, $10,241.38; running expenses, $28.702.13; horticultural garden, $6,706.31; contingent expenses, $10,578.14. Total, $56,227.96. Profit, $33,830.29.

From the report read by the President it appeared that the buildings and fixtures cost $106,330.60; running expenses of the Ninth Industrial Exhibition, $5,464; contingent expenses do, $2,193.46; receipts from Ninth Industrial Exhibition, $84,684.26, leaving a deficiency of $49,303.90. The ball given last year netted $2,797.47. In about thirty days a full report on the late exhibition, compiled by Mr. Culver, will be published.

ALEXANDER DEERING, judge for the Thirteenth judicial district of the State of California, died at Merced on the 18th inst.

MR. O. SEAWELL will please send his P. O. address to this office.

[PUBLISHERS' ANNOUNCEMENT.]

MINING AND SCIENTIFIC PRESS For 1876.

THIS PUBLICATION, SO VALUABLE FOR MINERS, MECHANICS AND MANUFACTURERS,

Will enter upon its THIRTY SECOND Semi-Annual Volume on Saturday, January 1st, 1876. It has ever been and will still continue to be the aim and object of the publishers to make the PRESS

A Practical and Interesting Journal.

To this end, we aim, through the constant watchfulness of our editors and correspondents, to seize upon everything new in the way of mining and the various processes connected with the saving and separating of the precious metals, and place the same before our readers at the earliest day. It has been well said that

A Newspaper is a Window

Through which men look out upon all that is going on in the world. Our window is a special one, so placed and arranged as to bring within the scope of its vision all that is going on

In the World of Mining, Mechanics and Science.

Without a paper of this kind, the miner or mechanic is shut up in a small room or shop and can know but little of what is going on in the world around him in relation to his particular calling. In this age of rapid progress books are necessarily slow and behind the times. It is only through papers devoted to the specialty which he has chosen that one can be easily apprised of the discoveries and improvements which are constantly being made by his fellow workers, and without a knowledge of which he soon becomes a laggard in the race.

The Value to the Community

Of such publications in disseminating important information, in checking useless and exploded experiments and in instigating important enterprises, can scarcely be overrated. Through them the readings and observations of thousands are collected and collated, and brought directly to the shop or table of the reader, without any effort of his own. For a mere trifle of cost he is regularly furnished with an encyclopedia of just the information he needs—an unbound book forever issuing but never finished.

Nowhere in the Wide World

Is such an aid more needed than by the miner of California. It is needed alike in the mill, in the mine and in the placer. We have here

The Largest Mining Field on the Globe,

Embracing a variety of minerals nowhere else found within the boundaries of a single field. We have here, also, men gathered from every quarter of the globe bringing with them the collective wisdom of the world,

Useful, Practical and Directly from the Field

Of labor. The mustiness of books has been brushed away, and their minds are stored not only with the experience of the past, but also with the practice of the present. It is to this fact that we are indebted for our present

Able List of Correspondents,

Through whom we are able to promise to our readers so much that cannot be collected in the mere routine of office work. By the aid of such help our editors will be able, during the coming year, to do more than ever in furnishing information which shall be

Fresh, Novel and Interesting,

And which shall comprise all that is known of the latest and best means for saving gold and silver, and for economizing labor and cost in that direction.

Our Illustration Department

Will still continue to form an important feature, and no effort will be spared to make it of the greatest possible local and general interest to our readers. The important matter of

Home Manufactures and Inventions

Will also largely occupy the attention of the publishers and editors, and will be constantly encouraged, as an important means of furnishing employment to those who are seeking our shores, and adding to the wealth of the Pacific coast.

The Large and Increasing Circulation

Of a journal thus devoted exclusively to useful and practical information, speaks more in our behalf than anything we could say of ourselves, and is an encouragement to its further increase, especially in these times of trifling and trashy journalism.

A Handy Map

Of California and the principal portion of Nevada will be furnished free to all subscribers who pay one year in advance, during the year 1876. The map is plain, printed on tinted paper, about 16x20 inches, showing townships in California, and the counties, railroads and principal towns in California and Nevada.

We Prepay the Postage

On all papers sent to subscribers in the United States.

The class of readers who are interested in such a publication as this, have no need to be anything more than merely reminded that such journals are necessarily more costly than those of a lighter class, such as are read by the "million" and thrown aside as soon as read. Considering the character and location of the MINING AND SCIENTIFIC PRESS, our rates are as favorable as can possibly be afforded and do justice to the great industries in aid of which we are laboring.

SUBSCRIPTION RATES, payable in advance: One year, $4. Sample copies free to those who will assist in obtaining subscribers.

DEWEY & CO., Publishers,
No. 224 Sansome street, S. F.

Our Merry Christmas.

When people go about proclaiming that "Christmas comes but once a year," it is not presumed that they suppose the rest of the world to be ignorant of the fact, but when their neighbors fully realize the fact that this,

The Greatest of all Holidays,

Occurs but once in the course of twelve months, it is expected that they will considerately make some allowances for the ebullitions of joyous feeling exhibited on this occasion.

Preparations are making for keeping this glorious holiday in a becoming manner. The growth of Christmas trees in the streets of San Francisco within the past week has been extremely rapid, and this novel feature of vegetation has undoubtedly exhibited the same marvelous growth in other cities and villages of California. We have much to thank our recent rains for, but they did not produce these green, fragrant Christmas trees. They had their growth in the hearts of the people. Sidewalks are obstructed with them in a way that would not be tolerated on any other occasion; but the policemen recognize a power behind the municipal throne, in the holiday feeling that produced these trees, and they only see them to admire and to be reminded that they were boys themselves a great many years ago.

These trees are of all dimensions and shapes, but are all the greenest of the green, and may all be known even without their fruits; but when on Christmas morning their generous harvests are offered to the grateful hearts of the rising generation, who can compute the value thereof! The variety of this fruit is as marvelous as its abundance. And then how unostentatious are all these Christmas offerings! The poor laboring man who makes a present of a cheap doll, a miniature wagon or some other substantial toy, would have the world remain forever as oblivious of the cost, as the favorite of fortune who hangs his rich gifts upon a tree that perhaps grew by the side of that to which his poorer neighbor fastens his cheap toys—which offerings were prompted by impulses having their growth in the same trait of human nature.

And another thing; we do not believe that the festivities of the season are any way dependent upon the magnitude of the snowbanks, upon the jingling of sleigh bells, or upon the freezing of fingers and toes, and, for our part, the supply of fresh strawberries and grapes which we have seen this week along Sansome street, shaded by the Christmas trees described above, did not lessen our anticipations of Christmas joys. And while we shall say nothing disparagingly of the pleasures which our friends at the East enjoy over their red hot stoves, still we cannot dispel the delusion that Christmas is just as merry where no fire is needed.

But this particular Christmas brings with it one coincidence over which we are especially merry. It is the fact that our paper bears the date of December twenty-fifth. There are, therefore, no anticipations, or no make believes of any kind, involved, when we wish our many friends

A Merry Christmas,

And that our intercourse may continue mutually pleasant and profitable. And though we have no right to expect that the Christmas trees of our readers will bear any fruit for our picking, we shall take the liberty on this occasion to assure our friends that for our part we shall continue to harbor the belief that we are bound by a closer tie than those that are created and maintained by mere selfishness.

THE North Pacific Coast railroad company are to construct a bridge for the new side track which is building on Paper Mill creek, tapping the Lagunitas canon. The bridge is to cost $5,000.

Legislative.

Our legislators seem to be pretty hard at work at Sacramento, judging from the number of bills introduced. Our space forbids our publishing many of the bills in full, although we shall keep our readers posted on such measures as effect general industrial interests. We note the following matters of general interest: A bill providing for a system of irrigation has been introduced, which is substantially the same as that brought up last year. Raymond, of the Senate, offered the following resolution:

WHEREAS, The policy of permitting the lands in this State to be monopolized in the hands of the few at the expense of the many, is subversive of the rights of the people and ruinous to the best interests of the State, therefore be it

Resolved, That the Judiciary Committee of the Senate be instructed to prepare and report to the Senate at an early day a bill to prevent the evils arising from land monopoly. Carried.

A bill has been introduced to regulate fare on street railroads in San Francisco.

Senator Tuttle's bill (63) to estsblish a State reformatory provides for a reformatory department at the State prison at Point San Quentin. Sec. 2 reads: "The Board of State Prison Directors shall proceed as soon as funds shall be appropriated by the Legislature for that purpose, to erect suitable buildings for the said State reformatory, having a capacity for not less than 400 inmates, and constructed if practicable with a view to the classification of prisoners; said building shall be erected outside of the present wall, and shall be enclosed by a suitable wall." On the completion of the buildings the Governor is to give notice thereof by proclamation, to be published once a week for six weeks in a newspaper in each judicial district. After said proclamation any person under twenty-five years of age convicted of felony, who has not been previously convicted of such a crime, shall be sent to the reformatory instead of the State prison for the same number of years for which the person so convicted would have been sentenced to the State prison. The amount appropriated under the bill is $75,000 for the erection of additional cells, and a similar amount for additional shop room, to be expended during the years 1876-77.

Senator Piersons has a bill to increase the State University library. The proposal is that on the institution of a civil suit, the plaintiff shall pay to the clerk of the court in which it is brought one dollar, to be applied to a fund to be known as the "University of California library fund."

The State Marine Board has been abolished.

The following resolution was passed:

WHEREAS, The candidates of the different political parties, at the last election held in San Francisco, pledged themselves, if elected, to use their best endeavors to reduce and make equitable the present exorbitant water rates in the city and county of San Francisco; therefore be it

Resolved, That a special committee of five be appointed by the House to act in conjunction with a similar committee of the Senate, for the purpose of collecting data as to the cost of getting water in San Francisco as compared with the cost of getting the same in other large cities, and that said committee be instructed to report on or before January 18th, 1876.

The following were appointed as the committee when the resolution passed, Donovan, Roach, McCoppin, Bartlett and Howe.

Mr. Ferral has introduced a resolution to discourage Chinese immigration.

Archer moved the adoption of the following:

Resolved, That the charges for fares and freights on railroads in California are subject to the control and should be regulated by an act of the Legislature, with a view to the protection of the people from injurious discriminations and unjust charges by railroad companies, but in a spirit of fairness to the owners thereof; that the said subject of fares and freights be referred to the Committee on Incorporations, with instructions to report a bill in relation thereto.

The resolution was adopted.

The following resolution has been referred to the Committee on Commerce and Navigation:

WHEREAS, Representations have been made to members of this House and the people of this State, through the public press, that there are a number of steamships sailing to and from the port of San Francisco, carrying passengers, that are rotten and unseaworthy; and

WHEREAS, A number of steamships sailing to and from San Francisco have been lost, together with a large number of lives, within the last few years, through unseaworthiness and without other cause; therefore

Resolved, That a committee of five be appointed by the Speaker, whose duty it shall be to proceed to the city of San Francisco with authority to examine into the facts and procure such evidence as is necessary in the case, and report the same back to this House for further action.

Lindsay has proposed a joint resolution asking Congress to restore to the public domain the Atlantic and Pacific railroad reserve lands.

Both Houses will adjourn over the holidays and meet again January 4th.

END OF VOLUME.—This issue of the MINING AND SCIENTIFIC PRESS concludes Volume XXXI, and we write the last lines in this only to begin with renewed efforts and encouraging prospects on the next. The copious index on the last page of this issue will give an account of our work, and we commend its perusal to those interested in industrial pursuits, so that they may see whether they can afford to be without a paper which has given such a variety of valuable reading matter in the last six months. The index itself is a matter of no little labor, but to those having bound volumes of the PRESS it is of course invaluable. We wish our readers all a "Merry Christmas," and trust that most of them will still be "our readers" at the end of the next volume as they are at the end of this.

The State Geological Survey.

The following memorial to the Legislature has been prepared by the California Academy of Sciences in relation to the resumption of the State Geological Survey:

To the Honorable the Senate and Assembly of the State of California:

The California Academy of Sciences would respectfully represent that the Geological Survey is a work of great practical importance, as well as scientific and educational value to the people of this State.

That by the action of the Legislature of 1873 and 1874, the accumulated and unpublished material of several years' work was placed for safe keeping in the custody of the Regents of the University, where for want of further provision the greater portion still lies unimproved.

That there has been already published four volumes of the Geological reports, viz: One of Geology, two of Paleontology and one of Ornithology, besides smaller pamphlets and several topographical maps, the beauty, accuracy and value of which are appreciated and acknowledged by all who have carefully examined them.

That of the unpublished matter already accumulated, there is the material for a second volume of Geology, for a volume of Botany nearly ready to be issued, and the greater portion of the material for a second volume of Ornithology, devoted to the aquatic birds.

That the map of Central California is so nearly finished that the active field work of one more season would complete it. This map embraces nearly one-half the area of the State, and extending from Lassen's peak on the north to Visalia on the south, includes all the more important mining districts within the limits of California. The work so far done upon it is unexceptionable, and when completed it will possess the highest practical value, will meet with a ready sale, and be the most important contribution to the geography of this coast that has ever been made.

That a general geological map of the whole State has been partially drawn and colored, and could be finished and published in such a way as to show the extent of present knowledge of the geology of the State (subject of course to such improvements in detail as may hereafter be developed by future work) at no great expense.

That the United States Coast Survey map of the peninsula of San Francisco has been geologically colored, in great detail, and only waits the means for its publication.

Finally, that these unpublished works are all greatly needed for the benefit of our public schools, as well as for all the higher educational interests of the State, and that when completed they would convey the most accurate information with regard to our coal fields, quicksilver mines, quartz veins and hydraulic washings, which cannot fail to exercise a most beneficial influence in aiding the further development of these important industries.

In view of the foregoing facts, the California Academy of Sciences would respectfully pray that your honorable bodies revive the State Geological Survey, and make a liberal appropriation for its continuance and completion.

HENRY EDWARDS, Vice-President. CHAS. G. YALE, Secretary.

That Quicksilver Contract.

An item has been going the rounds of the press to the effect that the Redington quicksilver company had a contract to supply Flood & O'Brien with 400 flasks of quicksilver per month at $1.50 per pound, the contract having a year and a half longer to run. If this were so the Redington company would have a pretty good thing supplying that quantity of quicksilver at double the market price. It happens, however, that the item is n't correct. The contract between these parties was that 400 flasks per month should be furnished at a price not over $1.50 per pound, no matter how high it went; but, of course, the market price only was to be charged.

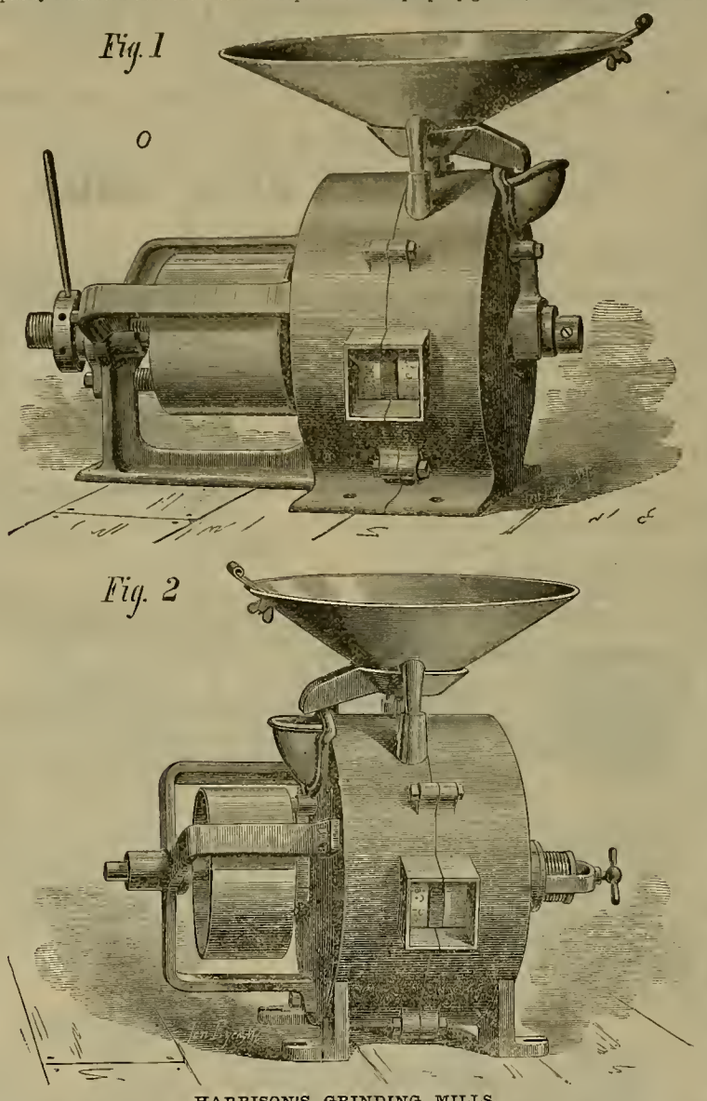
When the Redington company saw that quicksilver was going down they naturally desired to make a contract, so they made a contract for a large quantity at a low price. When it was really selling at $1, they agreed last March to sell it for seventy cents per pound, and furnish 400 flasks per month at that price, which is the market price now. Since then it has been lower and higher, so the contract was good enough for both parties. This contract expires in March. Flood & O'Brien had the quicksilver at the market price, and the Redington company could afford to hold the remainder of the product for a better price. Accordingly when it was selling at seventy cents they kept back the remainder of the product until the price came up again. So they made the most of the market.

The Redington is now turning out about 1,000 flasks of quicksilver per month and paying $50 dividends right along. There are only 1,260 shares in the mine, which are owned by three individuals, Redington, Livermore and Cornwall. It was considered a good joke on Flood & O'Brien to be caught in the $1.50 per pound contract, but it happens that such old birds in the business are not caught with chaff, and they have probably had their quicksilver cheaper than most other mines.

Improved Grinding Mills.

Geared mills with vertical spindles, save the inventor of the improved mills illustrated in the annexed engravings, are going out of use. Their toothed wheels or cogged gears are too rough in running and too expensive, while spindles in a vertical position do not run well, because they cannot be kept thoroughly oiled, and do not lie steadily against their bearings. Almost all the shafting used for driving machinery is now horizontal, with vertical pulleys, and therefore the driving pulleys of grinding mills should obviously also be vertical, in order to be as convenient as possible to set up and put in operation.

In constructing the mills represented, the horizontal shaft was the inventor's main object; but subsequent experiment showed him other and superior advantages attaching to the form. The machines became more quiet and light running, but ground more rapidly, while their simplicity evidenced that the extensive repairs required in the use of gearing would be avoided. As now made, the mills are compact and convenient to be driven from portable steam engines or horizontal shafting. The boxes for supporting the spindles are four times longer than are usually made, extending almost through the entire mill; and they carry the runner, which is solidly attached to the spindle, in a true plane with the face of the bedstone.



HARRISON'S GRINDING MILLS.

The runner stones are secured to the spindles by heavy iron connections, and if a suitable proportion of metal is used for this purpose the velocity at which they can be safely run is almost unlimited, and as speed is nearly the only limit to grinding in mills so constructed, it has been demonstrated a hundred times over that these burrs of only 20-inch diameter and 500 pounds weight, excel in working capacity the common four feet stones.

Millstones and the framework on which they are usually mounted are liable to be broken by hard substances passing through the mills, which in many cases have proved destructive to life and limb. To avoid such accident, the inventor constructs his mills so that they may be readily adjusted to any desired strain; and should nails, slugs, or bolts go through the stones, the latter immediately return to their places with such accuracy that no stoppage of the machine is required, but the working position is kept, and all delay avoided.

It is claimed that anything, however hard or ungrindable, which will pass through the eye of the stone will pass out without injury to the stones or mill. In order to accommodate different articles, which require more or less strain in grinding, and each needs a pressure peculiar to itself, the mills are provided with safety springs, which can be readily adjusted or changed to suit. These are also applicable to change of pressure, needed according to the quantity to be ground, as of course it takes more working pressure to grind fifty bushels than ten bushels of meal per hour. A common working speed for the 20-inch mill is 1,400 turns per minute, and 1,000 turns for the 30-inch mill.

The small portable burrstone mills grind fifty bushels of good meal per hour, as regular work, from day to day, and have averaged as high as eighty bushels. This, the inventor claims, is due to the peculiar mode of mounting and dressing the stones, their facility for receiving grain at the eye, and the ease with which the meal passes out of the new discharge spouts. It is due also to the vertical position of the stones, the extraordinary velocity at which they run, and to such an adaptation of speed to grinding surface that, when the meal is once properly ground, it is thrown out and does not clog the furrows and consume the driving power. The inventor has submitted written certificates as to the above mentioned capabilities of his mill. He further states that over 9,000 machines were sold up to the beginning of the present year.

The engravings show two different types of mill, the principal points of difference being the styles and sizes of frames for supporting the spindles and working parts and the number of bearings required, the construction and mode of adjusting the spring bearings by means of which the pressure of the stones is automatically controlled. The mills are adapted to all varieties of grinding and for every substance, whether wet or dry, hard or tough, heavy or light, brittle or fibrous. Several sizes of this machine are made.

The strength and durability necessary to enable these mills to be run safely at a very high velocity, is secured by the employment of the best materials, metal and stone only being employed in their construction. They are delivered to purchasers ready for use and in complete running order. For further information address the inventor and manufacturer, Mr. E. Harrison, New Haven, Conn.

THE Virginia *Chronicle* learns that a small gang of mining-claim jumpers are now preparing for a spring campaign in the business of jumping town lots and mining claims.

LUMBER is no longer a scarcity in Virginia City.

The Fryer Process.

Public interest in the Fryer process continues unabated, and has perhaps been more excited the past week, by some slight inklings as to the rationale of the process. Several gentlemen of Grass Valley, including the editors of the local papers, have been allowed to examine the works and see the details of the process, and they pronounce it a success, but do not explain the arrangements. The Nevada *Transcript* man describes the "chemicals" used in a facetious scientific manner, calling charcoal and air such names as not to be recognized by the uninitiated, and such other descriptions as have appeared throw no more light on the subject.

As Mr. Fryer has been in town this week we called upon him and were shown drawings of the furnace used and had the preliminary operations described to us, together with the working of the furnace. The furnace is peculiar in several points, and Mr. Fryer assures us that it will roast four tons of ore with one cord of wood, taking a charge every four hours; larger or smaller furnaces can of course be used. The principal points of the process are dependent upon the novel treatment of the rock after leaving the furnace; but this part is kept secret until the foreign patents are secured.

Mr. Fryer tells us that he can reduce the ore at Grass Valley for $3 per ton; and that it makes no difference to him what class of ore it is, refractory or free. He makes no pretence to metallurgical knowledge outside of his peculiar process, and says he did not know anything about quartz or quartz machinery before he came here. All the men about his works were green hands, no metallurgical expert being employed. He says that any one can try the tailings from his works to see whether he works close or not. With regard to use and loss of quicksilver he informs us that on his arrival at Grass Valley he bought ten pounds of quicksilver to experiment with. When the large works were up he bought a flask; since then several hundred tons of rock have been worked and on his return from the East he weighed the quicksilver, to see how much was lost. He had the whole flask left and eight and a half pounds of the original ten.

In the process we are informed that the pulverizer, amalgamating and concentrating machinery are all new, as is the furnace. No water is used until in the last stages. Further than this we are ignorant, as Mr. Fryer does not wish to make his secrets public until his patents are fully secured.

It would be useless to give any description of the furnace and part of the process without the whole thing. We have Mr. Fryer's authority, however, for saying that within a few weeks at most the whole process will be described in the MINING AND SCIENTIFIC PRESS, with detailed engravings of the machinery and furnace. We shall give a full account of the whole thing with Mr. Fryer's explanations, and until then any comments on the process, of the details of which we are ignorant, would be superfluous. We are told that the whole expense of an outfit for twenty tons per day will be about $15,000. The machinery will all be made in this city, although the headquarters of the company will be for the present in Grass Valley.

As soon as the engravings are prepared and the pending patents issued, the Fryer process will be fully described in this paper, due notice of which will be given.

General News Items.

THE Prince of Wales is n't having the jolliest time possible in India.

THERE is talk of a Pacific Centennial celebration.

HEAVY earthquakes have occurred in Porto Rico recently.

TROUBLE is still expected on our Southern borders.

THE Leidesdorff street extension project did not go through.

THEY still continue to have trouble on the Texas border.

"601" hanged Burt, the outlaw, in Carson City on the 17th.

No news yet of the whereabouts of "Boss Tweed."

DEFAULT has been made in payment of coupons of the Peruvian debt.

CROP prospects in New South Wales are decidedly bad.

A GENERAL strike is impending at Hartford, Conn., among the employees at the mills.

THEY are going to have an international four-oared race for the championship of the world and $5,000.

THE repairs to the *City of Peking* have been concluded and she will sail for China on the 1st inst.

LAWTON & HEAN, merchants and shipping and insurance agents in London, have failed. Liabilities put at $950,000.

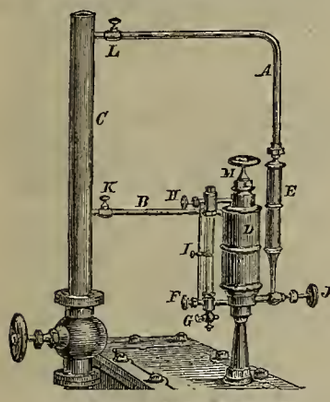
SAN FRANCISCO will probably soon have a clearing house; the bankers are now arranging the preliminaries.

CHARLES G. W. FRENCH is the newly appointed Chief Justice of the Supreme court of Arizona.

MANY persons have this week visited the Japanese man-of-war now lying in the harbor of San Francisco.

Machinery.

N. Seibert's Eureka Lubricators.

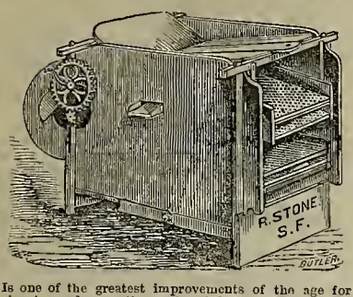


THE HIGHEST PREMIUM

Awarded by the Mechanics' Institute Fair, San Francisco, and State Fair, Sacramento, 1871.

These Lubricators are acknowledged by all engineers to be superior to any they have ever used; feed constantly by pressure of condensed water, supplied by pipe A, regulated under the oil by valve J, and forced out through check valve and pipe B into the steam pipe C; it then becomes greasy steam, passes to all the valves and cylinder at every stroke of the engine; glass tube I indicates amount used per hour. Packing on rods and stems lasts longer, and the rings on the piston will not corrode. One pint of oil will last from three to six days, according to speed and size of engine; I, sliding gauge; K, valve to shut off when engine stopps; H, F, valves to shut off in case of frost; steam does not enter the cup; it is always cool; warranted to give satisfaction. Patented February 14, 1871. Manufactured by California Brass Works, 125 First street, S. F. 24v23

THE PATENT
Novelty Mill and Grain Separator



Is one of the greatest improvements of the age for cleaning and separating grain, while it combines all the essential qualities of a first-class Fanning Mill. It also far excels anything that has been invented for the separation of grain. It has been thoroughly tested on all the different kinds of mixed grain. It takes out Mustard, Grass Seeds, Barley and Oats, and makes two distinct qualities of Wheat if desired. For further information, apply to

R. STONE,
eowbp 422 Battery street, S. F.

Buffalo Excelsior Pony Planer & Matcher.

Patented March 30, 1875.

Best of its kind in use. Price, complete, $275. Also, small Pony Planers and Planing Machine Knives, which are recommended as superior and extra in quality. 100 Scroll work designs free on receipt of stamp. For circulars giving details information, address

GEO. PARR, Buffalo, N. Y.

Excelsior Scroll Saw.

LATEST IMPROVEMENT.

Double Treadle, including one doz. Saws, thirty imitable Fret Sawing Patterns and Prepared Wood to the value of $1. A new device for tightening Saw, Power Drilling attachment, Wrench, Oil Cup and Driver. Speed, 800 strokes per minute. Saws 1¼ in. thick. Price, complete, cased and delivered on board cars or at Express office, $12

SMALL STEAM ENGINES,

With copper Boiler, to drive light Lathes, Scroll Saws, etc. 100 Scroll Work Designs, free on receipt of stamp.

Saw only without attachments, $9.

GEO. PARR, Buffalo, N. Y.

BUFFALO PONY PLANER.

Nearly One Thousand in Use.

BUFFALO PONY PLANER Will earn itself and pay expenses of running in 8 days. Price from $600 upwards, each. Also, small Pony Planers and Matchers, and Planing Machine Knives. Recommended as superior and extra in quality. Circulars free. One hundred Scroll designs free on receipt of stamp. Address

GEO. PARR, Buffalo, N. Y.

DUNHAM, CARRIGAN & CO., San Francisco, are Sole Agents in California for my Heavy Wood Working Machinery.

STEAM ENGINES & BOILERS

From 3 to 75-horse power. Shafting, Pulleys, Hoist Gears Quartz Mills, Water Tanks, Spanish Arastras, Pumps and Pipes, Hepburn and Belden Pans, and all kinds of Machinery for sale at lowest prices by

THOS. P. H. WHITELAW,
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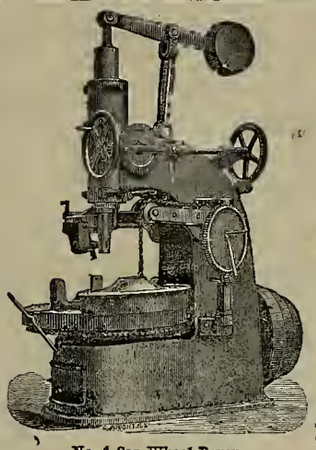
Highest cash prices paid for all kinds of Machinery.



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MANUFACTURERS OF
MACHINISTS' TOOLS
OF ALL DESCRIPTIONS
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We have the best and most complete assortment of

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AND
R. R. REPAIR SHOPS.

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"CALIFORNIA" ROCK DRILL,

MANUFACTURED BY

HAWKINS & CANTRELL, San Francisco, Cal.,

AND SPECIALLY DESIGNED TO MEET THE REQUIREMENTS OF MINERS ON THE PACIFIC COAST

—ALSO—

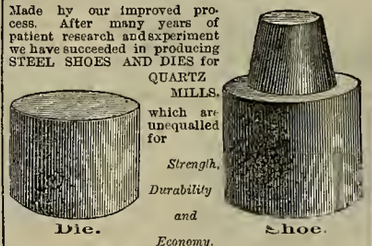
AIR COMPRESSORS,

And Complete Mining Outfits for Power Drills.

Address, L. W. COE,

Cor. Sansome and Sacramento Sts., San Francisco.

STEEL SHOES AND DIES
FOR QUARTZ MILLS,



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Will wear three times longer than any iron Shoes.

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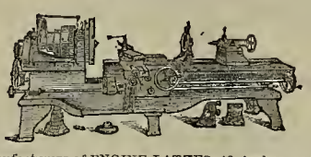

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To clinch the nails after the grooves are cut, the handles are opened, and the roughened plate is put beneath the hoof. The edge of a steel plate on the handle of the forceps is then placed above the nail point, and by closing the handles the nail will be bent down into the groove already cut, where it lies nearly flush with the hoof. The plate can be adjusted for large or small hoofs. The groove cut by the graver is about one-eighth of an inch long and one-eighth of an inch wide. No hammering or rasping is necessary. The foot is not bruised or scarred. Any one can learn to use it in a few minutes. Tender-footed horses can be shod with no pain to them. Further information given, if desired, by CARLES R. DONNER, Inventor, or C. F. SUHL, Cor. Commercial & Drumm Sts., S. F. eowhp

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It is unequalled for cleansing Woolen Fabrics, Cutlery, Carpets or Crockery; for Scrubbing Floors, Washing Paint, Removing Grease Spots, Shampooing or Bathing.

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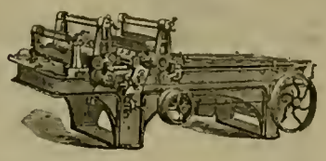

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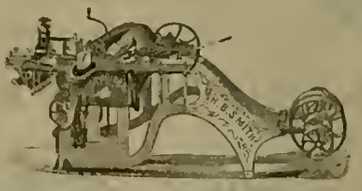

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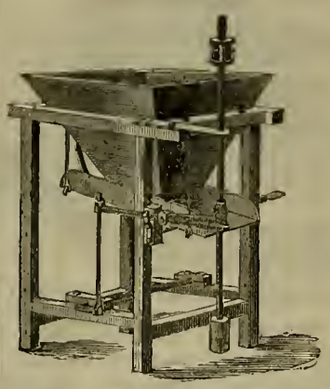

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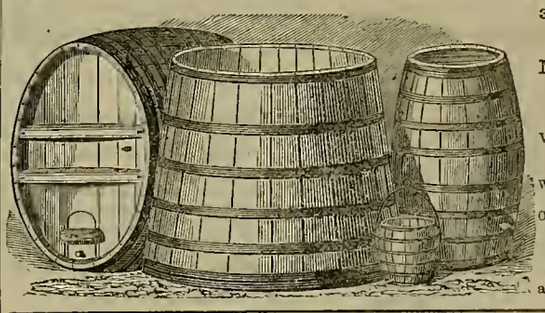

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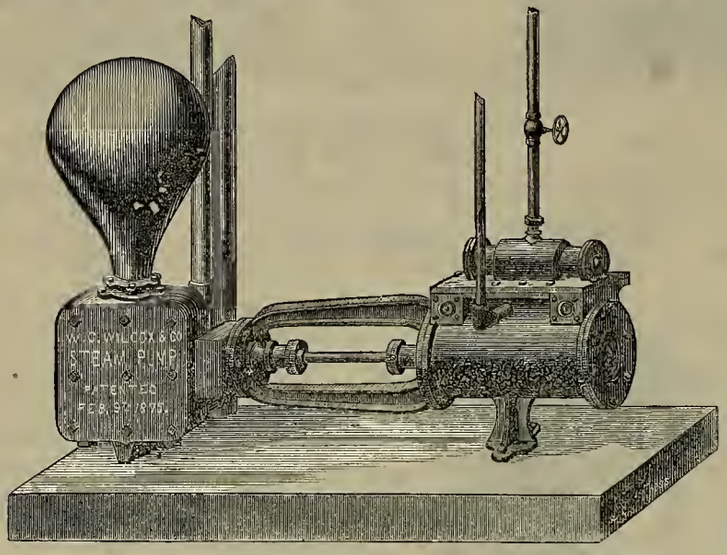

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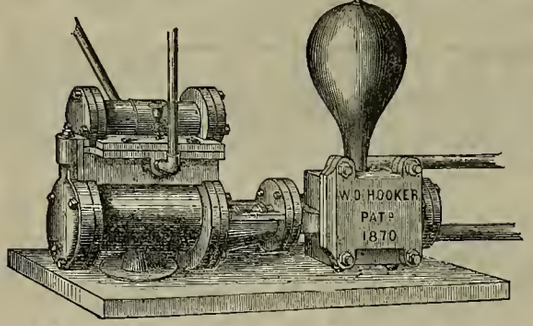

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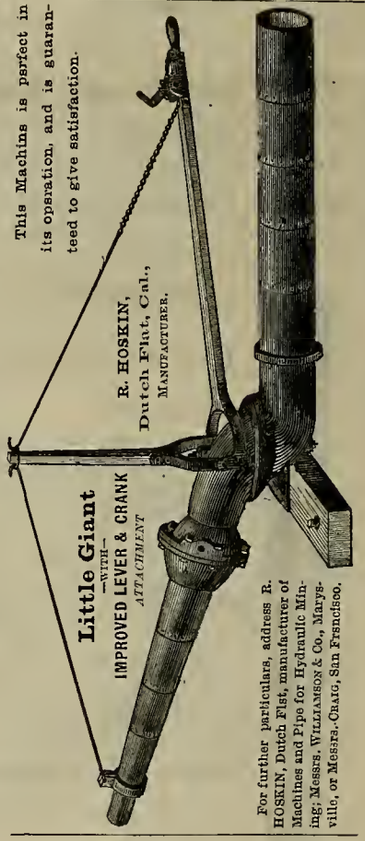
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At a Stated Term of the Circuit Court

of the United States of America of the Ninth Judicial Circuit in and for the District of California, held at the court room in the city and county of San Francisco, on Thursday, the 30th day of September, in the year of our Lord one thousand eight hundred and seventy-five. Present—The Honorable Lorenzo Sawyer, Judge.

Nicholas Selbert, complainant, vs. Wm. T. Garratt, defendant—In equity.

DECREE.

This cause came in to be heard at the February Term, A. D. 1875, of this Court and was argued by counsel and thereupon upon consideration thereof, it was ordered, adjudged and decreed, as follows, viz: That defendant, William T. Garratt, was not the first or original inventor, or discoverer of the improvement or discovery claimed by him, in and by those certain reissued letters patent of the United States, numbered five thousand three hundred and twenty-eight (No. 5328), for an alleged new and useful improvement in lubricators, issued to said defendant, William T. Garratt, on the 16th day of March, A. D. 1873, and is not entitled to a patent therefor, and that said reissued letters patent, number five thousand three hundred and twenty-eight (No. 5328) are declared void and the same are hereby vacated and set aside by reason of their interference with those certain letters patent of the United States, number one hundred and eleven thousand eight hundred and eighty-one (No. 111,881) for a new and useful improvement in lubricators, issued to complainant, Nicholas Seibert, on the fourteenth (14th) day of February, A. D. 1871.

It was also further ordered, adjudged and decreed that complainant do have and recover of and from defendant his costs and expenses to be taxed herein.

(Signed) LORENZO SAWYER,
Circuit Judge.

The above decree has reference to "Seibert's Eureka Lubricator" for oiling the valves and cylinders of steam engines.

It has a glass gauge and condensing pipe, or reservoir, with a regulating feed valve, and works as follows: As the water of condensation is admitted, under the oil, just so fast the oil passes out at the top through a pipe into the steam pipe to oil the valves and cylinder.

Parties who infringe or purchase the infringed lubricators, will be held strictly responsible.

N. SEIBERT, Patentee,
125 First Street, S. F.

Mining Superintendent

Of fifteen years' experience in working the most rebellious ores on the continent, desires employment. The gentleman thoroughly understands the opening and development of mines, and the construction of all kinds of machinery and appliances for the reduction of ores, and especially those termed rebellious. Can be communicated with through this office.

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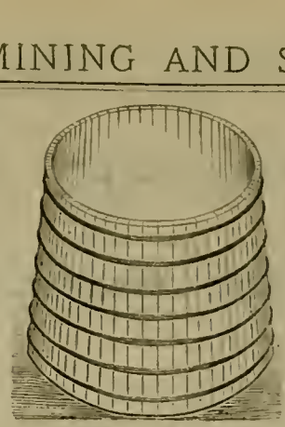
GIVE YOUR FULL ADDRESS when you communicate on business to this office, especially in returning newspapers. The fact that your name is on our subscription list is of no assistance to us. Without sending your post office address we should have to look over thousands of names to find yours.



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m6-m2

Mining and Other Companies.

Lake Mining Company — Location of

principal place of business, San Francisco, California. Location of mine and works, Quicksilver Mining District, Napa County, California.

NOTICE.—There are delinquent upon the following described stock, on account of assessment (No. 4) levied on the third day of November, 1875, the several amounts set opposite the names of the respective shareholders, as follows:

Names.	No. Certificate.	No. Shares.	Amount.
J H Goodman	25	2	$40 00
J H Goodman	31	10	200 00
P Christiauson	35	10	200 00
James Lefferts	*unknown	8	160 00

*All the Company's records having been burned.

And in accordance with law, and an order of the Board of Directors, made on the third day of November, 1875, so many shares of each parcel of such stock as may be necessary, will be sold at public auction, at the office of the Company, No. 19 First street, San Francisco, Cal., on Monday, the twenty-seventh day of December, 1875, at the hour of 3 o'clock P. M. of said day, to pay the delinquent assessment thereon, together with cost of advertising and expenses of sale.

R. F. KNOX, Secretary.

Office, 19 and 21 First street, San Francisco, Cal.

Mariposa Land and Mining Company of

California. Location of principal place of business, San Francisco, Cal. Location of works, Mariposa County, Cal.

Notice is hereby given, that at a meeting of the Board of Directors, held on the thirteenth day of November, 1875 an assessment, (No. 3) of one dollar per share was levied upon the capital stock of the corporation, payable immediately, in United States currency, to the Secretary, at the office of the company, room 33, Nevada Block, No. 309 Montgomery street, San Francisco, Cal., or to the Assistant Secretary, at the office, No. 9 Nassau street, New York City, N. Y.

Any stock upon which this assessment shall remain unpaid on the thirty-first day of December, 1875, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Tuesday, the first day of February, 1876, to pay the delinquent assessment, together with costs of advertising and expenses of sale. By order of the Board of Directors.

LEANDER LEAVITT, Secretary.

Office, Room 33, Nevada Block, No. 309 Montgomery Street, San Francisco, California.

Owyhee Water and Gravel Mining Company.

Location of principal place of business, San Francisco, Cal. Location of mines, Elko County, Nev.

NOTICE.—There are delinquent upon the following described stock, on account of assessment, (No. 1) levied on the first day of November, 1875, the several amounts set opposite the names of the respective shareholders, as follows:

Names.	No. Certificate.	No. Shares.	Amount.
M A Baldwin	37	100	$30 00
M A Baldwin	43	7400	2220 00
B Lande, trustee	3	10000	3000 00
B Lande, trustee	54	50	15 00
B Lande, trustee	50	12000	3600 00
C H Lagrauge, trustee	39	100	30 00
T H Mayne	21	1000	300 00
J W Penn, trustee	95	100	30 00
J W Penn, trustee	40	19900	5970 00
J W Penn, trustee	42	2500	750 00
H H Pearson	44	100	30 00

And in accordance with law, and an order of the Board of Trustees made on the first day of November, 1875, so many shares of each parcel of such stock as may be necessary, will be sold at public auction, on the fifteenth day of January, 1876, at the hour of 2 o'clock, P. M., of said day, to pay said delinquent assessment thereon, together with costs of advertising and expenses of sale. JOHN E. McDONALD, Secretary.

Office, No. 405 California street, San Francisco, Cal.

Pauper Mining Company.—Location of

principal place of business, San Francisco, California. Location of works, Owyhee county, Idaho Territory.

NOTICE.—There are delinquent upon the following described stock, on account of Assessment No. 6, levied on the 9th day of November, 1875, the several amounts set opposite the names of the respective shareholders as follows:

Names.	No. Certificate.	No. Shares.	Am't.
W F Bogart, Trustee	2	100	$20 00
W F Bogart, Trustee	7	150	30 00
W F Bogart, Trustee	8	100	20 00
W F Bogart, Trustee	9	100	20 00
W F Bogart, Trustee	10	100	20 00
Crocker & Garnett, Trustees	11	25	5 00
Crocker & Garnett, Trustees	12	25	5 00
Crocker & Garnett, Trustees	13	25	5 00
G A Coursen, Trustee	14	500	100 00
G A Coursen, Trustee	15	500	100 00
G A Coursen, Trustee	16	100	20 00
G A Coursen, Trustee	17	100	20 00
G A Coursen, Trustee	18	100	20 00
G A Coursen, Trustee	19	100	20 00
G A Coursen, Trustee	20	100	20 00
C P Gordon, Trustee	35	100	20 00
Jonas Lincoln, Trustee	55	50	10 00
W F Bogart, Trustee	62	100	20 00
W F Bogart, Trustee	63	100	20 00
W F Bogart, Trustee	64	100	20 00
W F Bogart, Trustee	65	300	60 00
W F Bogart, Trustee	66	750	150 00
W F Bogart, Trustee	67	150	30 00
W F Bogart, Trustee	68	150	30 00
W F Bogart, Trustee	69	150	30 00
W F Bogart, Trustee	70	225	45 00
W F Bogart, Trustee	71	75	15 00
W F Bogart, Trustee	80	25	5 00
W F Bogart, Trustee	81	25	5 00
W F Bogart, Trustee	82	25	5 00
W F Bogart, Trustee	87	50	10 00
W F Bogart, Trustee	88	50	10 00
W F Bogart, Trustee	89	50	10 00
O H Bogart, Trustee	90	300	60 00
O H Bogart, Trustee	91	1000	200 00
O H Bogart, Trustee	92	1000	200 00
O H Bogart, Trustee	93	1000	200 00
O H Bogart, Trustee	94	300	60 00
O H Bogart, Trustee	96	5	1 00
S E Holcombe	97	5	1 00
D L McDonald	98	5	1 00
A P Minear	99	5	1 00
Cope, Ubler & Co, Trustees	101	25	5 00
Cope, Ubler & Co, Trustees	102	500	100 00
Cope, Ubler & Co, Trustees	103	500	100 00
Cope, Ubler & Co, Trustees	104	500	100 00
Cope, Ubler & Co, Trustees	105	100	20 00
Cope, Ubler & Co, Trustees	106	100	20 00
Cope, Ubler & Co, Trustees	108	100	20 00
J H H Williams	110	30	6 00
D Wilder	111	30	6 00
J N Hill, Trustee	119	100	20 00
Parker & Fry, Trustees	24	50	10 00
Parker & Fry, Trustees	125	50	10 00
Parker & Fry, Trustees	126	50	10 00
Parker & Fry, Trustees	127	50	10 00
G H Purdy, Trustee	135	100	20 00
G H Purdy, Trustee	137	50	10 00
H W Howell, Trustee	140	75	15 00
C E Eckerd, Trustee	141	150	30 00
N C Efford, Trustee	149	25	5 00
N C Efford, Trustee	150	25	5 00
N C Efford, Trustee	151	25	5 00
W F Bogart, Trustee	155	100	20 00
W F Bogart, Trustee	156	50	10 00
W F Bogart, Trustee	159	100	20 00
W F Bogart, Trustee	160	50	10 00
Saml Marks, Trustee	167	30	6 00
Saml Marks, Trustee	168	30	6 00
W F Bogart, Trustee	172	50	10 00
W F Bogart, Trustee	173	50	10 00
W F Bogart, Trustee	174	50	10 00
W F Bogart, Trustee	177	100	20 00
H H Noble & Co, Trustees	180	50	10 00
H H Noble & Co, Trustees	181	50	10 00
H H Noble & Co, Trustees	182	50	10 00
H H Noble & Co, Trustees	183	50	10 00
H H Noble & Co, Trustees	184	50	10 00
H H Noble & Co, Trustees	185	50	10 00
H H Noble & Co, Trustees	186	100	20 00
H H Noble & Co, Trustees	187	100	20 00
H H Noble & Co, Trustees	188	100	20 00
H H Noble & Co, Trustees	189	100	20 00
H H Noble & Co, Trustees	190	100	20 00
H H Noble & Co, Trustees	191	100	20 00
C A Schmitt, Trustee	192	100	20 00
C A Schmitt, Trustee	193	100	20 00
C A Schmitt, Trustee	197	100	20 00
C A Schmitt, Trustee	198	100	20 00
C A Schmitt, Trustee	202	50	10 00
C A Schmitt, Trustee	203	50	10 00
H P Wood, Trustee	222	100	20 00
H P Wood, Trustee	223	100	20 00
H P Wood, Trustee	224	100	20 00
A Tence, Trustee	227	75	15 00
O H Bogart, Trustee	228	100	20 00
I Case, Trustee	229	5	1 00
W Turnbull & Co, Trustees	234	100	20 00
W Turnbull & Co, Trustees	235	100	20 00
W Turnbull & Co, Trustees	236	100	20 00
W Turnbull & Co, Trustees	244	100	20 00
W Turnbull & Co, Trustees	245	100	20 00
W Turnbull & Co, Trustees	247	100	20 00
W Wilkinson, Trustee	248	500	100 00
S E Holcombe, Trustee	249	500	100 00
E Breeze, Trustee	250	200	40 00
E Breeze, Trustee	251	200	40 00
E Breeze, Trustee	252	100	20 00
W F Bogart, Trustee	253	100	20 00
W F Bogart, Trustee	254	100	20 00
W F Bogart, Trustee	256	100	20 00
W F Bogart, Trustee	258	100	20 00
W E Norwood, Trustee	267	100	20 00
Jonas Lincoln, Trustee	269	50	10 00
W L Duncan, Trustee	270	50	10 00
W L Duncan, Trustee	271	50	10 00
W L Duncan, Trustee	272	50	10 00
W L Duncan, Trustee	274	50	10 00
W L Duncan, Trustee	274	20	4 00
W L Duncan, Trustee	275	20	4 00
M Moritz, Trustee	276	10	2 00
M Moritz, Trustee	277	10	2 00
M Moritz, Trustee	278	10	2 00
M Moritz, Trustee	279	10	2 00
M Moritz, Trustee	285	10	2 00
M Moritz, Trustee	287	25	5 00
M Moritz, Trustee	288	25	5 00
M Moritz, Trustee	290	50	10 00
M Moritz, Trustee	291	50	10 00
C P Gordon, Trustee	292	25	5 00
C P Gordon, Trustee	293	50	10 00
Hill & Kilgour, Trustees	294	25	5 00
Wm Maxford, Trustee	297	60	12 00
Wm Maxford, Trustee	298	60	12 00
M Moritz, Trustee	299	50	10 00
M Moritz, Trustee	300	50	10 00
M Moritz, Trustee	302	100	20 00
C A Schmitt, Trustee	303	50	10 00
C A Schmitt, Trustee	304	50	10 00
J D Parker, Trustee	305	100	20 00
J D Parker, Trustee	306	100	20 00
W F Bogart, Trustee	307	200	40 00
J E Purdy, Trustee	308	50	10 00
J E Purdy, Trustee	309	25	5 00
W F Bogart, Trustee	310	100	20 00
W F Bogart, Trustee	311	100	20 00
W F Bogart, Trustee	312	100	20 00
W F Bogart, Trustee	313	50	10 00
W F Bogart, Trustee	314	40	8 00
W S Lyons, Trustee	315	50	10 00
W S Lyons, Trustee	317	20	4 00
W F Bogart, Trustee	318	150	30 00
Ernest Ansela, Trustee	322	150	30 00
W Turnbull & Co, Trustees	325	75	15 00
W Turnbull & Co, Trustees	326	25	5 00
Hale, Page & Wilson, Trustees	327	150	30 00
C P Gordon, Trustee	328	120	24 00
W F Bogart, Trustee	333	100	20 00
W F Bogart, Trustee	334	100	20 00
W F Bogart, Trustee	335	100	20 00
Chas Athearn, Trustee	330	100	20 00
Chas Athearn, Trustee	337	100	20 00
Chas Athearn, Trustee	338	100	20 00
S E Holcombe, Trustee	339	100	20 00
S E Holcombe, Trustee	340	100	20 00
S E Holcombe, Trustee	341	100	20 00
S E Holcombe, Trustee	342	30	6 00
Riotte & Beyea, Trustees	343	100	20 00
Riotte & Beyea, Trustees	344	100	20 00
Riotte & Beyea, Trustees	345	100	20 00
Riotte & Beyea, Trustees	346	100	20 00
Riotte & Beyea, Trustees	347	100	20 00
Riotte & Beyea, Trustees	348	100	20 00
M Moritz, Trustee	349	20	4 00
M Moritz, Trustee	350	20	4 00
M Moritz, Trustee	351	20	4 00
M Moritz, Trustee	352	20	4 00
M Moritz, Trustee	353	20	4 00
M Moritz, Trustee	354	20	4 00
M Moritz, Trustee	355	20	4 00
M Moritz, Trustee	356	20	4 00
M Moritz, Trustee	357	20	4 00
M Moritz, Trustee	358	20	4 00
M Moritz, Trustee	359	50	10 00
M Moritz, Trustee	360	50	10 00
M Moritz, Trustee	361	50	10 00
M Moritz, Trustee	362	50	10 00
M Moritz, Trustee	363	50	10 00
M Moritz, Trustee	364	50	10 00
M Moritz, Trustee	365	100	20 00
M Moritz, Trustee	366	100	20 00
M Moritz, Trustee	367	100	20 00
M Moritz, Trustee	368	100	20 00
Joseph Jock, Trustee	369	100	20 00
Joseph Jock, Trustee	370	100	20 00
W H Richards, Trustee	371	10	2 00
W H Richards, Trustee	372	50	10 00
L F Loveland, Trustee	373	105	21 00
A H Webb, Trustee	374	50	10 00
A H Webb, Trustee	375	100	20 00
A H Webb, Trustee	376	100	20 00
A H Webb, Trustee	377	100	20 00
A H Webb, Trustee	378	100	20 00
W F Bogart, Trustee	379	100	20 00
W F Bogart, Trustee	380	100	20 00
W F Bogart, Trustee	381	100	20 00
G W Stanley, Trustee	388	100	20 00
J L Barstow, Trustee	389	100	20 00
J L Barstow, Trustee	390	100	20 00
J L Barstow, Trustee	391	100	20 00
J L Barstow, Trustee	392	100	20 00
J L Barstow, Trustee	393	100	20 00
J L Barstow, Trustee	394	100	20 00
H H Noble & Co, Trustees	396	50	10 00
H H Noble & Co, Trustees	397	50	10 00
W F Bogart, Trustee	398	100	20 00
W F Bogart, Trustee	399	100	20 00
W F Bogart, Trustee	400	100	20 00
Geo R Wells, Trustee	401	100	20 00
Geo R Wells, Trustee	402	100	20 00
Geo R Wells, Trustee	403	100	20 00
Child & Maguire, Trustees	404	20	4 00
Child & Maguire, Trustees	405	20	4 00
Child & Maguire, Trustees	406	20	4 00
W F Bogart, Trustee	408	300	60 00

And in accordance with law, and an order of the Board of Directors, made on the ninth day of November, 1875, so many shares of each parcel of such stock as may be necessary, will be sold at public auction at the office of the company, room 1, No. 402 Montgomery street, San Francisco, Cal., on Thursday, the sixth day of January, 1876, at the hour of one o'clock, P. M., of such day, to pay delinquent assessments thereon, together with costs of advertising and expenses of sale.

W. F. BOGART, Secretary.

Office, Room 1, No. 402 Montgomery street, San Francisco, California.

Pioneer Fluming Company of Placer

County, Cal. Location of principal place of business, San Francisco, Cal.

NOTICE.—There are delinquent upon the following described stock, on account of assessment levied on the third day of November, 1875, the several amounts set opposite the names of the respective shareholders, as follows:

Names.	No. Certificate.	No. Shares.	Amount.
J J Corrigan	1	1000	$50 00
J J Corrigan	2	1000	50 00
J J Corrigan	3	1000	50 00
J J Corrigan	4	1000	50 00
W A Knapp, trustee	24	800	40 00
W A Knapp, trustee	25	700	35 00
W A Knapp, trustee	26	400	20 00
W H Allen	22	1500	75 00
D M Hosmer	21	500	25 00

And in accordance with law, and an order of the Board of Directors, made on the third day of November, 1875, so many shares of each parcel of said stock as may be necessary, will be sold at public auction, at the office of the Company, No. 116 Leidesdorff street, on Wednesday, the twelfth day of January, 1876, at the hour of one o'clock, P. M., of said day, to pay said delinquent assessment thereon, together with costs of advertising and expenses of the sale.

W. AUG. KNAPP, Secretary.

Office, 116 Leidesdorff street, San Francisco, Cal.

Pioneer Fluming Company—Location of

principal place of business, San Francisco, Cal. Location of works, Shirt-tail Canon, Placer County, Cal.

Notice is hereby given, that at a meeting of the Board of Directors, held on the thirtieth day of November, 1875, an assessment of five cents ($0.05) per share was levied upon the capital stock of the corporation, payable immediately, in United States gold and silver coin, to the Secretary, at 116 Leidesdorff street, San Francisco, Cal.

Any stock upon which this assessment shall remain unpaid on the third day of January, 1876, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Monday, the seventeenth day of January, 1876, to pay the delinquent assessment, together with costs of advertising and expenses of sale.

W. AUG. KNAPP, Secretary.

Office, 116 Leidesdorff street, San Francisco, Cal.

Taylor Mill and Mining Company—Lo-

cation of property, Garden Valley Mining District, El Dorado County, State of California. Principal place of business, San Francisco, State of California.

Notice is hereby given, that at a meeting of the Board of Directors of said company, held on the ninth day of December, 1875, an assessment of sixty-five cents per share was levied upon the capital stock of the corporation, payable immediately, in United States gold coin, to the Secretary, at the office of the company, 607 Montgomery street, San Francisco, Cal.

Any stock upon which this assessment shall remain unpaid on the nineteenth day of January, 1876, will be delinquent, and advertised for sale at public auction, and unless payment is made before, will be sold on Wednesday, the ninth day of February, 1876, to pay the delinquent assessment, together with costs of advertising and expenses of sale. SAMUEL S. MURPHY, Secretary.

Office, 607 Montgomery street, San Francisco, Cal.

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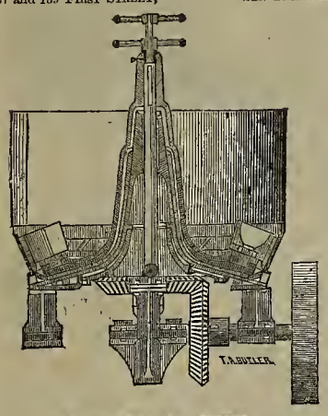

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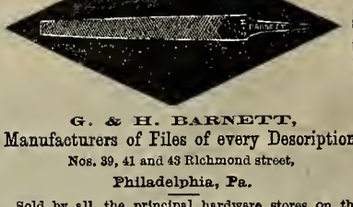

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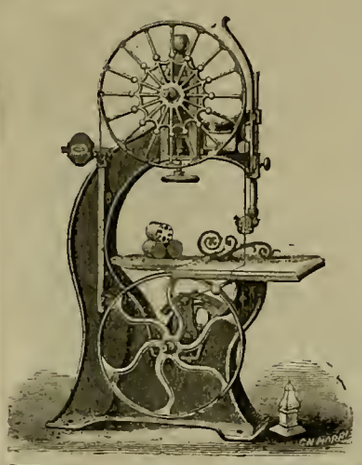

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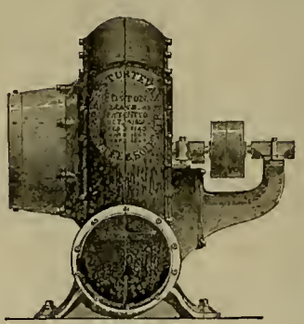

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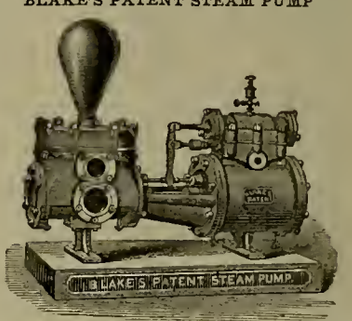

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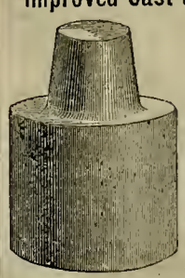

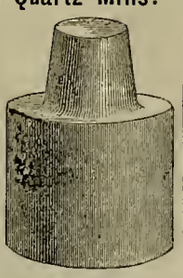

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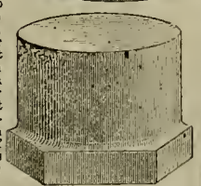

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